0009

ANDALEX
RESOURCES, INC.

P.O. BOX 902
PRICE, UTAH 84501
PHONE (435) 637-5385
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COPY

Utah Division of Oil, Gas & Mining
Coal program
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

Incoming OK
C/007/0033
Task ID#1911

ATTN: Pamela Grubaugh-Littig
Permit Supervisor

Re: MRP R-645 Rewrite
Wildcat Loadout
C/007/033
Carbon County, Utah

Pam

Dear Ms. Littig:

Enclosed are 5 complete copies of the text portion of the Wildcat Loadout, Mining and Reclamation Plan. This plan has been rewritten to conform to the Utah R-645 regulations.

Required C_1/C_2 Forms are enclosed. If you have any questions, or need additional information, please let me know.

Sincerely,

Michael W. Glasson
Manager of Operations

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Refer to Record No 0009 Date 04082004
In C 0070033 2004 Incoming
For additional information

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Application for Permit Processing
Detailed Schedule of Changes to the MRP

COPY

Title of Application:	Permit Number: C/007/033
New Permit Text - R645.	Mine: Wildcat Loadout
	Permittee: Andalex Resources, Inc.

Provide a detailed listing of all changes to the mining and reclamation plan which will be required as a result of this proposed permit application. Individually list all maps and drawings which are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise the existing mining and reclamation plan. **Include page, section and drawing numbers as part of the description.**

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	X REPLACE	☐ REMOVE	M.R.P. Text Only
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Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan?

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APPLICATION FOR PERMIT PROCESSING

Permit Change X	New Permit ☐	Renewal ☐	Transfer ☐	Exploration ☐	Bond Release ☐	Permit Number: C/007/ 033
Title of Proposal: New Permit Text - R645						Mine: Wildcat Loadout
						Permittee: Andalex Resources, Inc.

Description, include reason for application and timing required to implement: Rewritten permit text using R645 Rules.

Instructions: *If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation*

☐ Yes	X No	1. Change in the size of the Permit Area? _____ acres Disturbed Area? _____ acres ☐ increase ☐ decrease.
☐ Yes	X No	2. Is the application submitted as a result of a Division Order? DO #
☐ Yes	X No	3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes	X No	4. Does application include operations in hydrologic basins other than as currently approved?
☐ Yes	X No	5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes	X No	6. Does the application require or include public notice/publication?
☐ Yes	X No	7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes	X No	8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes	X No	9. Is the application submitted as a result of a Violation? NOV #
☐ Yes	X No	10. Is the application submitted as a result of other laws or regulations or policies? Explain: DIVISION REQUEST
☐ Yes	X No	11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes	X No	12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2?)
☐ Yes	X No	13. Does the application require or include collection and reporting of any baseline information?
☐ Yes	X No	14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes	X No	15. Does application require or include soil removal, storage or placement?
☐ Yes	X No	16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☐ Yes	X No	17. Does the application require or include construction, modification, or removal of surface facilities?
☐ Yes	X No	18. Does the application require or include water monitoring, sediment or drainage control measures?
☐ Yes	X No	19. Does the application require or include certified designs, maps, or calculations?
☐ Yes	X No	20. Does the application require or include subsidence control or monitoring?
☐ Yes	X No	21. Have reclamation costs for bonding been provided for?
☐ Yes	X No	22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes	X No	23. Does the application affect permits issued by other agencies or permits issued to other entities?

X Attach 5 complete copies of the application.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Signed - Name - Position - Date: Michael Hanna Manager 01/29/04

Subscribed and sworn to before me this 30th day of January, 2004

Notary Public: Linda Kerns

My Commission Expires: May 08, 2005

Attest: STATE OF Utah COUNTY OF Carbon

NOTARY PUBLIC
LINDA KERNS
345 NORTH 700 EAST
PRICE, UT 84501
MY COMMISSION EXPIRES
MAY 08, 2005
STATE OF UTAH

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ASSIGNED TRACKING NUMBER

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can be removed - Built.

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

R645-301

R645-301-100. GENERAL

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.

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.

R645-301-111. INTRODUCTION

Introduction and Overview of Project Permit Application

A. Introduction

This permit application is being submitted by Andalex Resources, Inc., in order that coal can be stored and loaded out of it's coal loadout facility located at Wildcat Junction, near Helper, Utah. This facility is known as the Wildcat Loadout. Andalex is a corporation organized and existing under the laws of the state of Delaware and qualified to do business in Utah. Andalex Resources has a permit to operate it's coal loading and storage facility known as Wildcat Loadout, in accordance with the appropriate regulations. This coal loadout facility is located on land owned by the United States of America in Carbon County, Utah.

Andalex was granted the right-of-way in January, 1982, by the Bureau of Land Management of the United States Department of the Interior. Andalex Resources, the designated operator, along with AMCA Coal Leasing, Inc., its' land acquisition and development branch, control all lands within the proposed coal loadout facility area. Andalex Resources, Inc., has therefore prepared this coal loadout facility permit application rewritten under the R645 Coal Mining Rules format, for submission to the appropriate regulatory authorities for review and approval.

B. Overview and Summary of Project

Coal storage and loading activities at Wildcat started officially on April 2, 1985, when the first coal was brought there for storage and eventual loadout, under a permit issued to Andalex Resources by the Bureau of Land Management, U.S. Department of the Interior. This coal loadout facility is located approximately three miles west of U.S. Highway 6, Consumer's Road, Helper, Utah, in Carbon County and can be more accurately described as parts of Section 33, Township 13 South, Range 9 East, S.L.B. & M. (please see Figure 1). The property contains approximately 91 acres, of which 12.5 acres are under lease to the Utah Railway by the Bureau of Land Management. The serial number for this right-of-way is U-48027.

There are no perennial streams or bodies of water on the property. Water for culinary purposes is supplied by Price Municipal Corporation and hauled down to the facility using approved culinary tank trucks. The water is in turn stored in an approved culinary tank at the loadout.

Historically, coal loading activities had been the sole use for this permit area, even prior to being leased to Andalex Resources. This is evidenced by the fact that the soil survey of the area revealed that of the eight test holes, two completely lacked topsoil and one located along the tracks had approximately two feet of fine coal and no topsoil. Coal had been stored along the tracks for shipping purposes in the past. It is appropriately justifiable to conclude that Andalex's proposed use of the area for coal storage and loading activities will be fully compatible with its' previous use, and as such, no significant new disturbance of the area has occurred. Observations have shown that the previous land use consisting of wildlife habitat and migrations has not been interrupted. This is evidenced by repeated sightings of deer herds moving through the permit area. Other mammals and birds continue to use this area for their habitat. Access to the loadout and storage facility is by paved county and state roads, which are also maintained by the county and state.

Coal is hauled from the Centennial Mine, Genwal Resources, and West Ridge Mine. All surface and support facilities necessary for present operations have been completed. There are no additions or modifications proposed at this time. Aside from the DOGM permit, Andalex Resources has acquired all the necessary approvals, licenses, rights-of-way, and permits at both state and federal levels to conduct coal storage and loading operations on the plan area. The facility is designed to handle loading and crushing activities up to 5 million tons per year.

Upon cessation of coal loading activities, reclamation activities will commence in accordance with the plans outlined in this application. The land will be restored to a condition equal to or better than the premining condition, according to available technology.

This facility is located in an area where mining and it's related activities have been the main industry, and as a

result, the surrounding communities are properly adapted. The labor supply is excellent and well trained. With all these considerations, coupled with the prudent management at Andalex, the Wildcat Coal Loadout Facility is a model operation in the Carbon County area with no significant environmental or socioeconomic impact.

C. Organization of Application

This permit application has been organized in accordance with the general requirements for format and contents as outlined in the R645 Coal Mining Rules.

R645-301-112. IDENTIFICATION OF INTERESTS.

Identification of Interests

1. Permit Applicant

Andalex Resources, Inc.
Tower Division
P.O. Box 902
Price, Utah 84501
(801) 637-5385

2. Legal and Equitable Owners of Record

The addresses of owners of record are as follows:
Bureau of Land Management
Utah State Office
Federal Building
Salt Lake City, Utah 84111
(801) 524-3004

Utah Railroad
P.O. Box 11608
Salt Lake City, Utah 84147
(801) 521-3447

Andalex Resources, Inc.
Tower Division
P.O. Box 902
Price, Utah 84501
(801) 637-5385

All land within the permit area in question is owned by the United States of America and is leased

by the Utah Railroad Corporation and Andalex Resources, Inc.

3. Purchaser's of Record Under Real Estate Contracts

There are no purchasers of record under any real estate contracts of areas to be affected by surface operations and facilities of this loadout, and there are no purchasers of record under any real estate contracts of the coal to be loaded out.

R645-301-112.100. TYPE OF BUSINESS

Andalex Resources, a corporation organized and existing under the laws of Delaware and qualified to do business in Utah, operates the Wildcat Loadout Facility. This facility stores, processes and ships coal for various operations in the area. This mining permit application has been prepared by Andalex Resources and is being submitted for review and approval by the appropriate regulatory authorities.

R645-301-112.200. NAMES, LOCATIONS, RESIDENT AGENT

Resident Agent who will accept service of process for Andalex Resources, Inc., Tower Division, Centennial Mines, ACT/007/019:

Michael W. Glasson
Andalex Resources, Inc.
Tower Division
P.O. Box 902
Price, Utah 84501

Also, see Chapter 8, for notarized statement pertaining to completeness and accuracy.

R645-301-112.300. OTHER THAN SINGLE PROPRIETORSHIPS

Andalex Resources, Inc., Tower Division, holds the exclusive coal operating interests in the permit area.

R645-301-112.310. OFFICERS AND SHAREHOLDERS

POSITIONS HELD -BEGINNING AND ENDING DATES
ANDALEX RESOURCES, INC.

NAME	AFFILIATE DATE	POSITION HELD	BEGIN DATE	ENDING DATE
PETER B. GREEN	01/05/88	DIRECTOR	01/05/88	------
	01/05/88	CHAIRMAN	05/11/90	------
	01/05/88	CEO	09/30/96	------
ROBERT ANDERSON, JR.	01/03/78	DIRECTOR	01/03/78	07/12/95
	01/03/78	PRESIDENT	08/20/90	07/01/94
	01/03/78	VICE CHAIRMAN	07/01/94	07/12/95
JOHN BRADSHAW	02/05/90	VP FINANCE	02/05/90	------
	02/05/90	SECRETARY	03/01/94	04/24/95
		secretary	11/01/97	------
RONALD C. BEEDIE	01/05/88	DIRECTOR	01/05/88	------
DOUGLAS H. SMITH	03/07/94	SR. VICE PRESIDENT	03/07/94	07/01/94
	03/07/94	PRESIDENT	07/01/94	------
	03/07/94	DIRECTOR	07/01/94	------
SAMUEL C. QUIGLEY	05/15/95	VICE PRESIDENT OPERATIONS	05/15/95	------
GORDON ULRICH	07/01/94	DIRECTOR	07/01/94	10/30/96
HOWARD RATTI	06/13/95	VICE PRESIDENT	06/13/95	09/01/97
G.CHRISTOPHER VAN BEVER	04/24/95	SECRETARY	04/24/95	11/01/97
MARY JEAN MITCHELL GREEN	12/31/85	DIRECTOR	12/31/85	05/11/90
	12/31/85	CHAIRMAN	12/31/85	05/11/90
KENNETH O. TAYLOR	01/01/81	VICE PRESIDENT	01/01/81	03/31/93
EMMETT ANDERSON	12/31/85	VICE PRESIDENT	12/31/85	08/11/89
JAMES D. POWELL	12/31/85	VICE PRESIDENT	12/31/85	08/11/89
BRUCE FERRIELL	11/18/86	SECRETARY	11/18/86	10/12/93
MALCOLM THOMAS	09/29/89	VICE PRESIDENT	09/29/89	12/01/93
DENNIS HALLIBURTON	12/31/85	VICE PRESIDENT	12/31/85	10/19/87
CHARLES MILLS	10/14/88	VICE PRESIDENT	10/14/88	10/01/89
DENNIS PERREY	12/31/85	CONTROLLER	12/31/85	02/08/90
W. KEITH SMITH	07/09/81	VICE PRESIDENT	07/09/81	05/01/90
GARY LIVINGSTONE	01/05/88	PRESIDENT	01/08/88	08/20/90

The address for all of the above is:

Andalex Resources, Inc.
45 West 10000 South
Sandy, Utah 84070

Principal Shareholders

The capital stock of Andalex Resources, Inc., is 100 percent owned and controlled by Andalex Resources B.V., a Netherlands company:

Andalex Resources, Inc.
45 West 10000 South
Sandy, Utah 84070

R645-301-112.320. OWNERSHIP AND CONTROL RELATIONSHIP TO APPLICANT

The capital stock of Andalex Resources, Inc., is 100 percent owned and controlled by Andalex Resources B.V., a Netherlands company:

Andalex Resources, Inc.
45 West 10000 South
Sandy, Utah 84070

Other names under which the principal shareholder has or is operating coal mining activities in the United States within the last five years preceding the date of this application are listed below:

Andalex Resources, Inc., Tower Division
Andalex Resources, Inc., Cimarron Division
AMCA Coal Leasing, Inc.
West Ken Coal Corporation
Andalex Resources, Inc., Little Creek Division

Andalex Resources, Inc., holds the exclusive coal operating interests in the permit area. The employer identification number is 61-0931325.

R645-301-112.400. PENDING, CURRENT AND PREVIOUS COAL PERMITS

A list of current and previous coal mining permits held by Andalex and its affiliates is included in Appendix B.

R645-301-112.500. SURFACE AND MINERAL OWNERSHIP

All surface and subsurface areas contiguous to the permit area are owned by the United States. The name and address of the responsible authority representing the federal government is as follows:

Bureau of Land Management
Utah State Office
Federal Building
Salt Lake City, Utah 84111
(801) 524-3004

R645-301-112.600. ADJACENT SURFACE AND MINERAL OWNERSHIP

(See R645-301-112.500)

R645-301-112.700. MSHA NUMBERS FOR ALL MINE-ASSOCIATED STRUCTURES

The Wildcat Loadout and Refuse Pile have the following M.S.H.A. I.D. Numbers:

Loadout	-	MSHA I.D. 42-01864
Refuse Pile	-	MSHA I.D. 1211-UT-09-01864-01

R645-301-112.800. STATEMENT OF ALL LANDS AND INTERESTS IN LANDS

N/A

R645-301-113. VIOLATION INFORMATION

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.

R645-301-113.100. COMPLIANCE INFORMATION

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.

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.

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.

R645-301-113.110. SUSPENDED OR REVOKED PERMITS

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.

R645-301-113.120. FORFEITED BONDS

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.

R645-301-113.200. EXPLANATION OF PERMIT OF BOND FORFEITURE

N/A

R645-301-113.210 PERMIT AND BOND IDENTIFICATION

The following is a list of all other licenses and permits under applicable state and federal land use, air and water quality, water rights, and health and safety laws and regulations held by Andalex Resources in order to operate its coal loading facility. These permits can also be found in Appendix B.

State:

1. State of Utah
   Department of Natural Resources
   Division of Oil, Gas, and Mining

355 West North Temple
3 Triad Center
Suite 350
Salt Lake City, Utah 84116

Reference I.D.: DOGM PRO 007/033

2. State of Utah
Department of Health
Division of Environmental Health
150 West North Temple
P.O. Box 2500
Salt Lake City, Utah 84110

- Air Quality Construction and Operation Permit
  Approved July 22, 1982

- Water Quality - Sediment and Drainage
  Approved September 15, 1982

- Septic and Culinary Plan (1)
  Approved April 1, 1982

Federal:

1. Bureau of Land Management
Utah State Office
Federal Building
Salt Lake City, Utah 84111

- Right-of-Way
  Permit Number U-48027
  Granted January 12, 1982

2. Environmental Protection Agency
Region VIII
1860 Lincoln Street
Denver, Colorado 80295

- National Pollutant Discharge Elimination System (NPDES)
  Permit I.D. - UT-0024147
  Issued November 4, 1982

- Prevention of Significant Deterioration of Air Quality (PSD)

Unissued: Determined by the E.P.A. to be unnecessary

3. U.S. Department of Labor
Mine Safety and Health Administration (M.S.H.A.)
P.O. Box 25367
Denver, Colorado 80225
(District 9)
Wildcat Loadout Facility I.D. 42-01864

R645-301-113.220. REGULATORY AUTHORITIES INVOLVED

See above

R645-301-113.230. CURRENT STATUS OF PERMIT AND BOND

See above

R645-301-113.240. ADMINISTRATIVE OR JUDICIAL PROCEDURES

Appendix B

R645-301-113.250. CURRENT STATUS OF PROCEEDINGS

Appendix B

R645-301-113.300. LIST OF ALL VIOLATIONS NOTICES

Appendix B

R645-301-113.310. IDENTIFICATION OF VIOLATIONS

Appendix B

R645-301-113.320. DESCRIPTION OF VIOLATIONS

Appendix B

R645-301-113.330. LOCATION OF VIOLATIONS PROCEEDINGS

Appendix B

R645-301-113.340. STATUS OF VIOLATIONS PROCEEDINGS

Appendix B

R645-301-113.350. ACTIONS TAKEN TO ABATE VIOLATIONS

Appendix B

R645-301-114. RIGHT-OF-ENTRY INFORMATION

Andalex Resources, Inc., in sublease agreement with AMCA Coal Leasing, Inc., currently holds approximately 91 acres of federal land which contains the permit area. Andalex bases its' legal right to enter and conduct coal loading activities in the permit area pursuant to the language contained in the right-of-way, specifically the actual grant (amended) dated March 24, 1982. This right-of-way was granted under the authority of the Federal Land Policy and Management Act of 1976 (90 Stat. 2776; 43 U.S.C. 1761, Sec. 501 (a)(7)). All valid rights existing on the date of this grant shall apply.

A right to enter and conduct loading activities on the approximately thirteen acres of the permit area leased to the Utah Railroad is contained in the private lease agreement between Utah Railroad and Andalex Resources in November, 1981.

The right-of-way can be described as follows:

U-48027:

Salt Lake Base and Meridian, Utah Township 13 South, Range 9 East, Section 33, NW¼SE¼, N½ SW¼ SE¼, E½E½NE¼SW¼, E½NE¼SE¼SW¼, NE¼SE¼SE¼SW¼, NW¼SW¼SW¼SE¼, E½SE¼SW¼NE¼ and portions of N½NW¼NE¼SE¼, NE¼SW¼NE¼, SW¼SW¼NE¼, NW¼SE¼SW¼NE¼, W½NE¼SW¼, W½E½NE¼SW¼, W½E½SE¼SW¼.

In addition, there is a parcel of land 500 feet by 500 feet square whose southeast corner is located 990 feet east of the center of Section 33.

Also see Appendix B for a letter from Beaver Creek Coal Company allowing Andalex to operate on a small portion of their leased land described in the letter.

This Right-of-Way contains 91 acres, more or less.

R645-301-114.100. DOCUMENTATION

Appendix B

R645-301-114.200. SEVERED SURFACE AND MINERAL ESTATES

Appendix B

R645-301-114.210. WRITTEN SURFACE OWNER CONSENT FOR COAL EXTRACTION

N/A

R645-301-114.220. CONVEYANCE EXPRESSLY GRANTING RIGHT TO MINE COAL

N/A

R645-301-114.230. DOCUMENTATION OF LEGAL AUTHORITY TO MINE COAL

N/A

R645-301-114.300. ADJUDICATION OF PROPERTY RIGHTS DISPUTES

The Division does not have the authority to adjudicate property rights disputes.

R645-301-115. STATUS OF UNSUITABILITY CLAIMS

N/A

R645-301-115.100. IDENTIFICATION OF LANDS UNSUITABLE

The permit area is not within an area designated unsuitable for the affects of mining activities, specifically, coal loading activities, under study for designation in an administrative proceeding initiated under those parts. Further, there are no occupied dwellings within 300 feet of the permit.

R645-301-115.200. CLAIMS OF EXEMPTION BY COMMITMENT PRIOR TO JANUARY 4, 1977

None.

R645-301-115.300. MINING AND RECLAMATION OPERATIONS WITHIN 300 FEET OF AN OCCUPIED DWELLING OR WITHIN 100 FEET OF A PUBLIC ROAD

None.

R645-301-116. PERMIT TERM

The requested term of this permit is five years. Andalex will then apply for five year extensions over the life of this operation.

R645-301-116.100. SCHEDULE OF PHASED MINING AND RECLAMATION ACTIVITIES

See R645-301-142

R645-301-116.200. PERMIT TERM IN EXCESS OF FIVE YEARS

The requested term of this permit is five years. Andalex will then apply for five year extensions over the life of the mine.

R645-301-116.210. COMPLETENESS AND ACCURACY FOR LONGER TERM

N/A

R645-301-116.220. DEMONSTRATION OF NEED FOR LONGER TERM

N/A

R645-301-117. INSURANCE, PROOF OF PUBLICATION AND FACILITIES OR STRUCTURES USED IN COMMON

Appendix B contains certificates of liability insurance covering personal injury and property damage resulting from this operation.

R645-301-117.100. LIABILITY INSURANCE

Appendix B

R645-301-117.200. NEWSPAPER PUBLICATION

A copy of the newspaper advertisement of this Mining and Reclamation Plan and proof of publication of the advertisement is filed with the Division and made part of the complete application.

R645-301-117.300. FACILITIES USED IN COMMON

N/A

R645-301-118. FILING FEE

N/A

NOTICE OF PERMIT APPLICATION
PRO 007/033

BEFORE THE BOARD OF OIL, GAS AND MINING, DEPARTMENT OF NATURAL RESOURCES in and for the STATE OF UTAH. BEFORE THE OFFICE OF SURFACE MINING, RECLAMATION AND ENFORCEMENT, DEPARTMENT OF THE INTERIOR in and for the UNITED STATES.

IN THE MATTER OF THE COAL PREPARATION PLANT RECLAMATION PERMIT APPLICATION SUBMITTED BY ANDALEX RESOURCES, INC., P.O. BOX 902, PRICE, UTAH 84501, FOR THE FACILITY LOCATED AT WILDCAT JUNCTION.

Notice is hereby given that a Coal Preparation and Loadout Reclamation Permit has been submitted to the Division of Oil, Gas and Mining for the operation of a coal crushing and loading facility. The name of the existing operation is the Andalex Resources Wildcat Loadout and the person representing the company is Samuel C. Quigley, P.O. Box 902, Price, Utah 84501.

The Wildcat Preparation Plant permit area is located within a BLM Right of Way described as follows: Township 13 South, Range 9 East, SLM.

Section 33: NW¼SE¼, N ½ S W ¼ S E ¼, E ½ E ½ N E ¼ S W ¼, E ½ N E ¼ S E ¼ S W ¼, N E ¼ S E ¼ S E ¼ S W ¼, N W ¼ S W ¼ S W ¼ S E ¼, E½SE¼SW¼NE¼. In addition, there is a parcel of land 500 feet by 500 feet square whose southeast corner is located 990 feet east of the center of section 33.

A copy of the Coal Preparation and Loadout Reclamation Permit submitted by Andalex Resources is available for public inspection at the office of the Division of Oil, Gas and Mining, Price, Utah. Any person aggrieved by this Coal Preparation and Loadout Reclamation Plan is requested to submit written comments, objections, or requests for informal conferences on said applications within thirty (30) days from the last date of this publication to the Division of Oil, Gas and Mining, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203 and to the Office of Surface Mining, Reclamation and Enforcement, Brook Towers, 1020 15th Street, Denver, Colorado 80202, setting forth factual reasons for his (her) complaint as to why this plan should not be approved.

Published in the Sun Advocate March 1, 8, 15 and 22, 1988.

Joe - file

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)
ss.
County of Carbon,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for .....Four...(4).....consecutive issues, and that the first publication was on the

.....11th.....day of...January.....,19.94

and that the last publication of such notice was in the issue of such newspaper dated the

.....1st.....day of.....February.....,19.....94

Kevin Ashby

Subscribed and sworn to before me this

.....1st.....day of.....February.....,19.....94

Linda Thayn
Notary Publi

My Commission expires January 10, 1995

Residing at Price, Utah

Publication fee, $.....452..00.....

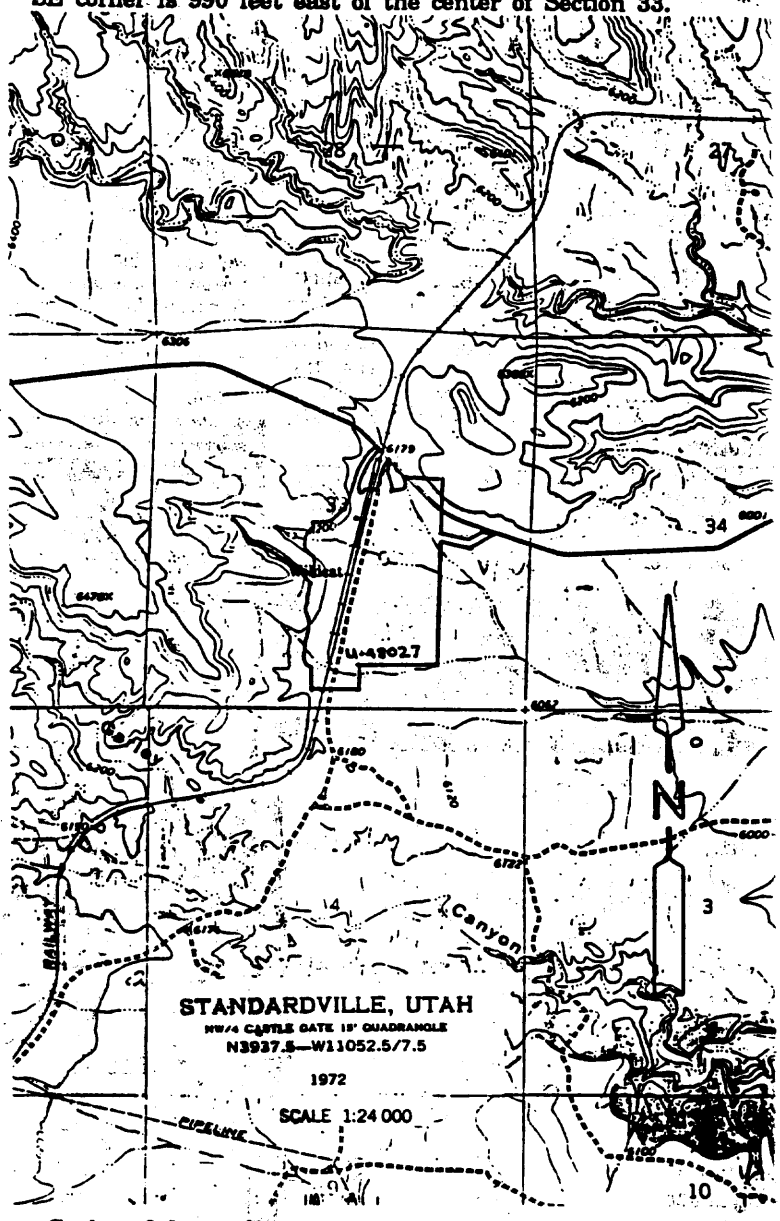
NOTARY PUBLIC
LINDA THAYN
811 NORTH 10TH EAST
PRICE, UT 84501
My Commission Expires Jan. 10, 1995
State of Utah

NOTICE

Andalex Resources, Inc., PO Box 902, Price, Utah 84501, has file application for a five-year permit renewal (ACT 007/003) for its Wil Loadout with the Utah Division of Oil, Gas & Mining. The permit are shown on the map below, is located within BLM right-of-way U-4802 the "Standardville" U. S. Geological Survey 7.5 minute quadrangle as follows:

Township 13 South, Range 9 East, SLM, Section 33: E1/2 SE1/4 SV NE1/4, NW1/4 SE1/4, N1/2 SW1/4 SE1/4, NW1/4 SW1/4 SW1/4 SE E1/2 E1/2 NE1/4 SW1/4, E1/2 NE1/4 SE1/4 SW1/4, NE1/4 SE1/4 SI SW1/4, and portions of N1/2 NW1/4 NE1/4 SE1/4, NE1/4 SW1/4 NE SW1/4 SW1/4 NE1/4, NW1/4 SE1/4 SW1/4 NE1/4, W1/2 NE1/4 SW W1/2 E1/2 NE1/4 SW1/4, W1/2 E1/2 SE1/4 SW1/4,

In addition, there is a parcel of land 500 feet by 500 feet square wi SE corner is 990 feet east of the center of Section 33.



Copies of the application for this permit renewal are available inspection at:

Carbon County Recorder's Office, County Courthouse, 120 East Ma Price, Utah 84501 or, Utah Division of Oil, Gas & Mining, 355 W North Temple, 3 Triad Center, Suite 350, Salt Lake City, Ut 84180-1203.

Written comments on this renewal application should be addressed the Director, Utah Division of Oil, Gas and Mining at the above addre

Published in the Sun Advocate January 11, 18, 25 and February 1994.

R645-301-120. PERMIT APPLICATION FORMAT AND CONTENTS

Summary of Table of Contents

R645-301-100. General

R645-301-200. Soils

R645-301-300. Biology

R645-301-400. Land Use and Air Quality

R645-301-500. Engineering

R645-301-600. Geology

R645-301-700. Hydrology

R645-301-800. Bonding and Insurance

R645-301-121. REQUIREMENTS

R645-301-121.100. CURRENT INFORMATION

Information is current.

R645-301-121.200. CLEAR AND CONCISE

Information is clear and concise.

R645-301-121.300. FORMAT REQUIREMENTS

To facilitate review of the application, each chapter listed above has been further divided into specific parts and sections. These can be found listed in the detailed table of contents appearing at the beginning of this text along with the page numbers on which they appear. This table of contents also contains lists of figures, tables, plates, exhibits, and appendices to facilitate cross referencing between chapters.

Exhibits include appropriate supporting documents, reports and publications and are included as appendices.

Maps which were not reduced to fit into the text are included in a separate volume as plates. All maps and plans are submitted in

accordance with the requirements.

R645-301-122. REFERENCED MATERIALS

All references and referenced publications and materials are listed under R645-301-130.

R645-301-123. APPLICATION FOR PERMITS, CHANGES, RENEWALS, OR TRANSFERS

This permit is submitted to update information to the R645 permit format.

R645-301-130. REPORTING AND TECHNICAL DATA

Preparation of Application

A. Persons and Consultants Involved

The following persons and/or organizations were involved in collection and analysis of the technical data set forth in this application.

1. In House Consulting Services

   a) Andalex Resources, Inc., AMCA Coal Leasing, Inc.
   Samuel C. Quigley - General Manager
   Michael W. Glasson - Senior Geologist
   David E. Shaver - Chief Engineer

2. Outside Consulting Services

   a) Dan W. Guy - Registered Professional Engineer (State of Utah No. 4548)
   Price, Utah
   - Sedimentation and Drainage Control Plan

   b) Bruce T.S. Ware - Registered Land Surveyor
   Price, Utah

   c) Rollins, Brown, and Gunnell
   Provo, Utah
   - Foundation Study

d) Earl Jensen - Soil Scientist
Price, Utah

e) Roy Harniss - Range Scientist
Logan, Utah
- Vegetation Inventory

B. Coordination and Consultation with Governmental Agencies

The following governmental agencies were consulted in the preparation of information set forth in this application.

U.S. Department of Agriculture
Soil Conservation Service
Price, Utah

U.S. Department of the Interior
Bureau of Land Management
Price, Utah
Salt Lake City, Utah

Office of Surface Mining
Reclamation and Enforcement
Denver, Colorado

U.S. Fish and Wildlife Service
Salt Lake City, Utah

State of Utah:
Department of Natural Resources
Division of Oil, Gas, and Mining
Salt Lake City, Utah

Antiquities Section (Consulting Services Branch)
Salt Lake City, Utah
(Archaeological Survey)

Department of Natural Resources
Division of Wildlife Resources
Salt Lake City, Utah
Price, Utah

Department of Community & Economic Development

Division of State History
Salt Lake City, Utah

Department of Natural Resources
Division of Water Rights
Salt Lake City, Utah

Department of Health
Division of Environmental Health
Salt Lake City, Utah

C. References

Andalex Resources, Inc. 1987 - Mining and Reclamation Plan
Submitted to the State of Utah
Department of Natural Resources, D.O.G.M.

Doelling, H.H. 1972 - Central Utah Coal Fields
U.G.M.S. Monograph Series No. 3

U.S.D.A. 1978 - Soil Survey and Interpretations of the Coal Creek Emery Portion of the Price River and Emery County Areas, Carbon and Emery Counties, Utah. S.C.S.

U.S.D.I. 1979 - Final Environmental Statement, Development of Coal Resources in Central Utah, Parts 1 and 2

D. Bibliography

Barfield, B.J., Warner, R.C. and Haan, C.R. 1983. Applied Hydrology and Sedimentology for Disturbed Areas. Olkahoma Technical Press, Stillwater, 603 pp.

Cordova, R.M., 1964, "Hydrogeologic Reconnaissance of Part of Head Waters Area of the Price River, Utah", Utah Geological and Mineral Survey, Water Resources Bulletin 4, p. 26.

Fisher, D.J., Erdmann, C.E., and Reeside, J.B., 1960. "Cretaceous and Testing Formation of the Book Cliffs, Carbon, Emery, and Grand Counties, Utah, and Garfield and

Mesa Counties, Colorado", U.S. Geological Survey, Professional Paper 332, p. 80.

Price, D. and Arnow, T., 1974. Summary Appraisals of the Nation's Ground Water Resources - Upper Colorado Region. U.S. Geological Survey Professional Paper 813-C, 40 pp.

Spieker, Edmond M., 1931. Wasatch Coal Field, Utah. U.S. Geological Survey, Bulletin 819.

U.S. Bureau of Reclamation, 1977. Design of Small Dams, U.S. Government Printing Office, Washington, D.C., 816 pp.

Waddell, K.M., and other, 1981. Hydrologic Reconnaissance of the Wasatch Plateau, Book Cliffs Field Areas, Utah. U.S.G.S. Water Supply Paper 2068.

R645-301-131. TECHNICAL DATA REQUIREMENTS

Where applicable, technical data submitted has been identified as to who prepared the information and is stamped by that registered professional engineer (P.E.).

R645-301-132. TECHNICAL ANALYSES REQUIREMENTS

Analyses are prepared by a qualified professional engineer.

R645-301-140. MAPS AND PLANS

Per Division Requirement.

R645-301-141. MAP FORMATS

Per Division Requirement.

R645-301-142. PHASES OF OPERATIONS AND MINING ACTIVITY

Introduction and Overview of Project Permit Application

This permit application is being submitted by Andalex Resources, Inc., in order that coal can be stored and loaded

out of its' coal loadout facility located at Wildcat Junction, near Helper, Utah. This facility is known as the Wildcat Loadout. Andalex is a corporation organized and existing under the laws of the state of Delaware and qualified to do business in Utah. Andalex Resources hereby seeks the permit to operate its' coal loading and storage facility known as Wildcat Loadout, in accordance with the appropriate regulations. This coal loadout facility is located on land owned by the United States of America in Carbon County, Utah.

Andalex was granted the right-of-way in January, 1982, by the Bureau of Land Management of the United States Department of the Interior. Andalex Resources, the designated operator, along with AMCA Coal Leasing, Inc., its' land acquisition and development branch, control all lands within the proposed coal loadout facility area. Andalex Resources, Inc., has therefore prepared this coal loadout facility permit application for submission to the appropriate regulatory authorities for review and approval.

Coal storage and loading activities at Wildcat started officially on April 2, 1985, when the first coal was brought there for storage and eventual loadout, under a permit issued to Andalex Resources by the Bureau of Land Management, U.S. Department of the Interior. This coal loadout facility is located approximately three miles west of U.S. Highway 6, Consumer's Road, Helper, Utah, in Carbon County and can be more accurately described as parts of Section 33, Township 13 South, Range 9 East, S.L.B. & M. (please see Figure 1). The property contains approximately 91 acres, of which 12.5 acres are under lease to the Utah Railway by the Bureau of Land Management. The serial number for this right-of-way is U-48027.

There are no perennial streams or bodies of water on the property. Water for culinary purposes is supplied by Price Municipal Corporation and hauled down to the facility using approved culinary tank trucks. The water is in turn stored in an approved culinary tank at the loadout.

Historically, coal loading activities had been the sole use for this permit area, even prior to being leased to Andalex Resources. This is evidenced by the fact that the soil survey of the area revealed that of the eight test holes, two completely lacked topsoil and one located along the tracks had approximately two feet of fine coal and no topsoil. Coal had

been stored along the tracks for shipping purposes in the past. It is appropriately justifiable to conclude that Andalex's proposed use of the area for coal storage and loading activities will be fully compatible with its' previous use, and as such, no significant new disturbance of the area has occurred. Observations have shown that the previous land use consisting of wildlife habitat and migrations has not been interrupted. This is evidenced by repeated sightings of deer herds moving through the permit area. Other mammals and birds continue to use this area for their habitat. Access to the loadout and storage facility is by paved county and state roads, which are also maintained by the county and state.

Coal is hauled from the Centennial Mine, Genwal Resources and West Ridge Mine. All surface and support facilities necessary for present operations have been completed. There are no additions or modifications proposed at this time. Aside from the DOGM permit, Andalex Resources has acquired all the necessary approvals, licenses, rights-of-way, and permits at both state and federal levels to conduct coal storage and loading operations on the plan area. The facility is designed to handle loading and crushing activities up to 5 million tons per year.

Upon cessation of coal loading activities, reclamation activities will commence in accordance with the plans outlined in this application. The land will be restored to a condition equal to or better than the premining condition, according to available technology.

This facility is located in an area where mining and its' related activities have been the main industry, and as a result, the surrounding communities are properly adapted. The labor supply is excellent and well trained. With all these considerations, coupled with the prudent management at Andalex, the Wildcat Coal Loadout Facility is a model operation in the Carbon County area with no significant environmental or socioeconomic impact.

R645-301-142.100. PRIOR TO AUGUST 3, 1977

None by Andalex Resources. A wash plant and loadout were operated by other independent companies or individuals in areas presently consumed by Andalex's surface facilities. Andalex's encroachment onto these previously disturbed areas transferred the responsibility for

reclamation to Andalex. The specific locations of disturbed areas prior to Andalex's mining activities is irrelevant.

R645-301-142.200. AFTER AUGUST 3, 1977

All of Andalex's surface facilities and mining operations began after August 3, 1977.

R645-301-142.210. PRIOR TO MAY 3, 1978

See R645-301-142.100.

R645-301-142.220. SMALL OPERATOR'S EXEMPTION PRIOR TO JANUARY 1, 1979

N/A

R645-301-142.300. AFTER MAY 3, 1978 (OR JANUARY 1, 1979 FOR SMALL OPERATOR'S EXEMPTION) AND PRIOR TO APPROVAL OF STATE PROGRAM

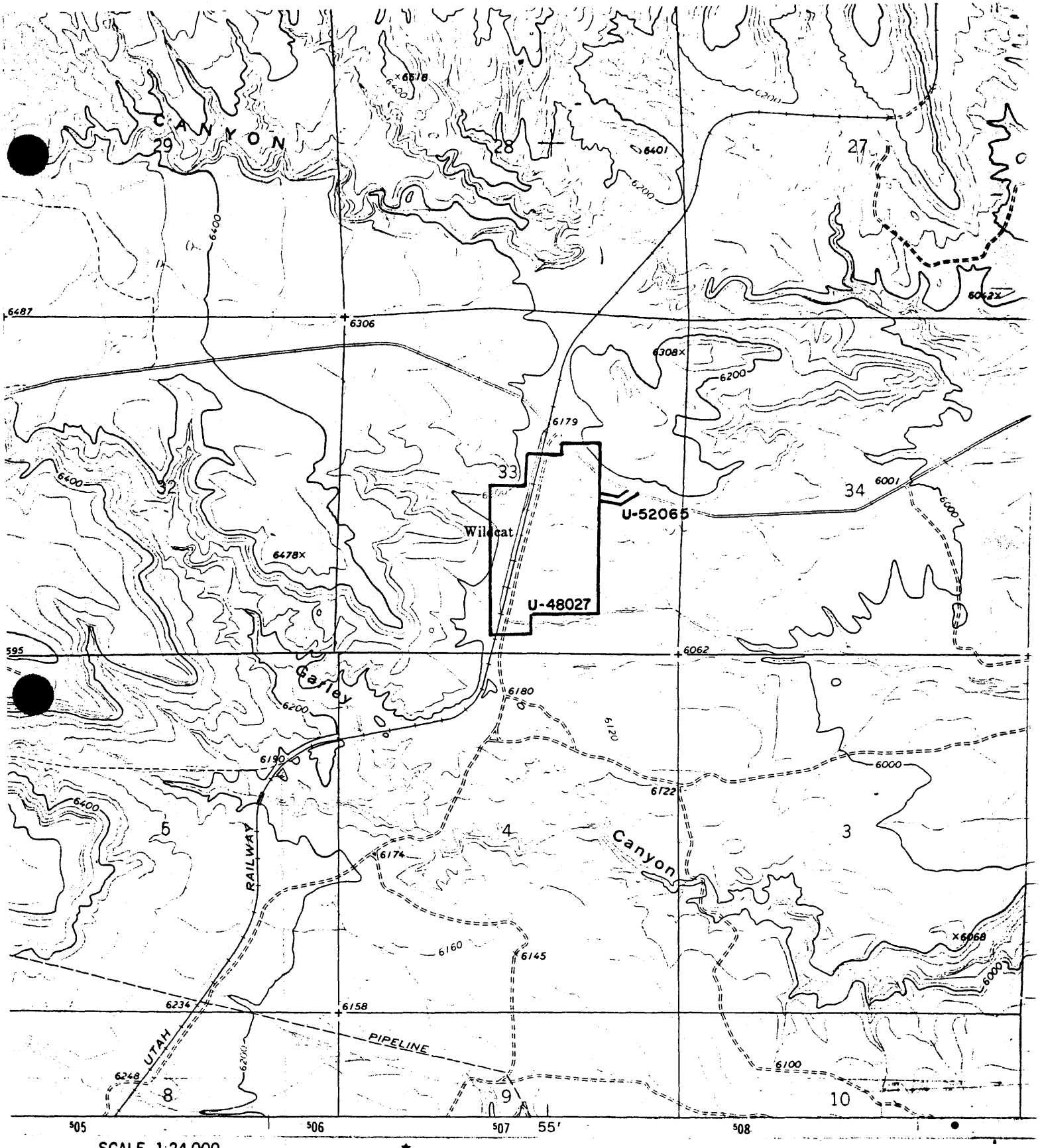
N/A

R645-301-142.400. AFTER ISSUANCE OF PERMIT BY THE DIVISION

A list of all applicable permits is included in Appendix B.

R645-301-150. COMPLETENESS

Per Division.



SCALE 1:24 000

GN MN

0°02' / 1 MIL

15½° / 276 MILS

UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

STANDARDVILLE QUADRANC

UTAH—CARBON CO.

7.5 MINUTE SERIES (TOPOGRAPH

NW ·4 CASTLE GATE 15' QUADRANGLE

Figure I-1

R645-301-200. SOILS

I. Soil Survey and Vegetation Inventory (please see Appendix D and Appendix I).

1. Introduction

Appendix D is a survey conducted by the SCS in the Wildcat area and depicts the major soil types here. Appendix D also includes a survey including sampling as performed by Earl Jensen consulting as a soil scientist. Included in this survey is a soil profile description for each soil type identified on the permit area. Plate 11 depicts the soils as outlined by the Order 3 Survey performed by the SCS.

R645-301-211. PREMINING SOIL RESOURCES

The entire disturbed area, with the exception of approximately 20 acres, was disturbed pre-law by previous owners, and no topsoil was saved.

Topsoil was removed prior to construction and stored and protected for use in final reclamation. Please see Plate 13 for a summary of stored topsoil. Appendix D also includes a topsoil mass balance and includes soil quality data from the Utah State University Testing Laboratory. The mass balance indicates that there may not be sufficient volume of topsoil for final reclamation. Andalex has committed to identifying and testing for suitable substitute material either off the permit area or possibly within the permit area if a suitable growth medium can be identified.

R645-301-212. STOCKPILING AND REDISTRIBUTION

Removal and Storage of Topsoil and Subsoils

The area from which topsoil was removed is approximately 20 acres (the surface area which was not previously impacted by loading operations prior

to Andalex) and includes poorly developed soils. Using scrapers, the soil was scraped from the surface to a depth of approximately six inches and dumped at five separate sites on facility location. The topsoil storage areas are shown on Plate 1 as well as the available topsoil gathering areas. No topsoil was gathered from the small area exemption portion of the permit area including the topsoil stockpile on the west side north of Pond F. The inclusion of this topsoil pile as a small area exemption adds one acre to the total small area exemption. All topsoil piles are to be considered small area exemptions (see Plate 2). This part of the permit area is where the topsoil piles were placed. Although soil studies indicate suitable material to a depth greater than six inches, Andalex needed to use this subsoil material for fill in the construction of their surface facilities. It should be noted that in several areas on the facility where excavations were made, piles of coal fines where uncovered in some cases up to six feet thick. This material was reclaimed and used as a base for Andalex's coal storage piles. However, no topsoil was available in these areas. 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. Topsoil has been segregated, stockpiled, and protected from wind and water erosion and contaminants through revegetation and the use of ditches. All topsoil piles are equipped with impermeable earthen berms. If over a period of time these berms become backfilled with soil as a result of minor erosion, Andalex will remove the material and place it back on the pile thereby maintaining the berm protection at all times. Likewise, substitute topsoil sites, once identified, will be protected with vegetation. Samples were taken of all the topsoil piles to determine whether the material which was gathered is suitable for final reclamation. This analysis is included in Appendix D. Based on these tests, Andalex will commit to submitting a Soil Amendments Plan. Andalex is willing to commit to any necessary steps to insure that the topsoil material is suitable for final reclamation such as the use of additives, fertilizer, etc. Andalex suggests that the topsoil piles be tested several years

piles be tested several years prior to final reclamation as conditions in the piles may change over the next fifteen to twenty years. Parameters that are being analyzed are pH, Ec, saturation percent, texture, organic C, SAR, Total N, available P, percent $CaCO_3$, Selenium, and Boron. Disturbed areas no longer required for the conduct of mining operations have been graded and revegetated. Once the topsoil was removed, the areas were graded to accommodate the surface facilities. Andalex submitted plans to modify the disturbed area boundary and to increase the capacity of the Wildcat Loadout. This proposal included plans to relocate three of the four topsoil piles on the east side of the permit area. These topsoil piles (B, C, D) have been moved to the west side of Wildcat where they are protected from additional wind-carried coal fines. After these piles were relocated, they also were reseeded once again with an interim seed mixture which will provide further protection from erosion. For further information about topsoil, please see Appendix D.

Topsoil Pile Summary, Existing	
Topsoil Pile A	11,877 $ft.^3$
Topsoil Pile B	97,622 $ft.^3$
Topsoil Pile C	158,694 $ft.^3$
Topsoil Pile D	29,454 $ft.^3$
Topsoil Pile E	122,176 $ft.^3$
Total	419,823 $ft.^3$

Topsoil piles B, C and D have been moved away from the coal storage piles to the west side of Wildcat where they will no longer be subjected to wind-borne coal fines. These piles represent a total volume of 285,770 ft^3. The new topsoil pile is a long, narrow pile situated adjacent to the existing topsoil pile on the west side. The new pile is approximately 10 feet in height, 75 feet wide and 500 feet long. Slopes on the topsoil pile do not exceed 2V:1H. A containment berm has been constructed around the perimeter of the pile to a minimum height of two feet. Surface area and surface roughness have been maximized to allow microbial activity and organic matter cycling. The new topsoil pile, was reseeded between October 1 and October 14, 1994, broadcasting the following

pure live seed mixture or drill seeding at half the specified rate.

Fairway crested wheatgrass	4 lb/ac
Bozoisky Russian wildrye	4 lb/ac
Arriba Western wheatgrass	4 lb/ac
Nezpar Indian ricegrass	4 lb/ac
Critana thickspike wheatgrass	4 lb/ac
Forage Kochia	4 lb/ac
Rincon Fourwing saltbush	4 lb/ac
Shadscale	2 lb/ac
Gordon Creek Wyoming sagebrush	.5 lb/ac
Castle Valley Gardner saltbush	2 lb/ac

Areas where topsoil has been moved will be drill seeded with the approved mixtures or hand broadcast at 1-1/2 times the specified rate. Andalex proposes the use of several techniques in order to measure revegetation success. These will include the use of non-weedy alfalfa mulch at the rate of three to four tons per acre as well as excelsior matting and chicken wire for erosion control. Mulch will be crimped in on the topsoil pile and in the areas previously designated as undisturbed a light application of water will be applied immediately after seeding. It should be noted that prior to revegetation of the areas previously designated as undisturbed coal fines were vacuumed to the extent possible. Also, if deemed necessary in future years, coal fines will be vacuumed in areas where revegetation could potentially be affected adversely.

It should be noted that areas from which topsoil piles were removed and on the area where fill material was borrowed additional topsoil was gathered to a depth of twelve inches and placed on the new topsoil storage pile on the west side.

Backfilling, Grading, and Soil Replacement and Stabilization

All disturbed areas will be backfilled and graded to as near as possible the approximate original contour with the exception of the natural drainage which came through the loadout site prior to Swisher Coal Company's establishment of their loadout facility. Andalex has diverted this

natural drainage and will provide permanent protection of this diversion once reclamation is complete. Please refer to Chapter 5, re Undisturbed Diversions for more detail. Slopes shall not exceed the angle of repose or such lessor slopes as required by the regulatory authority to maintain stability. Fill material will be compacted to assure stability. This is a flat lying area and therefore stabilization should be achieved easily.

Areas which will be backfilled include foundation areas such as the loadout, the reclaim tunnels (including the expanded reclaim system), and the truck dumps. All backfilled and regraded areas, including the Wildcat Expansion areas, will be reclaimed. Areas to be regraded include the loadout site, stockpile sites, and roads. These areas can all be regraded simultaneously because of the simple topography of the area. Where possible, all final grading and placement of topsoil will be done along the contour to minimize erosion.

In all cases, grading will be conducted in a manner which minimizes erosion and provides a stable surface for the placement of topsoils.

Upon reclamation, topsoil will be hauled to the area by end dump trucks, piled and spread using a grader. Where possible, the soil will be distributed along the contour. The thickness of the re-established soil will be consistent with soils in the vicinity and will be sufficient to support vegetation equal to or superior to pre-mining history. As previously mentioned, Andalex was unable to gather topsoil because of the previous disturbance. However, Andalex has committed to identifying and testing topsoil substitute areas either within or outside of the permit area as needed so that upon final reclamation, the entire disturbed area of approximately 55 acres can be resurfaced with six inches of topsoil or less if allowed by the Division (please see Plate 1 for the location of these topsoil substitute areas. They are identified on Plate 1 as revegetation test plots.) Existing topsoil piles on site total approximately 420,000 cubic feet of material. Andalex feels and

it is apparent from the soils inventory, that much of the fill material used onsite could be used as topsoil substitute. As previously mentioned, four topsoil substitute areas have been identified and are shown on Plate 1. Soil samples from these locations have been analyzed and the results are included in Appendix D. Once it has been determined that the substitute material is suitable for reclamation purposes, the actual area of substitute material will be carefully outlined on Plate 1 and the volumes included in the Topsoil Pile Summary. These areas will be protected from wind and water erosion through revegetation using the currently approved seed mixture. Please refer to Appendix D for the specific methods for this revegetation and monitoring. Revegetation of all existing topsoil piles will be accomplished in the same manner as the substitute piles (revegetation test areas). The only area which will not be subject to topsoil redistribution will be the small area exemption located on the east side of the permit area. This area has already been regraded and revegetated. The small area exemption on the west side of the tracks will also not be subject to topsoil redistribution as none was gathered per se beneath the existing pile. The final seed mixture will be used on these small area exemptions.

It should be noted that when rills or gullies deeper than nine inches form in areas that have been regraded or topsoiled, the rills and gullies will be filled, graded, or otherwise stabilized and the area reseeded or replanted. Rills and gullies of lessor size will be stabilized and the area reseeded or replanted if the rills or gullies are disruptive to the approved postmining land use or result in additional erosion and sedimentation.

At any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, Andalex Resources shall notify the Division by the fastest available means and comply with any remedial measures required by the Division.

R645-301-220. ENVIRONMENTAL DESCRIPTION

Appendix D

R645-301-221. PRIME FARMLAND INVESTIGATION

Appendix D

R645-301-222. SOIL SURVEY

Appendix D

R645-301-222.100. SOIL MAP

Plate 11

R645-301-222.200. SOIL IDENTIFICATION

Appendix D

R645-301-222.300. SOIL DESCRIPTION

Appendix D

R645-301-222.400. SOIL PRODUCTIVITY

Appendix D

R645-301-223. SOIL CHARACTERIZATION

Appendix D

R645-301-224. SUBSTITUTE TOPSOIL

Andalex has identified four different locations within the permit area to be used for revegetation test plots. These areas are all located on slopes of fill material created during the construction of the site. The object of these test areas is to determine whether or not all of the fill material within the permit area may be used as substitute topsoil for final reclamation purposes. The test plot locations are shown on Plate 1 and are located

in such a fashion so as to cover the various types of fill material throughout the entire permit area. It is doubtful that the different fill areas vary with respect to chemical constituants or reclamability; however, the revegetation test plots will prove or disprove this theory. It is Andalex's goal to demonstrate that any of the fill material may be used as topsoil substitute and thereby mitigating the shortfall of topsoil gathered due to previous disturbance on site. Based on the area to be reclaimed versus the volume of topsoil currently gathered and in piles, Andalex requires that an additional 30,000 cubic yards of substitute material be identified.

These four locations were treated according to discussions and commitments between Andalex and the Division in the fall of 1989. The treatment included fertilizing, tilling, mulching (weedless alfalfa hay) and seeding. Andalex agreed to quantitatively analyze these areas after two growing years and conducted the survey in the summer of 1992. The results of the survey are found in Appendix N and show that the test areas were less seccessful than hoped. Andalex will perform one more quantitiative test on these plots in the summer of 1993. Should the existing test plots show a significant improvement then Andalex will not install newly designed test plots during the fall of 1993. Andalex recommends that the consultant perfoming the survey be asked for an opinion as well. These techniques may include different bed preparation; using native, local seed; and different fertilizing techniques, indluding no fertilizer. Andalex is hopeful that the original plots will improve in 1993, considering the climatic changes which have taken place during the winter of 1992-1993.

In the unlikely event it is determined that the fill material is not suitable for topsoil substitute, Andalex will commit to locating offsite topsoil substitute material. This will have to be accomplished in conjunction with a new Bureau of Land Management right-of-way issued for this purpose; therefore, it is hoped that the fill material proves suitable.

In addition to these revegetation test plots, Andalex will create four new test plots on the surface of the new topsoil storage pile located on the west side of the tracks adjacent to existing topsoil pile F.

These test plots will be approximately 40 feet square and will not be situtated on any of the slopes of the topsoil pile. Test plots are shown on Plate 22 and are described as follows. All four test plots will have a roughened surface (roughened meaning troughs and hills between one and four feet in height). Also, all four test plots, along with the remainder of the surface of the topsoil pile will be mulched and have incorporated one ton of weed-free alfalfa hay per acre (the alfalfa will be tested by the Utah State University Agricultural Extension Service). The seed mixture to be used on all of the test plots, as well of the remainder of the topsoil pile is listed on Page 2-4 of this Plan. Seeding will occur no later than October 14, 1994. Seeding will be by hand-broadcasting and will not be raked if the surface is in a loose condition and not crusted.

Test Plot 1 - Test Plot 1 will not be irrigated; it will be mulched with three to four-tons-per-acre of alfalfa hay in an effort to retain natural moisture. The alfalfa hay will be incorporated into the surface so as not to attract deer.

Test Plot 2 - Test Plot 2 will be irrigated. Irrigation will be accomplished through the use of soaker hoses or fine-mist spray according to the following schedule:

In terms of inches of water, the initial profile wetting will be one inch which will occur in the Spring of 1995, approximately April 1. Irrigation will proceed at the rate of one inch every four days for four to six weeks (assuming lack of natural precipitation). Following this, the plot will be irrigated with one inch of water every two weeks until the end of the season, approximately mid-September, 1995. In addition, Test Plot 2 will be covered with North American Green Straw matting, which will be stapled adequately to the surface. The matting which is planned for use will have

netting on one side only.

Test Plot 3 - Test Plot 3 will be irrigated in the same fashion of Test Plot 2. In addition, Test Plot 3 will have 1.5 tons-per-acre straw applied and achored with biodegradable netting.

Test Plot 4 - Test Plot 4 will not be irrigated. In addition to the one-ton-per-acre alfalfa mulch this test plot will be covered with 1.5 tons-per-acre oat or barley straw. This straw will also be covered with a biodegradable mesh which will be stapled to the surface.

Observations will be made in the spring of the year to determine whether or not herbicide should be used.

R645-301-230. OPERATION PLAN

See R645-301-212

R645-301-231. GENERAL REQUIREMENTS

R645-301-231.100. REMOVAL AND STORAGE

See R645-301-212

R645-301-231.200. SUITABILITY OF TOPSOIL SUBSTITUTES

See R645-301-224

R645-301-231.300. TESTING PLAN

See R645-301-224

R645-301-231.400. TOPSOIL HANDLING AND STORAGE AREAS

See R645-301-212

R645-301-232. TOPSOIL AND SUBSOIL REMOVAL

See R645-301-212

R645-301-232.100. TOPSOIL SEGREGATION

See R645-301-212

R645-301-232.200. INSUFFICIENT QUANTITY OR POOR QUALITY

See R645-301-224

R645-301-232.300. TOPSOIL LESS THAN SIX INCHES THICK

N/A

R645-301-232.400. TOPSOIL REMOVAL FOR MINOR DISTURBANCES

N/A

R645-301-232.410. SMALL STRUCTURES

N/A

R645-301-232.420. PROTECTION OF EXISTING VEGETATION AND EROSION PROTECTION

See R645-301-212

R645-301-232.500. SUBSOIL SEGRETATION

N/A

R645-301-232.600. TIMING

All post-law disturbed area soils have been removed and stockpiled. There are no plans to disturb additional areas at this time.

R645-301-232.700. TOPSOIL AND SUBSOIL REMOVAL UNDER ADVERSE CONDITIONS

N/A

R645-301-232.710. IMPRACTICABILITY

N/A

R645-301-232.720. IMPORTING TOPSOIL MATERIAL

See R645-301-224

R645-301-233. TOPSOIL SUBSTITUTES AND SUPPLEMENTS

See R645-301-224

R645-301-233.100. SELECTED OVERBURDEN MATERIALS

See R645-301-224

R645-301-233.200. SUITABILITY OF TOPSOIL SUBSTITUTES AND SUPPLEMENTS

See R645-301-224

R645-301-233.300. PHYSICAL AND CHEMICAL ANALYSES

Appendices D and N.

R645-301-233.310. SCS PUBLISHED DATA

Appendix D

R645-301-233.320. SCS TECHNICAL GUIDES

Appendix D

R645-301-233.330. OTHER PUBLISHED DATA

Appendix D

R645-301-233.340. RESULTS OF FIELD SITE TRIALS OR GREENHOUSE TESTS

See R645-301-212 and Appendix N.

R645-301-233.400. DEMONSTRATION OF INSUFFICIENT TOPSOIL AND SUITABILITY OF SUBSTITUTE MATERIALS

See R645-301-224

R645-301-234. TOPSOIL STORAGE

See R645-301-212

R645-301-234.100. STOCKPILING AND REDISTRIBUTION

See R645-301-212

R645-301-234.200. STOCKPILING REQUIREMENTS

See R645-301-212

R645-301-234.210. PLACEMENT

See R645-301-212 and Plate I

R645-301-234.220. PROTECTION

See R645-301-212

R645-301-234.230. VEGETATIVE COVER

See R645-301-212

R645-301-234.240. REHANDLING

See R645-301-212

R645-301-234.300. LONG-TERM STORAGE AND DISTRIBUTION

See R645-301-212

R645-301-234.310. CAPABILITY OF HOST SITE

See R645-301-212

R645-301-234.320. SUITABILITY FOR REDISTRIBUTION

See R645-301-212 and R645-301-224

R645-301-240. RECLAMATION PLAN

Timetable for Major Reclamation Steps

Introduction

Reclamation will be uncomplicated since this area is flat lying and topographically simple. All disturbed areas no longer required for the conduct of operations were immediately revegetated. In the future, any areas no longer required for operations will also be immediately revegetated.

When buildings and final site preparation was completed, the topsoil was revegetated to prevent erosion.

When the project is expired, perhaps in 30 years, extraneous material will be removed. Roads will be regraded and using the most advanced technology at the time, Andalex will re-establish the terrain to as nearly the original as practical.

Reclamation Timetable

Reclamation will be accomplished in two phases. Phase I will commence immediately after the project has expired. Phase I involves the majority of the reclamation steps. It will bring the site to nearly complete with the exception of sedimentation ponds which will be left in place until revegetation has been determined complete. Prior to revegetation being complete, there is a possibility for runoff within the disturbed area to accumulate a sediment load. These ponds left in place will prevent this runoff from leaving the disturbed area. Once the vegetation has been established which will probably take a minimum of two years, Phase II of the reclamation will commence. This phase involves the removal of the four sediment ponds which were left, regrading, and

revegetating these areas, and finally, Andalex's commitment to monitoring.

Phase I

The first step will be to remove structures. Since none of the structures will remain on site, this will be the largest part of the Phase I effort and will also be the most expensive. The following is a list of structures which will be brought down and removed either complete or as scrap/salvage.

1. 14 x 60 Scale House Trailer
2. Truck Scales
3. Substation
4. Truck Dump (west side)*
5. Crushing Plant (west side)*
6. Radial Stacker (west side)*
7. Reclaim Tunnel (west side)
8. Loadout Conveyor (west side)*
9. Control Building (west side)
10. Truck Dump & Reclaim (2 each)
11. Conveyor T
12. Crusher and Screening Plant
13. Lump Coal Belt
14. Stoker Radial Stacker
15. Conveyor Y, Y-1
16. Main Radial Stacker (2 each)
17. Loadout Reclaim Tunnel, port supports, hoppers
18. Conveyor R
19. Loadout Tower
20. Miscellaneous (Guard Rails, Office, Water Tanks, Motor Control Centers)
21. Powerline
22. 40' x 40' Shop Building and foundation

* Portable

The next step will be to remove any coal remaining on the various storage areas. This will not amount to a large volume of material and it will either be hauled to an approved storage area off-site or it will be disposed of within the loadout permit area by burial. This will include the coal refuse pile currently stored at Wildcat. The refuse pile will be flattened and buried according to the reclamation plan regarding coal mine refuse (Chapter 5).

Once the coal has been removed, then the recontouring and regrading portion will commence. It is anticipated that the structure removal will take approximately one year to complete so at this point, we would be into the reclamation about thirteen months. The first step in the recontouring and regrading would be the removal of the culverts. They have been left in until this point so the disturbed area would drain properly. The recontouring would primarily involve the primary and secondary roads, the loadout pad, and the coal stockpile areas. The undisturbed diversion west of the facility would become permanent at this point and would be capable of passing a 100 year precipitation event. The original natural drainage could not be restored because of the Utah Railroad. This natural drainage has been either blocked or diverted for the last 30 years by predecessors to Andalex.

It is estimated by the cross sections that approximately 74,000 cubic yards of material will have to be moved in this process of recontouring and grading (please see Tables II-1 and II-1A re Mass Balance Summary). This part of Phase I will include the removal of ponds B and E and establishing new drainages to Ponds A, C, and D. Recontouring will take one month.

TABLE II-1

Mass Balance Summary

	Cut	Fill
1 + 00	740.8	926.0
0 + 00	1,111.2	
1 + 00	3,333.6	
2 + 00	1,481.6	2,963.2
3 + 00	1,852.0	5,185.6
4 + 00		5,926.4
5 + 00	1,111.2	4,074.4
6 + 00		4,444.8
7 + 00		1,481.6
8 + 00	7,037.6	4,444.8
9 + 00	6,667.2	2,963.2
10 + 00	7,037.6	2,222.4
11 + 00	4,444.8	2,963.2
12 + 00	8,519.2	4,444.8
13 + 00	1,481.6	6,296.8
14 + 00		8,148.8
15 + 00	7,408.0	4,444.8
16 + 00	6,667.2	3,704.0
17 + 00	2,222.4	5,185.6
18 + 00	5,926.4	2,222.4
19 + 00	1,481.6	1,852.0
20 + 00		740.8
21 + 00	5,185.6	
Total	73,709.6	74,635.6

TABLE II-1A

Mass Balance
Expanded Wildcat Pad Cross Sections

	Cut	Fill
0+00 - 0+60	0	0
0+80	24.0	0
1+00	22.9	0
1+20	26.1	0
1+40	24.5	0
1+60	58.7	0
1+80 - 3+80	0	0
4+00	0	78.4
4+20	0	250.4
4+40	0	302.3
4+60	181.0	301.3
4+80	157.2	310.1
5+00	139.9	273.5
5+20	132.4	272.7
5+40	135.5	271.7
5+60	153.2	251.3
5+80	169.7	204.9
6+00	171.4	194.7
6+20	173.5	148.0
6+40	185.7	109.3
6+60	227.3	88.4
6+80	234.7	35.0
7+00	211.9	17.0
7+20	0	0
Totals	2,429.6	3,109.0
x 20% swell =	485.9	
	2,915.5	

Once all the areas have been recontoured and graded, the next part of the Phase I reclamation will be compaction and scarification of the regraded areas. During this operation, if it is determined that additional sediment control measures are needed for the diversions leading to the four ponds, they will be put in at this time. These measures might include rock check dams or straw dikes.

The next steps in Phase I will not take place until the fall of whatever year we are in at this point. Including compaction and scarification, so far the project has taken 14 to 15 months. The next two steps in the process are topsoil redistribution, where additional substitute will be hauled in if necessary, and revegetation. Once the topsoil is spread, the approved seed mixture will be spread using a rangeland drill. Areas which cannot be seeded mechanically will be hydroseeded and hydromulched. The entire revegetation procedure is described in this chapter. Included in this part of the operation will be the staking of any slopes which exceed 10%.

Finally in Phase I, monitoring will commence. Observations of revegetation success and slope stability will be observed. If any part of this is unsuccessful, corrective measures will be taken.

Since Andalex estimates a minimum of two years before vegetation has taken hold to prevent erosion, then the entire Phase I project will take at least 3-1/2 years.

Phase II

Phase II of the reclamation will commence as soon as the monitoring of Phase I allows.

All that is left at this point is the removal (recontouring) of Ponds A, C, D, and F and the removal of the field fence surrounding the permit area. Once the areas have been graded, they will be compacted and scarified prior to topsoil redistribution. At this point, if it

is not already the fall season, Andalex will wait before redistributing the topsoil and revegetating. The same methods for revegetation will be used as in the Phase I reclamation.

Monitoring will then continue until the release of the bond.

Please note that earthwork will be done in both Phase I and II as much as possible during the dry seasons to avoid unnecessary erosion to the regraded areas. If dust becomes a problem, water will be used to control it.

Reclamation Cost and Bonding

A detailed cost of reclamation is provided in Appendix 8-1.

Soil Testing Plan and Soil Preparation

Where possible the soil will be distributed along the contour. Soil will be redistributed using dump trucks and graders. The thickness of the re-established soil will be consistent with the pre-mining conditions. As this facility was previously impacted by other loading operations, Andalex was unable to gather topsoil on these areas. This will require the use of topsoil substitute material for final reclamation. Andalex has chosen potential topsoil substitute material and is currently in the process of performing the necessary tests and monitoring to demonstrate that it is suitable (page 51). Twenty samples of potential substitute topsoil material have been sent to the Utah State University Soils Lab. There are four test plot locations, A through D (Plate 1), and samples at each location have been taken from 0-6", 6-12", 1-2', 2-3', & 3-4'. Samples will be taken from the new test area west of the railroad tracks at these same depths. All test plots, including the newest plot will be analyzed for: soil color, texture, pH, organic carbon, saturation percentage, alkalinity, electrical conductivity, calcium carbonate percentage, sodium absorption ratio, soluable potassium, magnesium, calcium, sodium, total nitrogen,

available phosphorous, available water capacity, and percent rock fragments. The results can be found in Appendix D. Once any of the areas of substitute material have been determined suitable for reclamation, all or part of these areas will be carefully outlined on Plate 1 and the volumes necessary to make up the current topsoil deficit, will be included in the Topsoil Pile Summary. This will require approximately 29,000 additional cubic yards of material.

Prior to final reclamation, samples will be taken of the stored topsoil to determine any deficiencies which would affect the growth of newly revegetated areas. Any deficiencies will be corrected by adding to the soil chemical fertilizers, organic mulch, or any other substances recommended by the regulatory authority. Preparation techniques such as discing will be incorporated.

Species and Amounts of Seeds and Seedlings

A reference area has been established by Andalex and DOGM. The sagebrush/grass reference area was used in combination with a vegetation inventory to determine the final seed mixture and amounts of seed to be used for final reclamation.

The following seed mixture, was developed by UDOGM in conjunction with the vegetation inventory.

Planting and Seeding Methods

All areas will be disced using conventional farm equipment. The seed will be spread using a rangeland drill. Areas which cannot be seeded mechanically will be hydroseeded and hydromulched.

Mulching Techniques

Vegetative cover will be promptly re-established following cessation of mining activities to stabilize erosion. Crimped straw mulch will be used and re-seeding will occur during the first normal period for

favorable growth following regrading. Mulch will be applied to all reseeded areas. Mulch will be crimped mechanically using equipment such as a small cat dozer. Areas which are hydromulched will be done so using an organic type mulch at the rate of one ton per acre. Where hydroseeding and hydromulching occur, a tackifier will be added to both the seed and the mulch.

Mulch will be used wherever seeds are planted. These areas are shown on Plate 9 and constitute 66 acres. The rate of application will be one ton per acre for both hydromulched and crimped straw. A tackifier is not needed for the straw mulch since it is crimped nor is it needed for the rangeland drill seeding method.

Grasses

Common Name	Scientific Name	lbs.PLS /acre	PLS/ft.^{2}
Blue grama	Bouteloua gracilis	.5	8.6
Indian ricegrass	Oryzopsis hymenoides	2.5	10.0
Needle and thread	Stipa comata	2.0	5.2
Thickspike wheatgrass	Agropyron dasystachyum	2.5	8.8
Western wheatgrass	Agropyron smithii	3.0	8.3

Forbs

Common Name	Scientific Name	lbs/PLS /acre	PLS/ft.^{2}
Alfalfa	Medicago sativa	1.0	4.8
Gooseberryleaf globemallow	Sphaeralcea grossulariaefolia	.3	3.4
Lewis flax	Linum lewisii	.75	4.9
Palmer penstemon	Penstemon palmeri	.3	4.2
Yellow sweetclover	Melilotus officinalis	1.0	5.9

Shrubs

Common Name	Scientific Name	lbs/PLS /acre
Antelope bitterbrush	Purshia tridentata	3.0
"Mountain" big sagebrush	Artemisia tridentata ssp. vaseyana	.3
"Whitesteam" rubber rabbitbrush	Chrysothamnus nauseosus ssp. albicaulis	.5
Winterfat	Ceratoides lanata	3.0
*Fourwing Saltbrush		2.0
*Shadescale		1.0
*Gardner Saltbrush		1.0

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*For use on Test Plots.

Management Practices, e.g., Irrigation, Pest, and Disease Control

No mechanical irrigation will be used because of the lack of water in the area. Vegetative growth will be subject to normal rainfall and winter snowfall. Vegetation will be protected from both wildlife and livestock by drift-fences until the reclaimed areas have been adequately re-established. Upon approval, the fences will be removed. Fences are already standing surrounding the permit area. Pesticides and herbicides will be used as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

Measures to Determine Success

Revegetation will be closely monitored. Areas which fail to support sufficient growth to stabilize conditions will be tested and reseeded until a proper cover is established. Physical examinations will be conducted to note any species which are not thriving or regenerating. If this occurs, species will be substituted at the recommendation of the regulatory authority. Any other species will be added at the time of reclamation upon recommendation of the regulatory authority. All reclaimed areas will be monitored and maintained by the constant observation of Andalex until the surety release is granted. This will include slope staking on any sloped areas.

Revegetation monitoring parameters to be measured are growth rate, plant density and percent cover. We would expect to monitor or supervise monitoring at least monthly during the first two growing seasons. From experience with interim revegetation at the minesite, we have learned that two growing seasons are needed to establish any success. After this we would know whether reclamation was progressing successfully.

Andalex is committed to quantitative sampling of reclamation cover, frequency and woody plant density during years 2, 3, 5, 9, and 10.

Productivity will be sampled only during years 9 and 10. The reference area will be sampled during years 9 and 10.

R645-301-241. GENERAL REQUIREMENTS

R645-301-242. SOIL REDISTRIBUTION

Topsoil and or substitute topsoil is to be redistributed to a depth of 6-inches (or less as approved by the Division) across the entire 56.10 acre disturbed area.

R645-301-242.100. CRITERIA FOR REDISTRIBUTION

The only criteria is that it will be redistributed to a depth of 6 inches (or a lessor amount as approved by the Division).

R645-301-242.110. UNIFORMITY AND CONSISTENCY

The soil will be redistributed uniformly and consistent with the regraded contours.

R645-301-242.120. PREVENTION OF COMPACTION

Once redistributed, unnecessary compaction from equipment will be avoided.

R645-301-242.130. PROTECTION FROM WIND AND WATER EROSION

The topsoil will be protected from wind and water erosion through mulching and revegetation.

R645-301-242.200. REGRADING AND TREATMENT

Not applicable, unless unacceptable rills and gullies are observed. (See R645-301-212)

R645-301-242.300. EMBANKMENTS OF PERMANENT IMPOUNDMENTS OR ROADS

The 2-celled Permanent Impoundment will be left. The embankments are stable and vegetated. Details are discussed in Chapter 7 of this Permit.

R645-301-242.310. PREVENTION OF SEDIMENTATION

Sediment Ponds A, C, D and F will be left in place until revegetation standards are reached (Phase I).

R645-301-242.320. OTHER METHODS OF STABILIZATION

Other methods may include mulching and rip-rap.

R645-301-243. SOIL NUTRIENTS AND AMENDMENTS

As needed to be determined through Phase I monitoring.

R645-301-244. SOIL STABILIZATION

See R645-301-242.

R645-301-244.100. EROSION CONTROL AND AIR POLLUTION

See R645-301-242.

R645-301-244.200. SOIL STABILIZING PRACTICES

See R645-301-242.

R645-301-244.300. RILLS AND GULLIES

See R645-301-212 and R645-301-242.

R645-301-244.310. DISRUPTION OF POSTMINING LAND USE OR ESTABLISHMENT OF VEGETATIVE COVER

Vegetative cover will be in accordance with revegetation practices found in R645-301-331.

R645-301-244.320. CAUSE OR CONTRIBUTE TO A VIOLATION OF WATER QUALITY STANDARDS

Andalex will not violate water quality standards. This will be demonstrated through monitoring practices.

R645-301-250. PERFORMANCE STANDARDS

All performance standards will be adhered to.

R645-301-251. SOIL REMOVAL

See R645-301-212.

R645-301-252. SOIL STORAGE AND REDISTRIBUTION

See R645-301-212.

R645-301-300. BIOLOGY

R645-301-310. INTRODUCTION

Vegetation Information

Introduction

An intensive detailed vegetation survey was not required or performed for the BLM Right-of-Way prior to the construction of this facility. It was a sagebrush/grass lowland with a Pinyon-Juniper community to the west. The following letter, shows the two reference areas identified by the SCS which show the general vegetative types in the area. Although the SCS identified these two areas, a third area was chosen by the Division of Oil, Gas, and Mining and Andalex Resources and is shown on Plate 1. A detailed vegetation inventory has been performed for Andalex by a qualified range scientist on this third reference area and is included in this document as Appendix I. This inventory will be the basis for a seed mixture to be used during reclamation. Please note that although the SCS identified two reference areas, the reference area being used for this MRP was designated by DOGM and Andalex for use during reclamation.

Description

Vegetative Types

The vegetative types include Pinyon-Juniper and Sagebrush-Grass. The Loadout Facility was constructed entirely within the Sagebrush-Grass Community. Please see Table III-7. Also refer to Appendix I.

Threatened or Endangered Species

There are no known threatened or endangered species within the permit area and the detailed inventory of the reference area has comfirmed this.

Plant Communities

The Sagebrush-Grass group is present from 6,200 to 9,000 feet on and in the low benches below the cliffs. Sage and rabbit brush appear associated with the common grasses occurring in other communities such as curly grass, indian rice grass, and bull grass. Fourwing and saltbrush is found on better drained soils. Shad scale and curly grass associations are found on the heavier clay soils.

The Pinyon-Juniper Woodland community occurs in the area from an elevation of 5,600 to 8,000 feet and dominates the area below the excarpment of the Wasatch Plateau. Pinyon pine and Utah juniper are the dominant species with bull grass, indian rice grass, and birch leaf mahogany as associated species.

Identified species of noxious or poisonous weeds in the area are halogeton, cockleburr, loco, and copperweed. There are no concentrated areas or serious problems from these poisonous plants.

Some of the most important vegetation species are listed in Table III-7. Please see Appendix I for the site specific vegetation inventory.

TABLE III-7

Vegetation Possibly Occurring in Area

Common Name	Scientific Name
Grasses:	
curly grass	Hilaria jamesii
indian rice grass	Oryzopsis hymenoides
squirreltail	Sitanian hystix
needle and thread grass	Stipa commata
no eatum grass	Aristida fendleriana
western wheat grass	Agropyron smithii
bull grass	Elymus salinus
Shrubs:	
nuttal saltbush	Atriplex nuttallii
mat saltbush	Atriplex corrugata
shadscale	Atriplex confertifoldia
fourwing saltbush	Atriplex canecens
big sagebrush	Artemisia tridentate
black sagebrush	Artemisia arbuscula nova
greasewood	Sarobatus vermiculatus
small rabbitbrush	Chrysothamnus viscidiflorus
big rabbitbrush	Chrysothamnus nauseosus
mountain-mahogany	Cercocarpus montanus
serviceberry	Amelanchief alnifolia
curlleaf mahogany	Cercocarpus ledifolius
squaw apple	Peraphyllum ramosissimum
snowberry	Symphoricarpos oreophilus
Trees:	
juniper	Juniperus osteosperma
pinion	Pinus edulis
ponderosa pine	Pinus ponderosa
aspen	Populus temuloides
limber pine	Pinus flexilis
douglas fir	Pseudotsuga menziesii
gambel oak	Quercus gambelii

Area to be Disturbed

The surface area disturbed is 56.10 acres as shown on Plate 1 of which approximately 20 acres were disturbed by Andalex. The present surface facilities are located in an area that has been previously impacted by loading activities. Actual plant communities which have been disturbed is the Sage-Grass. Extreme care has been taken to disturb as little vegetation as possible and revegetation has been immediately carried out on all disturbed areas no longer needed for the mining operation.

Fish and Wildlife Resources and Plan

Introduction

The loadout area is located east of the Wasatch Plateau, a region which supports about 360 vertebrate wildlife species. The abundance and distribution of wildlife in the lease area is directly related to present land use activities and capabilities. Use of this area by certain species is limited to lack of perennial water. Wildlife species possibly occurring in the lease area are listed in Table III-8. Please see Appendix F re Wildlife Resources Information

Source of Data

Department of the Interior, 1979. Final Environmental Statement - Development of Coal Resources in Central Utah, Parts 1 and 2. (Sections 3, 4.0, 4.1, 4.2, 4.3, 4.4, and 4.5)

Andalex Resources (Chapter 3)

Utah Department of Natural Resources, Division of Fish and Wildlife. (Appendix F)

U.S. Department of Interior, Bureau of Land Management (Appendix E)

Habitats

Previously described vegetation provides fair to excellent habitat for a variety of wildlife species. It also provides critically important winter range for deer.

Species (Please see Table III-8)

Mammals

Mammals occurring in the area can be divided into two groups, game species and non-game species.

The main game species include mule deer, mountain lion, black bear, elk, and cottontail rabbits. Mule deer, however, are the most important wildlife resource in the area. Mountain lion are present but little information is available due to their ranging habits. Generally, their movement coincides with the migration of deer. Black bear may occasionally be found in the vegetated canyons, usually along the cliff face. They normally inhabit the Wasatch Plateau to the west but little data is available on their populations. The permit area is not within the limits of the elk range. Cottontail rabbits are distributed throughout the area.

Non-game mammals include several species of small animals inhabiting the area. Predator species such as coyote and bobcat occasionally are found in the area and depend on small rodents and rabbits for their source of food. Information on non-game species is generally unavailable.

TABLE III-8

List of Animals Possibly Occurring in Region

Common Name	Scientific Name
Mammals:	
Badger	Taxidea taxus
Black Bear	Ursus americanus
Bobcat	Lynx rufus
Coyote	Canis latrans
Deer mouse	Peromyscus maniculatus
Desert Cottontail	Sylvilagus audubonni
Elk	Cervus elaphus
Ground Squirrel	Spermophillus tridecelineatus
Least Chipmunk	Eutomias minimus
Mountain Lion	Felis concolor
Mule Deer	Odocoileus hemionus
Porcupine	Evethizon dorsatum
Striped Skunk	Mephitus mephitus
White-tailed Jackrabbit	Lepus townsendii
White-tailed Prairie Dog	Cynomys leucurus
Birds:	
Brewers Sparrow	Spizella breweri
Blue Grouse	Dendragapus obscurus
Common Nighhawk	Chordeiles minor
House Sparrow	Passer Domesticus
Lark Sparrow	Chondestes grammacus
Magpie	Pica pica
Mourning Dove	Zenaidura macroura
Pinyon Jay	Gymnorhinus cyanocephala
Red-tailed Hawk	Buteo jamaicenis
Robin	Turdus migratorius
Ruffed Grouse	Bonasa umbellus
Sage Grouse	Centrocercus urophasianus
Sparrow Hawk	Falco sparverius
Turkey Vulture	Cathartes aura
Vesper Sparrow	Pooecetes gromineus
Great Horned Owl	Bubo Virginianus

Birds

Raptors

The turkey vulture and red-tailed hawk frequent the area. A variety of other raptors breed in the Price area; however, there is a poor density of raptors throughout the plan area. Bald eagles migrate through this area in the winter and a variety of owl species are occasionally observed year round.

Most interestingly, a family of Great Horned Owls successfully nested on top of the loadout structure. A Great Horned Owl had been observed during the winter months flying and roosting near by. Owl eggs were first observed on top of the loadout beneath the conveyor belt in early March. The DWR was contacted immediately and we were instructed to do nothing and continue operations normally. The DWR advised us that once the chicks hatched, they would move them to a nest box which Andalex built and mounted nearby but out of the way. The chicks hatched in mid April and were moved the same day. When the chicks (two) were approximately one month old, they were banded by officers of the DWR. The chicks matured and left the nest in June. The DWR feels that there is a strong possibility that the owls may return in 1989.

Other

Sage grouse inhabit the sagebrush flats at the foot of the cliffs. Blue and ruffed grouse may occasionally be found in the vegetated canyons of the area. Chukars can be found around the cliffs. Mourning doves are generally distributed throughout the area; however, the lack of perennial water limits dove nesting habitat in the area. Other representative birds include the magpie, bluebird, robin, and several species of sparrow.

Reptiles and Amphibians

The most prominent species of reptiles include the rattlesnake and sagebrush lizard. No aquatic fauna are present in the area.

Fish

There are no active fisheries as there are no permanent

bodies of water or perennial streams in the area. No aquatic fauna are found.

Threatened or Endangered Species

There have been no known threatened or endangered species on or near the lease area according to a survey conducted by the Utah Division of Wildlife Resources.

Impacts of Operations

Construction of all roads, powerlines, and surface facilities has been completed and loading operations have commenced. Therefore, no additional impact of operations on wildlife is anticipated. Powerlines were constructed according to DWR and USF&W guidelines. It should be noted that this facility has had a good history of co-existing with wildlife in this area. This is constantly observed.

Fish and Wildlife Plan

The Fish and Wildlife Plan was prepared by the Utah DWR under the direction of Mr. Larry Dalton in 1987 (please see Appendix F). The purpose for this study was to estimate the types and densities of wildlife expected to be found in the area. It was also done to determine whether or not threatened or endangered species existed and whether or not the impacts to wildlife could be mitigated. The environmental assessment performed by the B.L.M. (Appendix E) was performed to estimate the best methods which could be used for the Wildlife Enhancement Project. Part of any grant issued by the B.L.M. includes an environmental assessment. This assessment was put together by the B.L.M. in the summer of 1984.

Andalex has made every possible effort to minimize disturbances to wildlife habitat in the area and where possible will enhance that habitat during reclamation.

Please refer to Appendix F re Fish and Wildlife Resources and Plan. It should be noted that there is no aquatic life in the permit area as this area is dry except as a result of direct precipitation (ephemeral streams). Andalex has performed numerous mitigative measures including extensive revegetation in the area directly mitigating our disturbance. Andalex has performed all

mitigative measures outlined in the Fish and Wildlife Plan (Appendix F) with the exception of the use of swareflex reflectors.

Andalex has advised and encouraged employees to avoid unnecessary disturbances to all wildlife regardless of the season, but especially the depleted winter season or the breeding season. Hunting and all wildlife regulations are adhered to. In corporation with the Division of Wildlife Resources and the College of Eastern Utah, Andalex has incorporated a visual training guide for its employees to be used annually during mine retraining.

During revegetation, Andalex will use seed mixtures which are favorable for wildlife enhancement.

To date, Andalex has had no use for poisons for rodent control or any other persistent pesticide.

Snake dens will be reported to the DWR.

Andalex will report the sitings of any known threatened or endangered species within or in the vicinity of the permit area.

Andalex will commit to reporting any unapproved range or forest fires. Spontaneous combustion in the coal piles occurs from time to time particularly in the winter months. These small smoldering areas in the coal piles are extinguished easily and immediately using a frontend loader. All coal piles are subject to this phenomenon and Andalex is sure that the division would not want each small coal fire reported.

No avifauna will be disturbed within Andalex's minesite and in particular, raptors and their nests. Andalex's powerline was constructed under the guidance of the Utah DWR and USF&W.

Lodges, nests, and dens for all mammals will be protected from disturbance. Andalex has reduced speed limits posted within the permit area to 15 mph. The haulroad year-round is posted at 40 mph. Swareflex reflectors will not be implemented.

There are no unpaved sections of the haul road and

swareflex reflectors are not being used. Andalex has demonstrated mitigation of impacted habitat through revegetation efforts on areas in and outside the permit area. We have had employee wildlife education sessions in the past and may perhaps in the future. The powerline was constructed under strict guidelines and has been thoroughly checked by both the Utah DWR and the U.S. Fish and Wildlife Service. Prior to November 30, 1988, Andalex will provide the 4" gap in the ground wire on all cross-arm type structures from the substation to the loadout.

Please note that as an indication that this facility is not disruptive to wildlife, deer herds are constantly observed moving through the area, drinking from our ponds, and feeding on revegetated areas. Also, small mammals such as prairie dogs have formed towns within the permit area.

Most interestingly, a family of Great Horned Owls have successfully nested on top of the loadout structure.

Should Andalex observe reoccurring problems with respect to wildlife fatalities which potentially could be corrected, Andalex will make every effort to correct these problems.

Please note that a large area of revegetation was undertaken by Andalex to enhance wildlife range thereby mitigating the loss of range through the construction of this facility. The acreage enhanced by Andalex Resources is roughly the same as that acreage disturbed by Andalex for the Wildcat Loadout Facility. Please bear in mind that the majority of the Wildcat Facility had been previously impacted by coal loading operations and railroad operations. Appendix E is a description of the mitigation work performed by Andalex under the direction of the B.L.M. and the Utah D.W.R. Andalex is following all guidelines set forth in the Fish and Wildlife Plan except the use of swareflex reflectors. Please see Chapter IV for a more detailed discussion of mitigative measures as outlined in the plan.

Andalex Resources was issued a right-of-way and a temporary land use permit associated with its' Wildcat Loadout Facility. A stipulation to these grants was that Andalex would perform a wildlife enhancement project to

mitigate the loss of critical deer winter range as a result of the construction of the loadout facility. This work was performed under the direction of the Bureau of Land Management and the Division of Wildlife Resources in the fall of 1984. The work consisted of the elimination of undesirable vegetation and replacing it with preferred deer range species. Vegetation was removed with a plow and the seed mixture developed by the Utah DWR was planted using a rangeland drill. Andalex Resources performed this work on an area of approximately 21 acres (Plate 18 outlines the area impacted by Andalex for the Wildcat Loadout. The remaining acreage consumed by the Wildcat Loadout Facility was previously disturbed). Andalex has fulfilled its' obligations under these grants. It should be noted that contemporaneous reclamation as well as sediment pond construction has in itself mitigated impact to deer winter range within the permit area. It should also be noted that the mineral sale borrow area was never used. Please see Appendix E.

During the spring of 1988, Andalex Resources' personnel traveled to the site where wildlife enhancement took place. Areas which were plowed and seed drilled were stepped off and measured in the field and a total of 21 acres was estimated with reasonable accuracy. A direction and chain method was utilized to measure the areas. Plate 18 depicts the areas disturbed by Andalex versus previously disturbed areas. These two areas can be distinguished easily on the aerial photo. Please note that the temporary land use area was one of the previously disturbed areas and as such, Andalex did not destroy any valuable deer winter range. The actual acreage disturbed by Andalex totals 24.5 acres. Andalex would also like to point out that large portions of the disturbed area have been enhanced subsequent to the construction of the facility to create reasonably good wildlife habitat, specifically, deer. This has been accomplished with contemporaneous reclamation of all areas not being utilized within the disturbed area (pond embankments, other slopes, and topsoil storage piles have all been revegetated). Also, it has been observed that the sedimentation ponds create drinking reservoirs for deer. During winter months at the Wildcat facility, deer herds of up to 50 animals have been observed on a frequent basis, grazing and drinking within Andalex's disturbed area. The deer actually congregate within Andalex's disturbed area. None of Andalex's activities

affect the deer herd as far as migration or movement. Deer have been observed even walking beneath unit trains. Therefore, Andalex's facility offers no obstructions to deer movement. Taking all this into consideration, and as a result of an agreement between Andalex and the Utah Division of Wildlife Resources, Andalex has agreed to enhance an additional approximately 15 acres in the near future. Andalex will perform this work in the fall of 1989 in accordance with the UDWR alternative 1.

R645-301-311. VEGETATIVE, FISH AND WILDLIFE RESOURCES

See R645-301-310.

R645-301-312. POTENTIAL IMPACTS

See R645-301-310 "Area to be Disturbed".

R645-301-313. RESTORATION OR ENHANCEMENT

See R645-301-240.

R645-301-320. ENVIRONMENTAL DESCRIPTION

See R645-301-310.

R645-301-321. VEGETATION INFORMATION

See R645-301-310.

R645-301-321.100. POTENTIAL FOR REESTABLISHING VEGETATION

Appendix N

R645-301-321.200. PREMINING PRODUCTIVITY

Appendix I

R645-301-322. FISH AND WILDLIFE INFORMATION

See R645-301-310.

R645-301-322.100. PROTECTION AND ENHANCEMENT PLAN

Appendix E & F

R645-301-322.200. SITE-SPECIFIC RESOURCE INFORMATION

Appendix F

R645-301-322.210. THREATENED OR ENDANGERED SPECIES

See R645-301-310.

R645-301-322.220. HABITATS OF UNUSUALLY HIGH VALUE FOR FISH AND WILDLIFE

See R645-301-310.

R645-301-322.230. OTHER SPECIES OR HABITATS REQUIRING SPECIAL PROTECTION

N/A

R645-301-322.300. FISH AND WILDLIFE SERVICE REVIEW

Appendix F

R645-301-323. MAPS AND AERIAL PHOTOGRAPHS

Appendix F

R645-301-323.100. REFERENCE AREAS

See R645-301-331 "Reference Areas".

R645-301-323.200. MONITORING STATIONS

N/A

R645-301-323.300. ENHANCEMENT FACILITIES

N/A

R645-301-323.400. PLANT COMMUNITIES

See R645-301-310.

R645-301-330. OPERATION PLAN

Maps and Plans

The lands affected by this operation (surface only) are clearly shown on Plate 1. Plate 1 depicts all buildings, utilities, and facilities. All of the land within this permit area which is to be affected already has been. This is a surface facility only and involves no underground workings. The bond required by the Division is for the entire affected area including all the surface facilities.

Coal storage, topsoil storage, loading areas, coal preparation waste areas are all depicted on the surface facilities map. Additional detail on topsoil, diversions, and ponds can be found in Volume II on Plates 13, 2, and 3 through 7 respectively.

There is no storage of explosives at the Wildcat Loadout.

The final surface configurations will be similar to the surface prior to Andalex's involvement at Wildcat. Cross sections and a surface configuration plate are included in Volume II as 10 and 9 respectively.

Surface water monitoring locations are shown on Plate 15.

After the completion of activities at this facility, no structures will remain with the exception of the railroad grade, the tracks, and it's associated drainage structures.

All maps requiring certifications by a registered person have been done so. Included are stamps from experts in related fields such as surveying.

R645-301-331. MINIMIZING IMPACT AND SURFACE EROSION

Revegetation Plan

Revegetation

Revegetation will be accomplished by Andalex or under Andalex's direct supervision and under the recommendations of the regulatory authority. A seed mixture has been developed and can be found in this chapter. This mixture was developed by estimating vegetative types in the sagebrush/grass reference area established by DOGM and Andalex. Please refer to Appendix I and Plate 1.

Schedule of Revegetation

The seeding of native flora (consisting where possible of deer browse species), will commence as soon as is practical following regrading and topsoil replacement. This revegetation will help stabilize the soil and the fill quickly. Revegetation will be accomplished by Andalex or under Andalex's direct supervision and under the recommendations of the regulatory authorities. Revegetation will occur during the first fall planting season following the regrading and topsoil redistribution. Please refer to Revegetation Schedule.

Andalex Resources' Revegetation Schedule

TASK	MONTH: MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Review reveg. plan	XX	X								
Order seed			X							
Regrading				XXXX	XXXX	XXXX				
Spread topsoil							XXX			
Seedbed Prep.							XX	X		
Apply fertilizer		XX*						XX		
Seeding								XX	X	
Mulching								XX	X	

Tasks to be done in subsequent years: (years 2, 3, and 5, 9, and 10, following planting, minimum)**

* May need application of N the spring following seeding.

** Productivity will be sampled only during years 9 and 10. Also, the reference area will be sampled during the years 9 and 10.

Andalex Resources' Revegetation Monitoring Schedule

QUALITATIVE OBSERVATIONS:

Reclamation type	YEAR 1	2	3	4	5	6	7	8	9	10
Permanent Reclamation	X	X	X	X	X	X	X	X	X	X
Trial Plantings	X	X	X	X	X	X	X	X	X	X
Test Plots	X	X	X	X	X	X	X	X	X	X
Interim Stabilization	X	X	X	X	X	X	X	X	X	X

QUANTITATIVE OBSERVATIONS:

Parameter	YEAR 1	2	3	4	5	6	7	8	9	10
Cover		X	X		X				X	X
Frequency		X	X		X				X	X
Woody Plant Density		X	X		X				X	X
Transplant Survival	X*	X	X							
Productivity:										
Test plots			X		X				X	X
All Other Revegetation									X	X

* Sampling will take place in the fall of the year.

Soil Testing Plan and Soil Preparation

Where possible the soil will be distributed along the contour. Soil will be redistributed using dump trucks and graders. The thickness of the re-established soil will be consistent with the pre-mining conditions. As this facility was previously impacted by other loading operations, Andalex was unable to gather topsoil on these areas. This will require the use of topsoil substitute material for final reclamation. Andalex has chosen potential topsoil substitute material and is currently in the process of performing the necessary tests and monitoring to demonstrate that it is suitable (page 51). Twenty samples of potential substitute topsoil material have been sent to the Utah State University Soils Lab. There are four test plot locations, A through D (Plate 1), and samples at each location have been taken from 0-6", 6-12", 1-2', 2-3', & 3-4'. Samples will be taken from the new test area west of the railroad tracks at these same depths. All test plots, including the newest plot will be analyzed for: soil color, texture, pH, organic carbon, saturation percentage, alkalinity, electrical conductivity, calcium carbonate percentage, sodium absorption ratio, soluable potassium, magnesium, calcium, sodium, total nitrogen, available phosphorous, available water capacity, and percent rock fragments. The results can be found in Appendix D. Once any of the areas of substitute material have been determined suitable for reclamation, all or part of these areas will be carefully outlined on Plate 1 and the volumes necessary to make up the current topsoil deficit, will be included in the Topsoil Pile Summary. This will require approximately 29,000 additional cubic yards of material.

Prior to final reclamation, samples will be taken of the stored topsoil to determine any deficiencies which would affect the growth of newly revegetated areas. Any deficiencies will be corrected by adding to the soil chemical fertilizers, organic mulch, or any other substances recommended by the regulatory authority. Preparation techniques such as discing will be incorporated.

Species and Amounts of Seeds and Seedlings

A reference area has been established by Andalex and DOGM. The sagebrush/grass reference area was used in combination with a vegetation inventory to determine the final seed mixture and amounts of

seed to be used for final reclamation.

The following seed mixture, was developed by UDOGM in conjunction with the vegetation inventory.

Planting and Seeding Methods

All areas will be disced using conventional farm equipment. The seed will be spread using a rangeland drill. Areas which cannot be seeded mechanically will be hydroseeded and hydromulched.

Mulching Techniques

Vegetative cover will be promptly re-established following cessation of mining activities to stabilize erosion. Crimped straw mulch will be used and re-seeding will occur during the first normal period for favorable growth following regrading. Mulch will be applied to all reseeded areas. Mulch will be crimped mechanically using equipment such as a small cat dozer. Areas which are hydromulched will be done so using an organic type mulch at the rate of one ton per acre. Where hydroseeding and hydromulching occur, a tackifier will be added to both the seed and the mulch.

Mulch will be used wherever seeds are planted. These areas are shown on Plate 9 and constitute 66 acres. The rate of application will be one ton per acre for both hydromulched and crimped straw. A tackifier is not needed for the straw mulch since it is crimped nor is it needed for the rangeland drill seeding method.

Grasses

Common Name	Scientific Name	lbs.PLS /acre	PLS/ft.^{2}
Blue grama	Bouteloua gracilis	.5	8.6
Indian ricegrass	Oryzopsis hymenoides	2.5	10.0
Needle and thread	Stipa comata	2.0	5.2
Thickspike wheatgrass	Agropyron dasystachyum	2.5	8.8
Western wheatgrass	Agropyron smithii	3.0	8.3

Forbs

Common Name	Scientific Name	lbs/PLS /acre	PLS/ft.^{2}
Alfalfa	Medicago sativa	1.0	4.8
Gooseberryleaf globemallow	Sphaeralcea grossulariaefolia	.3	3.4
Lewis flax	Linum lewisii	.75	4.9
Palmer penstemon	Penstemon palmeri	.3	4.2
Yellow sweetclover	Melilotus officinalis	1.0	5.9

Shrubs

Common Name	Scientific Name	lbs/PLS /acre
Antelope bitterbrush	Purshia tridentata	3.0
"Mountain" big sagebrush	Artemisia tridentata ssp. vaseyana	.3
"Whitesteam" rubber rabbitbrush	Chrysothamnus nauseosus ssp. albicaulis	.5
Winterfat	Ceratoides lanata	3.0
*Fourwing Saltbrush		2.0
*Shadescale		1.0
*Gardner Saltbrush		1.0

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*For use on Test Plots.

Management Practices, e.g., Irrigation, Pest, and Disease Control

No mechanical irrigation will be used because of the lack of water in the area. Vegetative growth will be subject to normal rainfall and winter snowfall. Vegetation will be protected from both wildlife and livestock by drift-fences until the reclaimed areas have been adequately re-established. Upon approval, the fences will be removed. Fences are already standing surrounding the permit area. Pesticides and herbicides will be used as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

Measures to Determine Success

Revegetation will be closely monitored. Areas which fail to support sufficient growth to stabilize conditions will be tested and reseeded until a proper cover is established. Physical examinations will be conducted to note any species which are not thriving or regenerating. If this occurs, species will be substituted at the recommendation of the regulatory authority. Any other species will be added at the time of reclamation upon recommendation of the regulatory authority. All reclaimed areas will be monitored and maintained by the constant observation of Andalex until the surety release is granted. This will include slope staking on any sloped areas.

Revegetation monitoring parameters to be measured are growth rate, plant density and percent cover. We would expect to monitor or supervise monitoring at least monthly during the first two growing seasons. From experience with interim revegetation at the minesite, we have learned that two growing seasons are needed to establish any success. After this we would know whether reclamation was progressing successfully.

Andalex is committed to quantitative sampling of reclamation cover, frequency and woody plant density during years 2, 3, 5, 9, and 10. Productivity will be sampled only during years 9 and 10. The reference area will be sampled during years 9 and 10.

R645-301-332. IMPACTS OF SUBSIDENCE ON RENEWABLE RESOURCE LANDS

N/A

R645-301-333. USING THE BEST TECHNOLOGY CURRENTLY AVAILABLE TO MINIMIZE DISTURBANCE AND IMPACT

See R645-301-310.

R645-301-333.100. PROTECTION OF THREATENED AND ENDANGERED SPECIES

There have been no known threatened or endangered species within the permit area. See R645-301-310.

R645-301-333.200. SITE-SPECIFIC PROTECTION OF THREATENED AND ENDANGERED SPECIES

See R645-301-310.

R645-301-333.300. PROTECTIVE MEASURES DURING ACTIVE PHASES OF MINING OPERATIONS

Appendix F

R645-301-340. RECLAMATION PLAN

See R645-301-240.

R645-301-341. REVEGETATION

See R645-301-240 and R645-301-331.

R645-301-341.100 SCHEDULE AND TIMETABLE

See R645-301-240 and R645-301-331.

R645-301-341.200. DESCRIPTION

See R645-301-240 and R645-301-331.

R645-301-341.210. SPECIES AND AMOUNTS PER ACRE OF SEEDS AND/OR SEEDLINGS USED

See R645-301-331.

R645-301-341.220. METHODS USED IN PLANTING AND SEEDING

See R645-301-240 and R645-301-331.

R645-301-341.230. MULCHING TECHNIQUES

See R645-301-240 and R645-301-331.

R645-301-341.240. IRRIGATION AND PEST CONTROL MEASURES

See R645-301-240 and R645-301-331.

R645-301-341.250. METHODS USED TO DETERMINE REVEGETATION SUCCESS

See R645-301-240 and R645-301-331.

R645-301-341.300. STUDIES AND TESTING TO DEMONSTRATE FEASIBILITY OF REVEGETATION PLAN

See R645-301-240.

R645-301-342. FISH AND WILDLIFE

See R645-301-310.

R645-301-342.100. ENHANCEMENT MEASURES

Appendix F. Andalex will endeavor to use the best technology current available to enhance wildlife habitat during the reclamation phase of its operation. This will include, but not be limited to water sources (if available), thermal cover, escapeways, hiding and loafing places, and travelways. ANDALEX will consult with the Division of Wildlife Resources, at the time of final reclamation, to determine exactly what reclamation designs, planting arrangements, and artificial structures would best enhance a wildlife habitat.

R645-301-342.200. PLANT SPECIES SELECTION

See R645-301-341.210.

R645-301-342.210. NUTRITIONAL VALUE

Appendix F

R645-301-342.220. COVER AND PROTECTION

Appendix F

R645-301-342.230. ABILITY TO SUPPORT AND ENHANCE HABITAT

Appendix F

R645-301-342.300. CROPLAND

N/A

R645-301-342.400. RESIDENTIAL, PUBLIC SERVICE OR INDUSTRIAL LAND USE

N/A - The post mining land use does not include residential, public service or industrial use.

R645-301-350. PERFORMANCE STANDARDS

R645-301-351. GENERAL REQUIREMENTS

All loadout and reclamation operations will be carried out according to plans provided under R645-301-330 through R645-301-340.

R645-301-352. CONTEMPORANEOUS RECLAMATION

Contemporaneous revegetation at the Wildcat Loadout will occur on topsoil piles and sediment pond embankments. The vast majority of the site will remain disturbed to facilitate the operation, until final reclamation.

R645-301-353. REVEGETATION: GENERAL REQUIREMENTS

R645-301-353.100. VEGETATIVE COVER

The vegetative cover will be as stated in the following categories.

R645-301-353.110. DIVERSITY, EFFECTIVENESS AND PERMANENCE

The vegetative cover will be diverse, effective and

permanent. Standards for reclamation success will be evaluated accordance with DOGM's "Vegetation Information and Monitoring Guidelines", Appendix A. The success of final reclamation will be judged on the effectiveness of the vegetation for the postmining land use and the extent of cover compared to the extent of cover for the reference area. Ground cover, production or stocking will be considered equal to the approved success standard when it reaches 90% of the success standard. Statistical adequacy of all statistical sampling will be determined using the following formula:

$$N_{min} - \frac{t^2 S^2}{(dx)^2}$$

where:

t = the value from appropriate t-table*, (2-tail test for pre-mine studies, 1-tail test for success studies)
s = the sample standard deviation,
d = the desired change in the mean,
x = the sample mean of the parameter in question
* = All parameters are to be tested at the 90% confidence level with a 10% change in the mean (d = .1).

Ground cover will be estimated by using one of the methods listed in "Vegetation Information Guidelines" Appendix A.

Andalex does not propose to stock shrubs or trees during interim or final revegetation.

Production measurements will be made in accordance with DOGM's "Vegetation Information Guidelines" Appendix A. Estimates may be made by the methodology which the vegetation consultant feels is the most suitable method to used for the work being performed.

An evaluation of species composition will be made, including species present, form and diversity.

For a postmining land use of grazing and wildlife habitat, the ground cover and production will be equal to or greater that a reference area. The Division's "Vegetation Information Guidelines", Appendix A will be utilized for the evaluation of the success of revegetation. Appendix B will be references for calculating diversity.

Siltation structures will be maintained until the disturbed area is revegetated and stabilized. They will remain in place at least two years after the

last augmented seeding. Siltation structures may include straw bales, silt fences or filter baskets. Removal will be contingent upon revegetation and stabilization of the area as well as DOGM concurrence. Following removal, the area will be revegetated in accordance with the reclamation plan.

R645-301-353.120. NATIVE OR DESIRABLE INTRODUCED SPECIES

The vegetative cover will be comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the Division.

R645-301-353.130. EXTENT OF COVER

The vegetative cover will be at least equal in extent of cover to the natural vegetation of the area.

R645-301-353.140. STABILIZING SOIL FROM SURFACE EROSION

The vegetative cover will be capable of stabilizing the soil surface from erosion.

R645-301-353.200. REESTABLISHED PLANT SPECIES

The reestablished plant species will:

R645-301-353.210. COMPATIBILITY WITH APPROVED POST-MINING LAND USE

The reestablished plant species will be compatible with the approved postmining land use.

R645-301-353.220. SEASONAL CHARACTERISTICS OF GROWTH

The reestablished plant species will have the same seasonal characteristics of growth as the original vegetation.

R645-301-353.230. SELF-REGENERATION AND PLANT SUCCESSION

The reestablished plant species will be capable of self-regeneration and plant succession.

R645-301-353.240. COMPATIBILITY WITH AREA PLANT AND ANIMAL SPECIES

The reestablished plant species will be compatible with the plant and animal species of the area.

R645-301-353.250. COMPLIANCE WITH OTHER APPLICABLE LAWS OR REGULATIONS

The reestablished plant species will meet the requirements of applicable Utah and federal seed, poisonous and noxious plant; and introduced species laws or regulations.

R645-301-353.300. EXCEPTION TO REQUIEMENTS

N/A - No request for exception.

R645-301-353.400. CROPLAND

N/A - Crop land is not a post mining land use.

R645-301-354. REVEGETATION: TIMING

Disturbed areas will be planted during the first normal period for favorable planting conditions after replacement of the plant-growth medium. The normal period for favorable planting in this area is in the fall.

R645-301-355. REVEGETATION MULCHING AND OTHER SOIL STABILIZING PRACTICES

See R645-301-331

R645-301-356 REVEGETATION: STANDARDS FOR SUCCESS

R645-301-356.100. EFFECTIVENESS OF VEGETATION FOR POST-MINING LAND USE

See R645-301-331

R645-301-356.110. STANDARDS FOR SUCCESS: GUIDELINES

See R645-301-240 and R645-301-331

R645-301-356.120. SAMPLING TECHNIQUES

See R645-301-240 and R645-301-331

R645-301-356.200. CONDITIONS FOR SUCCESS

See R645-301-240 and R645-301-331

R645-301-356.210. GRAZING OR PASTURE LAND

See R645-301-240 and R645-301-331

R645-301-356.220. CROPLAND

N/A

R645-301-356.230. FISH AND WILDLIFE

See R645-301-240 and R645-301-331

R645-301-356.231. STOCKING AND PLANTING

See R645-301-240 and R645-301-331

R645-301-356.232. TREES AND SHRUBS

See R645-301-240 and R645-301-331

R645-301-356.240. INDUSTRIAL, COMMERCIAL OR RESIDENTIAL

N/A

R645-301-356.250. PREVIOUSLY DISTURBED AREAS

See R645-301-240 and R645-301-331

R645-301-356.300. SILTATION STRUCTURES

See R645-301-240

R645-301-356.400. REMOVAL OF SILTATION STRUCTURES

See R645-301-240

R645-301-357. REVEGETATION: EXTENDED RESPONSIBILITY PERIOD

R645-301-357.100. BEGINNING OF EXTENDED RESPONSIBILITY PERIOD

See R645-301-240

R645-301-357.200. VEGETATION PARAMETERS FOR SUCCESS

See R645-301-240 and R645-301-331

R645-301-357.210. GREATER THAN 26.0 INCHES ANNUAL PRECIPITATION

N/A

R645-301-357.220. LESS THAN 26.0 INCHES ANNUAL PRECIPIATION

See R645-301-240 and R645-301-331

R645-301-357.300. HUSBANDRY PRACTICES - GENERAL INFORMATION

R645-301-357.301. SELECTIVE HUSBANDRY PRACTICES

N/A - Not Requested

R645-301-357.302. DEMONSTRATION OF PRACTICES

N/A

R645-301-357.303. BONDED AREA

N/A

R645-301-357.304. EXTENDED RESPONSIBILITY FOR RESEEDED AREAS

N/A

R645-301-357.310. REESTABLISHING TREES AND SHRUBS

R645-301-357.311. RATE OF REPLANTING

See R645-301-240

R645-301-357.312. ESTABLISHMENT BY SEED

See R645-301-240 and R645-301-331

R645-301-357.320. WEED CONTROL AND ASSOCIATED REVEGETATION

See R645-301-240

R645-301-357.321. CHEMICAL WEED CONTROL

See R645-301-240

R645-301-357.322. MECHANICAL WEED CONTROL

See R645-301-240

R645-301-357.323. BIOLOGICAL WEED CONTROL

See R645-301-240

R645-301-357.324. RESEEDING DAMAGED AREAS

See R645-301-240

R645-301-357.330. CONTROL OF OTHER PESTS

See R645-301-240

R645-301-357.331. CONTROL OF BIG GAME

See R645-301-240

R645-301-357.332. CONTROL OF SMALL MAMMALS AND INSECTS

See R645-301-240

R645-301-357.341. AREA OF RESEEDING: NATURAL DISASTERS

See R645-301-240

R645-301-357.342. SUCCESS STANDARDS FOLLOWING A DISASTER

See R645-301-240

R645-301-357.343. TIMING OF RESEEDING FOLLOWING A DISASTER

See R645-301-240

R645-301-357.350. IRRIGATION

N/A - Not Planned

R645-301-357.360. RILL AND GULLEY REPAIR

See R645-301-240

R645-301-357.361. GREATER THAN 3% OF AREA

See R645-301-240

R645-301-357.362. EXTENT OF AFFECTED AREA

See R645-301-240

R645-301-357.363. AREA DEFINED BY RESEEDING

See R645-301-240

R645-301-357.364. RESULT OF DEFICIENT PLANS

See R645-301-240

R645-301-357.365. DEMONSTRATION OF METHOD

See R645-301-240

R645-301-358. PROTECTION OF FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES

See R645-301-310

R645-301-358.100. ENDANGERED OR THREATENED SPECIES

See R645-301-310

R645-301-358.200. BALD OR GOLDEN EAGLES

See R645-301-310

R645-301-358.300. ENDANGERED SPECIES ACT

See R645-301-310

R645-301-358.400. WETLANDS/RIPARIAN VEGETATION

See R645-301-310

R645-301-358.500. BEST TECHNOLOGY CURRENTLY AVAILABLE

See R645-301-310

R645-301-358.510. MINIMIZE ELECTRICAL HAZARDS

See R645-301-310

R645-301-358.520. PASSAGE FRO LARGE MAMMALS

See R645-301-310

R645-301-358.530. PONDS CONTAINING HAZARDOUS OR TOXIC MATERIALS

See R645-301-310

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

350 North 4th East
Price, Utah 84501

November 19, 1987

Andalex Resources
P.O. Box 902
Price, Utah 84501

Dear Mr. Glasson:

Here is the response on the condition and production of the reference areas at Wildcat Loadout.

The sagebrush grass area south of the loadout is in fair conditon and the production is about 600 lbs/acre.

The pinion-Juniper area on the slope west of the loadout is in fair condition and the production is about 500 lbs/acre.

George S Cook
George S. Cook
Range Conservationist
Price, Utah

RECEIVED
NOV 20 1987
ANDALEX RESOURCES, INC.

R645-301-400. LAND USE AND AIR QUALITY

R645-301-410. LAND USE

R645-301-411. ENVIRONMENTAL DESCRIPTION

Because of the vegetation and poor rainfall, the land is presently used only for grazing, wildlife habitat, and limited outdoor recreation. Historically, the land has also been used for coal loading.

R645-301-411.100. PREMINING LAND USE INFORMATION

Past mining in the vicinity of Wildcat includes ARCO'S Beaver Creek Mines (ten miles to the west). The Swisher Coal Company previously used the Wildcat Siding.

R645-301-411.110. USES OF THE LAND AT THE TIME OF FILING APPLICATION

The wildcat Loadout area would fall into two land use categories: 1) Fish and Wildlife habitat and recreation lands, and 2) Range Lands. County zoning regulations (1974) indicate all lands involved in the lease application area are within Zone M and G1 which is for mining and grazing. Current land use consists of grazing, wildlife habitat, and deer hunting. No other game species are found in the area. For recreational purposes, the land is suitable for deer hunting as well as ATV riding and occasionally snowmobiling. There are no oil and gas wells or water wells.

The area is ten miles from Price, but the unavailability of water precludes any development for residential or summer homes.

R645-301-411.120. LAND USE DESCRIPTION IN CONJUNCTION WITH OTHER ENVIRONMENTAL RESOURCES INFORMATION

Livestock grazing has been the most intense use of the permit area.

Mule deer are found within the lease area as well as the usual small mammals, predators, and passerine and raptorial birds.

Outdoor recreation in the lease area is limited and usually related to enjoyment of the open space and associated scenic facilities and hunting for wild animals.

R645-301-411.130. EXISTING LAND USES AND LAND USE CLASSIFICATION

See R645-301-411.110

R645-301-411.140. CULTURAL AND HISTORIC RESOURCES INFORMATION

To assure that no archaeological or historical sites existed in the proposed permit area. A reconnaissance survey has been conducted.

This survey was conducted based on requirements of the Bureau of Land Management prior to the issuance of the right-of-way. All of the surface within this permit area is under the jurisdiction of the Bureau of Land Management.

Prior to this investigation, no recorded archaeological studies of any kind had ever been one in the survey area. Please see Appendix A.

Archaeological clearance was granted based on this survey.

R645-301-411.141. CULTURAL AND HISTORIC RESOURCES MAPS

See Appendix A

R645-301-411.141.1 PUBLIC PARKS AND LOCATIONS OF ANY CULTURAL OR HISTORICAL RESOURCES

N/A - There are no public parks in the proposed permit area or nearby vicinity. No other cultural or historical resources are known to exist in the area.

R645-301-411.141.2 CEMETERIES

N/A - There are no cemeteries or burial grounds in or within 100 feet of the permit area.

R645-301-411.141.3 NATIONAL SYSTEM OF TRAILS OR THE WILD AND SCENIC RIVERS SYSTEM

N/A

R645-301-411.142 **COORDINATION WITH THE STATE HISTORIC PRESERVATION OFFICER (SHPO)**

See Appendix A

R645-301-411.142.1 **PREVENTION OF ADVERSE IMPACTS**

See Appendix A

R645-301-411.142.2 **VALID EXISTING RIGHTS OR JOINT AGENCY APPROVAL**

See Appendix A

R645-301-411.143 **IMPORTANT HISTORIC AND ARCHAEOLOGICAL RESOURCES THAT MAY BE ELIGIBLE FOR LISTING ON THE NATIONAL REGISTER OF HISTORIC PLACES**

N/A - See Appendix A

R645-301-411.143.1 **COLLECTION OF ADDITIONAL INFORMATION**

See Appendix A

R645-301-411.143.2 **CONDUCTING FIELD INVESTIGATIONS**

See Appendix A.

R645-301-411.143.3 **OTHER APPROPRIATE ANALYSES**

See Appendix A.

R645-301-411.144. **APPROPRIATE MITIGATION AND TREATMENT MEASURES**

See Appendix A.

R645-301-411.200. **PREVIOUS MINING ACTIVITY**

No mining ever occurred at this site. The area was used as a coal

processing and loadout facility.

R645-301-411.210. TYPE OF MINING METHOD USED

Area was used as a processing/loadout facility.

R645-301-411.220. COAL SEAMS OR OTHER MINERAL STRATA MINED

N/A

R645-301-411.230. EXTENT OF COAL OR OTHER MINERALS REMOVED

N/A

R645-301-411.240. APPROXIMATE DATES OF PAST MINING

The loadout area was used from approximately 1960 to present under various operators.

R645-301-411.250. USES OF LAND PRECEDING MINING

See R645-301-411.140.

R645-301-412. RECLAMATION PLAN

See R645-301-240.

R645-301-412.100. POSTMINING LAND USE PLAN

The post-mining land use will consist of livestock grazing with wildlife habitat and some recreation.

R645-301-412.110. ACHIEVEMENT OF PROPOSED POSTMINING LAND USE

See R645-301-412.100.

R645-301-412.120. RANGE OR GRAZING LAND USE

See R645-301-412.100.

R645-301-412.130. ALTERNATE POSTMINING LAND USE

N/A

R645-301-412.140. CONSISTENCY WITH SURFACE OWNER PLANS AND APPLICABLE UTAH AND LOCAL LAND USE PLANS

Socioeconomic Impacts

The proposed project is located in an area where coal mining is the major industry, therefore, the community is geared for coal operations. The labor supply is excellent, well-trained, and available. Most people in this area have a very favorable attitude towards the increased coal activity. They look forward to growth in the area which will increase population, home construction, and provide other facilities for community use.

The need for development of additional housing, school space, and changes in present community services would be among the greatest impacts, due to the increase in population. Positive effects of the project will be to increase the number of jobs, payroll, and taxes thus helping to build the community.

Land Use Changes

The limited resources, both physical and scenic, will dictate no future change in land status. Considering the extent and nature of similar lands in this area, no uses other than those previously discussed can be forecast.

Wildcat has been unsightly since coal loading activities began with the Swisher Coal Company. The new loadout is in the same area as the old tipples and waste dumps. These waste dumps are numerous and located throughout the permit area and consist of coal fines which were unmarketable during the earlier mining history. This new operation will actually be a significant reclamation phase to the permit area.

After completion of loading operations, the land will continue to be used for grazing and hunting. Although hunting may occur within the permit area during operations, grazing will not. No future change is dictated in the land status. All disturbed land will be restored in a timely manner, according to the Reclamation Plan outlined in Chapter 5, to conditions that are capable of supporting the uses they were capable of supporting before mining.

R645-301-412.200. LAND OWNER OR SURFACE MANAGER COMMENTS

As there are no proposed land use changes, there have been no negative comments from legal or equitable owners of record of surface areas to be affected or from any state or local agencies.

R645-301-412.300. SUITABILITY AND COMPATIBILITY

See R645-301-412.200.

R645-301-413. PERFORMANCE STANDARDS

R645-301-413.100. POSTMINING LAND USE

See R645-301-412.100.

R645-301-413.110. CAPABILITY OF SUPPORTING POSTMINING LAND USE

See R645-301-412.100.

R645-301-413.120. HIGHER OR BETTER USES

See R645-301-412.100.

R645-301-413.200. DETERMINING PREMINING USES OF LAND

See R645-301-412.100.

R645-301-413.210. PREMINING USES OF LAND NOT PREVIOUSLY MINED

See R645-301-412.100.

R645-301-413.220. POSTMINING LAND USE FOR LAND THAT HAS BEEN PREVIOUSLY MINED AND NOT RECLAIMED

See R645-301-412.100.

R645-301-413.300. CRITERIA FOR ALTERNATIVE POSTMINING LAND USES

N/A

R645-301-413.310. LIKELIHOOD FOR ACHIEVEMENT LAND USE

Post-mining land use as proposed shall be achieved.

R645-301-413.320. HAZARDS TO PUBLIC HEALTH OR SAFETY, OR THREAT OF WATER DIMINUTION OR POLLUTION

N/A

R645-301-413.330. PROHIBITED LAND USES

N/A

R645-301-413.331. IMPRACTICAL OR UNREASONABLE

N/A

R645-301-413.332. INCONSISTENT WITH APPLICABLE LAND USE POLICIES

N/A

R645-301-413.333. UNREASONABLE DELAY IN IMPLEMENTATION

N/A

R645-301-413.334. VIOLATION OF FEDERAL, UTAH OR LOCAL LAW

N/A

R645-301-414. PERMIT REVISIONS REQUESTING APPROVAL OF ALTERNATE POSTMINING LAND USE

N/A

R645-301-414.100. FILING DEADLINES

N/A

R645-301-414.200. SIGNIFICANT ALTERATION FROM MINING OPERATIONS IN THE ORIGINAL PERMIT

N/A

R645-301-414.300. OTHER REQUIREMENTS

N/A

R645-301-420. AIR QUALITY

Existing Environment

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

Air Quality Impact Analysis

Air quality information has been submitted and approved by the State Bureau of Air Quality.

Emission Estimates

Andalex's inventory has been reviewed and approved by the Utah Bureau of Air Quality and the E.P.A.

Proposed Controls

The only changes in air quality will be attributable to minor road dust. Methods of control are spray systems, chemical treatment, and enclosures. Please see approval order for a description of control measures in Appendix B.

Andalex cannot control wind blown coal fines entirely; however, several things can and are being done to at least minimize the impact. For example, the stacker is always placed over the highest part of the stockpile so as to minimize the dropping distance. Also, the conveyor is equipped with water sprays for occasions when

exceptionally dry coal is being run through the system. Reference is made in Chapter 5 to areas within the permit area which do not report to sediment ponds. These areas are included in the permit area as alternate sediment control areas or ASCAS's, and have been revegetated and stabilized. One such area which is susceptible to wind blown coal fines between Sedimentation Ponds A and B has been equipped with a substantial straw berm. This berm will be maintained throughout the life of the facility and replaced and cleaned as necessary to avoid contamination as much as possible.

PSD Permit and Compliance with Air Quality Laws

The Environmental Protection Agency has determined that this project does not require a PSD Air Quality Permit. The loadout is not subject to the PSD regulations because of the new definition of a major source.

R645-301-421. CLEAN AIR ACT AND OTHER APPLICABLE LAWS

See R645-301-420.

R645-301-422. UTAH BUREAU OF AIR QUALITY

See R645-301-420.

R645-301-423. SURFACE COAL MINING AND RECLAMATION ACTIVITIES EXCEEDING 1,000,000 TONS PER YEAR

See R645-301-420.

R645-301-423.100. COMPLIANCE WITH FEDERAL AND UTAH AIR QUALITY STANDARDS

See R645-301-420.

R645-301-423.200. FUGITIVE DUST CONTROL PLAN

See also Appendix B

R645-301-424. FUGITIVE DUST CONTROL - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR

N/A - Greater than 1,000,000 ton/yr.

R645-301-425. AIR QUALITY MONITORING - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR

N/A

R645-301-500. ENGINEERING

R645-301-510. INTRODUCTION

Volume II of this PAP contains plates which support the narrative of Volume I. These maps include, but are not limited to, contiguous surface and subsurface owners, the permit boundary including the area to be affected over the life of the project, a plate depicting all buildings and structures within 1,000 feet of the permit area and any surface or subsurface man-made features (powerline). Much of this information is combined on individual maps, e.g., the man-made features are on Plate 1 which also depicts buildings within 1,000 feet.

The location and boundaries of the revegetation reference area will be shown at such time as the location is finalized.

Figure VII-2 depicts surface waters and receiving waters in the vicinity of the permit area. The Gordon Creek Road (County Road 139) is also depicted as it relates to the permit area on the surface facilities map.

Cross Sections, Maps, and Plans

Many of the plans of this section are not applicable to the Wildcat Loadout Facility as it is strictly a surface facility and plans showing core samples, nature of coal seams, outcrops, active underground and abandoned workings or any others pertaining to mining (surface or underground) are not included.

Surface water monitoring stations are included on Plate 2.

Subsurface water has not been encountered within the permit area and the only surface water would consist of sediment ponds and diversion ditches which become surface waters only in direct response to a precipitation event. These, along with the one spring located southwest of the permit area, are shown on Plate 2 and Figure VII-2 respectively.

There are no oil or gas wells in or adjacent to this permit area.

Slopes are represented by topographic maps (Plate 2) and final reclamation contours (Plate 9). The cross-sections, through these two topographic maps, are shown on Plate 10.

From this, a mass balance was developed.

Operation Plan: Maps and Plans

The lands affected by this operation (surface only) are clearly shown on Plate 1. Plate 1 depicts all buildings, utilities, and facilities. All of the land within this permit area which is to be affected already has been. This is a surface facility only and involves no underground workings. The bond required by the Division is for the entire affected area including all the surface facilities.

Coal storage, topsoil storage, loading areas, coal preparation waste areas are all depicted on the surface facilities map. Additional detail on topsoil, diversions, and ponds can be found in Volume II on Plates 13, 2, and 3 through 7 respectively.

There is no storage of explosives at the Wildcat Loadout.

The final surface configurations will be similar to the surface prior to Andalex's involvement at Wildcat. Cross sections and a surface configuration plate are included in Volume II as 10 and 9 respectively.

Surface water monitoring locations are shown on Plate 2.

After the completion of activities at this facility, no structures will remain with the exception of the railroad grade, the tracks, and it's associated drainage structures.

All maps requiring certifications by a registered person have been done so. Included are stamps from experts in related fields such as surveying.

Maps and Plans

The following is a list of maps and plans included with this application as Volume II. Those maps which require certification by a registered professional engineer bear that mark. These maps and plans, when used in conjunction with Volume I (the text), will constitute a complete plan for the Wildcat Loadout Facility. As this facility has already been completely constructed, the maps do not include any "as proposed" facilities, only existing ones. Along with the facilities, plates are included, environmental resource maps, and reclamation plans. It should be noted that a wildlife distribution map is not included based on the State Division of Wildlife Resources' comments (please see Appendix F).

PLATES

Plate #	Plate Title
Plate 1	As Constructed Surface Facilities
Plate 2	Surface Facilities Topography (Watershed & Drainage)
Plate 3	Sediment Pond A (As Constructed)
Plate 4	Sediment Pond B & D (As Constructed)
Plate 5	Sediment Pond C (As Constructed)
Plate 6	Sediment Pond E (As Constructed & As Proposed)
Plate 7	Sediment Pond F (As Constructed)
Plate 8	Final Reclamation Hydrology (Phase I)
Plate 9	Final Reclamation Contours & Revegetation
Plate 10	Cross Section
Plate 11	Soil Survey
Plate 12	Surface Geology
Plate 13	Topsoil Piles
Plate 14	Cross Section Reference Map
Plate 15	Watershed
Plate 16	Surface & Subsurface Ownership
Plate 17	Typical Road Cross Section, Double-Lane Roads
Plate 17-A	Typical Road Cross Section, Single-Lane Roads
Plate 18	Permanent Impoundment

PLATES, Continued

Plate #	Plate Title
Plate 19	Diversion UD-1 Profile
Plate 20	Diversion UD-1 Point of Diversion Cross Section
Plate 22	Proposed Expansion
Plate 23	Cut/Fill Locations
Plate 24	Pad Area Cut/Fill
Plate 25	Pad Area Cut/Fill
Plate 26	Pad Area Cut/Fill
Plate 27	Truck Loop Cut/Fill

R645-301-511. GENERAL REQUIREMENTS

See R645-301-510.

R645-301-511.100. PROPOSED COAL MINING AND RECLAMATION OPERATIONS

See R645-301-510.

R645-301-511.200. POTENTIAL IMPACTS TO THE ENVIRONMENT

See R645-301-510.

R645-301-511.300. RECLAMATION

See R645-301-240.

R645-301-512. CERTIFICATION

See Volume II and R645-301-510.

R645-301-512.100. CROSS SECTIONS AND MAPS

See R645-301-510.

R645-301-512.110. MINE WORKINGS TO THE EXTENT KNOWN

N/A - There are no mine workings associated with this project.

R645-301-512.120. SURFACE FACILITIES AND OPERATIONS

See Volume II, Plates 1 and 2. All applicable maps are certified.

R645-301-512.130. SURFACE CONFIGURATIONS

See Volume II, Plates 1 and 2. All applicable maps are certified.

R645-301-512.140. HYDROLOGY

See Volume II, Plates 2 through 8, 15, 19 and 20. All applicable maps are certified.

R645-301-512.150. GEOLOGIC CROSS SECTIONS AND MAPS

See Volume II, Plates 10, 12 and 14. All applicable maps are certified.

R645-301-512.200. PLANS AND ENGINEERING DESIGNS

Applicable plans, such as for impoundments and primary roads have been certified by a qualified, registered professional engineer and are included in the following sections.

R645-301-512.210. EXCESS SPOIL

N/A - There are no plans for excess spoil at this facility.

R645-301-512.220. DURABLE ROCK FILLS

N/A - There are no plans for durable rock fills at this facility.

R645-301-512.230. COAL MINE WASTE

This is strictly a surface facility, there will be no underground development wastes.

Coal Processing Waste

During processing, a small amount of boney material and rock is removed from the lump coal product. It is currently proposed to dispose of this material on the west side of Wildcat in a previously disturbed area which reports to the sedimentation ponds.

In accordance with requirements of 30 CFR 77.215-2, a refuse disposal plan has been filed with MSHA. An MSHA I.D. number has been issued for this pile - 1211-UT-09-01864-01. The required disposal plan and maps are included as Appendix O of this M.R.P.

If it is determined through testing that this material is acid- or toxic-forming, then the disposal will consist of burial on the west side of Wildcat (Plate 1) or haulage to another approved coal processing waste disposal area. The Division will be notified if the coal processing waste is to be moved off-site to another approved disposal area. All coal processing waste piles shall be inspected at least quarterly, by a qualified registered engineer. This person will be responsible for inspecting visual factors such as steepness of slopes and seepage. Copies of inspections will be maintained at the site and should any potential hazards

be observed, the Division shall be notified and remedial action taken. The coal processing waste piles shall be spread in layers no more than 24 inches in thickness; however, because of the nature of this "boney" material and its size (5 to 8 inches in diameter) compaction is not possible. Observations will be made regarding stability of the pile. This section shall comply with UMC 817.81-.88. Andalex Resources' coal processing waste is very small in volume. Andalex's hydrologic studies have indicated that groundwater does not exist within a zone of impact created by this facility. Drainage from coal processing waste, until such time as the material is buried with four feet of the best available non-toxic and non-combustible material and revegetation has occurred, will report to sedimentation ponds as shown on the surface drainage map. Drainage from the pile is carried to Pond F via disturbed ditch D-17, which is sized to carry runoff from the pile from a 100 year - 6 hour event as required. (See Table IV-13). Slope protection will be provided as required and banks will have a minimum static safety factor of 1.5. In the unlikely event spontaneous combustion occurs within the coal processing waste pile, the fire will be extinguished through means of compaction which is standard operating procedure (not to imply that the waste pile will be compacted as it is built). All personnel at Wildcat Loadout are familiar with this procedure. No burned coal processing waste or coal refuse will be removed from the disposal area except if it is moved to another approved coal processing disposal area. Coal processing waste from the Wildcat Loadout will not be returned to underground mine workings.

This material has been tested according to requirements for acid and toxic-forming materials and the results of these tests have been submitted to the Division. The intention of the testing was to determine whether the material had any toxic or acid-forming characteristics. Our results show that this material may be used in fill situations within our approved permit area. It is Andalex's intention to use this material as substitute fill for the expansion plans at the Wildcat loadout. It is clear that this material will have to be reclaimed as a separate operation from an ordinary fill situation. Andalex has committed to covering this material with four feet of native fill prior to redistribution of topsoil. This refuse material, which is used in a fill situation, will be reclaimed separately and covered with native material. Andalex makes this commitment for all of the refuse material which is used as fill.

It should be emphasized that upon final recla- mation any refuse material which has been used in a fill situation will

be removed and placed in the approved refuse disposal area. It will not be reclaimed in-place.

R645-301-512.240. IMPOUNDMENTS

The Sedimentation and Drainage Control Plan has been designed according to OSM regulations and the design criteria and construction certified by a Utah Registered Professional Engineer. No other embankments or other impoundments have been built nor are any proposed except similar sedimentation control structures at the facility.

There are six sedimentation ponds constructed at the Wildcat Loadout Site. The pond locations are shown on Plate 2 and each pond is detailed on Plates 3 through 7. An additional 2-celled pond called the Permanent Impoundment is also constructed. This impoundment is meant to capture only natural drainage from the canyon above.

All ponds are constructed with proper embankment slopes, each is equipped with a principal and emergency spillway. All ponds are presently adequate for the design runoff from a 10 year - 24 hour precipitation event (or larger).

The disturbed area draining to the ponds has been divided into a series of sub-drainages designated A through F. Runoff from each of these sub-drainages is directed to the corresponding pond via surface flow paths (ditches) and culverts as shown on Plate 2. One area of disturbance, in the northwest corner of the permit area, is an old stockpile area and is a large depression. This area is shown on Plates 1 and 2. The area does not drain and does not receive runoff except for direct precipitation and a small amount of undisturbed runoff from the hillside to the northwest as shown on Plate 2; therefore, it is not included in any of the pond sizing calculations.

There are seven small areas on the site which do not drain to the sediment ponds. These areas are all equipped with alternate sediment control consisting of straw bales, berms and/or vegetation. The areas are designated ASCA Areas and are shown on Plate 2. Complete descriptions of each of the areas is provided in this chapter.

All sediment ponds are sized to contain the complete runoff from a 10 year - 24 hour precipitation event. If ponds need to be dewatered, this will be accomplished by a small pump or siphon, in accordance with the discharge permit. The ponds meet a theoretical detention time of at least 24 hours, since they will totally contain runoff from the 10 year - 24 hour event without overflow and any release from the pond is at the discretion of

the operator, after a 24 hour settling period. All ponds are covered by a UPDES Discharge Permit.

Maximum sediment levels for each pond is shown on the corresponding Plates 3 through 7. Each pond will be equipped with a sediment marker (as shown). The marker will consist of a steel rod or pipe painted with a red stripe to delineate the maximum sediment accumulation level in each pond.

Certifications of the design and construction inspections are provided in Appendix H.

Ponds will be inspected on a quarterly basis for safety, condition, and operation, and results recorded at the office for inspection.

All ponds are temporary and will be removed in two phases during final reclamation with the exception of the Permanent Impoundment, shown on Plate 2. During Phase I, Ponds B and E will be removed. This will occur during initial reclamation and revegetation of the property. Ponds A, C, D, and F will remain in place until revegetation standards are reached on the reclaimed site. At that time, during Phase II, all ponds will be removed except for the Permanent Impoundment and the pond areas reclaimed.

R-69 forms for each of the sediment ponds have been submitted to the State Engineer, as required. Copies of the forms are included in Appendix H of this plan.

All ponds have been constructed according to the design criteria under "Construction Specifications for Sedimentation Ponds".

Construction Specifications for Sedimentation Ponds

The following design criteria were used in the construction of all sedimentation ponds at the Wildcat Loadout. The certifications found in Appendix H reflect these design criteria.

All construction of sedimentation ponds will be performed under the direction of a qualified registered professional engineer.

Dams shall be constructed with primary overflows a minimum of two feet from the top, and emergency overflows at least one foot from the top.

The areas of pond construction shall be examined for topsoil, and where present in removable quantities, such soil shall be removed separately and stored in an approved topsoil storage location.

In areas where fill is to be placed, natural ground shall be removed for at least 12" below the base of the structure.

Native materials will be used where practical. Fill will be placed in lifts not to exceed 15" and compacted prior to placement of next lift. Compaction of all fill materials shall be at least 95%.

Rip-rap or other protection (belting, culverts, etc.) will be placed at all inlets and outlets to prevent scouring. Rip-rap will consist of substantial (non-slaking) rock material of 6" or greater size.

Each pond shall be fitted with an inverted inlet to the primary overflow, to prevent the passage of oil into the discharge.

Slopes of the dams shall not be steeper than 2h:1v, inside and outside, with a total of the inslope and outslope not less than 5:1.

Tops and external slopes of the dams shall be planted with an approved seed mix to prevent erosion and promote stability. Compaction of the slopes shall be at least 95%.

Top width of dams shall be not less than (H + 35)/5.

Design Parameters

Precipitation

The precipitation - frequency values for the area were taken from "NOAA, Precipitation - Frequency Atlas of the Western U.S., Volume 6".

Frequency - Duration	Precipitation
10 year - 24 hour	1.85"
25 year - 24 hour	2.15"
100 year - 24 hour	2.75"
100 year - 6 hour	1.91"

Flow

Flows for the property were calculated using the SCS-TR55 Method as described on page 114 of "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner and Haan, 1983. Peak discharge in CSM per inch of runoff was taken from Figure 2.40, page 115 of that same reference.

Time of concentration of storm events was calculated for each

sub-drainage using the following formula:

$$t_L \text{ (hrs.)} = \frac{L^{0.8}(S+1)^{0.7}}{1900y^{0.5}} \quad ; \quad t_L = 0.6t_c$$

where: t_c = Time of concentration (hrs.)
t_L = Lag Time (hrs.)

L = Hydraulic Length of Watershed (ft.)
y = Average Land Slope (%)
$S = \frac{1,000}{CN} - 10$

Estimated Return Periods for Short Duration Precipitation in Utah

U.S.U., page 53

Velocity

Flow velocities for each sub-drainage were calculated using Manning's Formula:

$$V = \frac{1.49}{n} R^{2/3} S^{1/2}$$

where: v = Velocity in feet per second
r = Hydraulic radius in feet
s = slope in feet per foot
n = Manning's n; Table 3.1, page 159, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner & Haan, 1983.

Small Drainage Ditches - 0.025*
Corrugated Metal Pipe - 0.025

*Based on DOGM recommendation.

Areas

All areas were planimetered directly from the Watershed Map, Plates 2 and 15.

Slopes

All slopes were measured directly from the topography on the Watershed Map, Plates 2 and 15.

Runoff

Runoff was calculated using the SCS formula:

$$Q = \frac{(P-0.2S)^2}{P+0.8S}$$

where: Q = Runoff in inches
P = Precipitation in inches
$S = \frac{1,000}{CN} - 10$
CN = Runoff curve number

note: A runoff curve number of 90 was used for all disturbed areas. This is a conservative number based on the SCS determinations for Runoff Curve Numbers for Antecedent Moisture Condition II. A runoff curve number of 65 was used for undisturbed areas. this number is based on the SCS determinations for Runoff Curve Numbers for Antecedent Moisture Condition II, Soil Group B, Range Land in Fair to Good Condition.

The selection of the curve number is also based on field observations and subsequent discussions with DOGM personnel.

The native soil in the area is quite sandy and porous in nature, resulting in a relatively low runoff potential. This was the basis for the selection of SCS Soil Group B.

The runoff numbers were also checked against the chart in Figure 2.26, page 85, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983.

Sediment Yield

The Universal Soil Loss Equation (USLE) was used to estimate sediment yield from disturbed areas. All soil loss from disturbed sub-areas was assumed to be delivered to, and deposited in the respective ponds.

Erosion rate (A) in tons-per-acre-per-year is determined using the USLE as follows:

$$A = (R)(K)(LS)(CP)$$

The variables R, K, LS, and CP are defined as follows:

Variable "R" is the rainfall factor which can be estimated from $R = 27P^{2.2}$, where P is the 2-year, 6-hour precipitation value. P

for the Gordon Creek Area is 0.85 inches as shown on Figure 5.4, page 315, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983. Therefore, the estimated value of "R" for this area is 18.88.

Variable "K" is the soil erodibility factor. For disturbed areas, the "K" value was conservatively estimated to be 0.5. This value is representative of compacted disturbed areas such as roads, embankments, and parking areas.

Variable "LS" is the length - slope factor. This figure was determined by applying the slope length and percentage for each sub-drainage area to the chart in Figure 5.15, page 334, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983.

Variable "CP" is the control practice factor, which can be divided into a cover and a practice factor. For purposes of these calculations, no cover or control practice was assumed, and therefore, the "CP" factor was used as the maximum value of 1.

The results of the sediment yield calculations are summarized on Table V-4, Sediment Yield. A unit weight of 100 pounds per cubic foot was used to convert sediment yield to volume capacity requirements. Sediment storage values shown on the Sediment Pond Specification Tables are for a 3-year period.

Pond Volumes

All pond volumes shown in the Sediment Pond Specification Tables are from measurements taken directly from the "As Constructed" drawings of the sediment ponds, Plates 3 through 7 and Plate 18. Areas of the top and bottom of the ponds were planimetered, and depths were measured directly.

The following tables will summarize the drainage areas, sediment yield, and sediment pond specifications. Methods of calculations are detailed in Design Parameters.

STAGE-VOLUME DATA
FOR
DEPRESSION AREA

Elevation	Area (ft.^{2})	Volume (ac. ft.)	Accum. Volume (ac. ft.)
6172 (Bottom)	4,500	-	-
6174	46,000	1.16	1.16
6176 (Top)	121,000	3.83	4.99

Note: Water would impound to an elevation of 6,178 before actually going over the track area. This would increase the total storage volume by an additional 6.54 acre feet, allowing for an absolute maximum of 11.53 acre feet of storage before discharging. The 6,176 elevation used would not result in damage.

TABLE V-2

Drainage Areas/Flow Calculations

Drainage Area	Area (acres)	Length (ft.)	Elev. Diff. (ft.)	Slope (%)	tc (hrs)	Q (cfs)
A	7.85	800	38	4.75	0.14	6.96
B	2.29	600	18	3.27	0.14	2.03
C	18.03	1200	52	4.33	0.21	15.31
D	6.61	400	18	4.50	0.08	6.45
E	7.69	1250	52	4.16	0.22	6.50
F	7.50	1200	38	3.17	0.24	6.26

TABLE V-2A

Post-Mining
Drainage Areas/Flow Calculations

Drainage Area	Area (acres)	Length (ft.)	Elev. Diff. (ft.)	Slope (%)	tc (hrs)	Q (cfs)
A	10.14	800	38	4.75	0.14	14.26
C	30.59	1200	52	4.33	0.21	37.04
D	8.04	1250	52	4.16	0.22	9.42
F	7.50	1200	38	3.17	0.24	8.79

TABLE V-3

Runoff Calculations

Area/Pond	A	B	C	D	E	F
Drainage Area (ac.)						
Precipitation						
10 yr.-24 hr. (in.)	7.85	2.29	18.03	6.61	7.69	7.50
25 yr.-24 hr. (in.)	1.85	1.85	1.85	1.85	1.85	1.85
100 yr.-24 hr. (in.)	2.15	2.15	2.15	2.15	2.15	2.15
Runoff CN	2.75	2.75	2.75	2.75	2.75	2.75
Runoff to Pond:	90	90	90	90	90	90
10 yr.-24 hr. (ac. ft.)	0.654	0.191	1.503	0.551	0.641	0.625
25 yr.-24 hr. (ac. ft.)	0.820	0.239	1.883	0.690	0.803	0.783
100 yr.-24 hr. (ac. ft.)	1.143	0.333	2.624	0.962	1.119	1.092
Peak Flow:						
10 yr.-24 hr. (cfs)	6.96	2.03	15.31	6.45	6.50	6.26
25 yr.-24 hr. (cfs)	8.72	2.54	19.29	8.04	8.20	7.90

TABLE V-3A

Post-Mining
Runoff Calculations

Area/Pond	A	C	D	F
Drainage Area (ac.)	10.14	30.59	8.04	7.50
10 yr. - 24 hr. (in.)	1.85	1.85	1.85	1.85
25 yr. - 24 hr. (in.)	2.15	2.15	2.15	2.15
Runoff CN	90	90	90	90
Runoff to Pond:				
10 yr. - 24 hr. (ac. ft.)	0.845	2.549	0.670	0.625
25 yr. - 24 hr. (ac. ft.)	1.059	3.193	0.839	0.783
Peak Flow:				
10 yr. - 24 hr. (ac. ft.)	14.26	37.04	9.42	8.79
25 yr. - 24 hr. (ac. ft.)	17.11	44.45	11.31	10.93

TABLE V-4

Sediment Yield

Area/Pond	A	B	C	D	E	F
Area (ac.)	7.85	2.29	18.03	6.61	7.69	7.50
Length	800	600	1200	400	1250	1200
Slope (%)	4.75	3.27	4.33	4.50	4.16	3.17
LS Factor	1.30	0.56	1.30	0.85	1.30	0.60
Sed. Yield (tons/ac/yr.)	12.27	5.29	12.27	8.02	12.27	5.664
Unit Weight (lbs./ft.^{3})	100	100	100	100	100	100
Sed. Yield (ac. ft./yr.)	0.044	0.006	0.102	0.024	0.043	0.019
Sed. Yield (ac. ft./3 yrs.)	0.132	0.018	0.306	0.072	0.129	0.057

Note: Calculations based on Universal Soil Loss Equation

R = 18.88 inches

K = 0.5

CP = 1

TABLE V-4A

Post-Mining
Sediment Yield

Area/Pond	A	C	D	E
Area (ac.)	10.14	30.59	8.04	7.50
Length (ft.)	800	1200	1250	1200
Slope (%)	4.75	4.33	4.16	3.17
LS Factor	1.30	1.30	1.20	0.60
Sed. Yield (tons/ac./yr.)	12.27	12.27	11.33	5.664
Unit Wt. (lbs/ft.^{3})	100	100	100	100
Sed. Yield (ac. ft./yr.)	0.057	0.172	0.042	0.019
Sed. Yield (ac. ft./3 yrs.)	0.171	0.516	0.126	0.057

Note: Calculations based on Universal Soil Loss Equation

R = 18.88 inches

K = 0.5

CP = 1

TABLE V-5

Direct Precipitation to Ponds

Pond	A	B	C	D	E	F
Precipitation (in.):						
10 yr.-24 hr.	1.85	1.85	1.85	1.85	1.85	1.85
25 yr.-24 hr.	2.15	2.15	2.15	2.15	2.15	2.15
100 yr.-24 hr.	2.75	2.75	2.75	2.75	2.75	2.75
Surface Area (ac.)	0.66	0.13	0.86	0.29	0.17	0.18
Precipitation to Ponds (ac. ft.):						
10 yr.-24 hr.	0.055	0.011	0.072	0.024	0.031	0.015
25 yr.-24 hr.	0.069	0.014	0.090	0.030	0.039	0.019
100 yr.-24 hr.	0.096	0.019	0.125	0.042	0.055	0.026

TABLE V-5A

Post-Mining
Direct Precipitation to Ponds

Pond	A	C	D	F
Precipitation (in.):				
10 yr. - 24 hr.	1.85	1.85	1.85	1.85
25 yr. - 24 hr.	2.15	2.15	2.15	2.15
Surface Area (ac.)	0.66	0.86	0.29	0.18
Precipitation to Ponds (ac. ft.):				
10 yr. - 24 hr.	0.055	0.072	0.024	0.015
25 yr. - 24 hr.	0.069	0.090	0.030	0.019

TABLE V-6

Pond Volume Summary
(10 year - 24 hour event)

Pond	A	B	C	D	E	F
Runoff (ac. ft.)	0.654	0.191	1.503	0.551	0.641	0.625
Direct Precipitation	0.055	0.011	0.072	0.024	0.014	0.015
3 yr. Sed. Storage (ac. ft.)	0.132	0.018	0.306	0.072	0.129	0.057
Required Pond Vol. (ac. ft.)	0.841	0.220	1.881	0.647	0.784	0.697
Actual Pond Vol. (ac. ft.)	2.410	0.310	4.430	0.880	0.849	0.700
Excess Capacity (ac. ft.)	1.569	0.090	2.549	0.233	0.065	0.003

TABLE V-6A

Post-Mining
Pond Volume Summary
(10 year - 24 hour event)

Pond	A	C	D	F
Runoff (ac. ft.)	0.845	2.549	0.670	0.625
Direct Precip. (ac. ft.)	0.055	0.072	0.024	0.015
3 yr. Sed. Storage (ac. ft.)	0.171	0.516	0.126	0.057
Req'd Pond Volume (ac. ft.)	1.071	3.137	0.820	0.697
Actual Pond Volume (ac. ft.)	2.410	4.430	0.880	0.700
Excess Capacity (ac. ft.)	1.339	1.293	0.060	0.003

TABLE V-7A

Permanent Impoundment

*Drainage Area	86.32 acres
10 year - 24 hour event	1.85 inches
100 year - 6 hour event	1.91 inches
Runoff Curve Number	65
Required Pond Volume (10/24)	0.70 ac. ft.
Required Pond Volume (100/6)	0.81 ac. ft.
** Upper Cell Volume	0.43 ac. ft.
** Lower Cell Volume	0.53 ac. ft.
Total Storage Volume	0.96 ac. ft.

NOTE: Ponds are adequate for the 10 year - 24 hour event and the 100 year - 6 hour event.

* Planimetered from Plate 15
** Planimetered from Plate 18

TABLE V-7B

Permanent Impoundment
Overflow Structures

Structure	Upper Cell Primary 18" CMP	Upper Cell Emergency 18" CMP	Lower Cell Emergency Overflow
Drainage Area	86.32	86.32	86.32
10 yr.-24 hr. event (in.)	1.85	---	1.85
100 yr.-6 hr. event (in.)	---	1.91	1.91
Time of Conc. (hrs.)	0.50	0.50	0.50
Runoff Curve Number	65	65	65
Structure Slope (%)	5.00	5.00	4.00
Peak Flow (10/24)	6.67	---	6.67
Peak Flow (100/6)	---	7.70	7.70
Min. Structure Area (ft^2)	1.77	1.77	4.50
Req'd Area (10/24)	0.80	---	1.74
Req'd Area (100/6)	---	0.92	1.92
Velocity (fps)	8.34	8.37	4.02
Rip-Rap Req'd (Y/N)	Y	Y	N
* Rip-Rap D_{50}	Belting	Belting	6"

* Rip-Rap D_{50} based on Figure V-4.

Depression Area:

This area is located below the 2-celled Permanent Impoundment, between the Permanent Impoundment and the railroad tracks. The area receives a very small amount of water from direct precipitation, and would otherwise receive larger amounts of water only through overflow or failure of the Permanent Impoundment. Calculations show the Depression Area to have a capacity of 4.99 acre feet at an elevation 2' below the tracks - this is 616% of the capacity of the Permanent Impoundment requirements for a 100 year - 6 hour storm event. The Depression Area, however, does not have an overflow; therefore, the following monitoring and de-watering plan is proposed in the unlikely event of significant water accumulation:

(1) Monitoring - A steel post will be set at the low point of the depression area. This post will be marked at an elevation of 2' above ground level. This elevation will mark the point at which the area will be dewatered.

(2) Dewatering - If water should accumulate to the mark on the monitoring post, the area will be dewatered using the pump system approved for decanting the sediment ponds on the property.

Diversion Structures

Flow within the disturbed area is diverted to the ponds by the use of ditches and culverts. These are temporary structures and will be removed on final reclamation of the site. Undisturbed drainage runoff is diverted around the site by existing channels as shown on Plate 2. These existing channels are permanent and will not be disturbed nor reclaimed during the life of this facility. Since Andalex does not intend to re-establish the drainage through the facility and under the railroad tracks upon final reclamation, these channels will remain after final reclamation.

Undisturbed Diversions

UD-1 - Undisturbed runoff from the west of the property is captured by a pre-existing diversion and conveyed to the south and east into the Garley Canyon Drainage. This diversion is shown on Plate 2 as UD-1. The natural drainage into which it drains is designated ND-2. This is a natural drainage and will not be maintained, disturbed, or reclaimed in connection with this operation. A typical section of UD-1 is shown in Figure V-1. This diversion was installed by a previous operator and is meant to replace the original channel through the area, which was rendered useless by the height of the Utah Railway grade. UD-1 intercepts undisturbed runoff from approximately 10.29 acres. This will become a permanent diversion, and as shown on Plate 15 and on Table V-12, will be capable of carrying runoff from a 100 year-6 hour event from this area. Andalex Resources, Inc. will maintain this diversion at the minimum cross-sectional area shown on Figure V-1.

It was previously proposed to extend UD-1 some 650 feet up the canyon to intercept the majority of the drainage, but during construction, it was determined not feasible due to topography, slope requirements and environmental destruction. The diversion has been pulled back to its original location, and the construction disturbance is being reclaimed.

Upper Diversion - The farthest reach of the previous UD-1 extension intercepted a small natural drainage coming off the rim of the small canyon. To re-establish the drainage pattern, a berm will be constructed as recommended by the Division. The berm will be 4 feet high with a top width of 2 feet, 2:1 side slopes, and will utilize existing available riprap material on the upstream face. In addition, Andalex will commit to the use of additional erosion control measures approved by the Division if erosion becomes apparent on the upstream face of the berm. Details of the berm design are shown on Figure IV-1A. Upon completion of the berm, any areas disturbed by the construction

will be regraded and seeded according to the approved plan.

Lower Diversion - The mid-section of the previous UD-1 extension also blocked a natural drainage ditch. To re-establish the natural drainage pattern, the channel will be reconstructed through the blocked drainage ditch, as recommended by the Division. The channel will be 2 feet deep, 2 feet wide and will have side slopes of 2:1. Details of this channel design are shown on Figure IV-1B. Upon completion of the channel construction, any disturbance will be regraded, and the area will be reseeded according to the approved plan in the MRP.

BY D. Guy DATE 5/1/88 SUBJECT Undisturbed Diversion UD-1 SHEET NO. ..... OF .....

CHKD. BY ..... DATE ..... JOB NO. .....

Scale: 1" = 1'

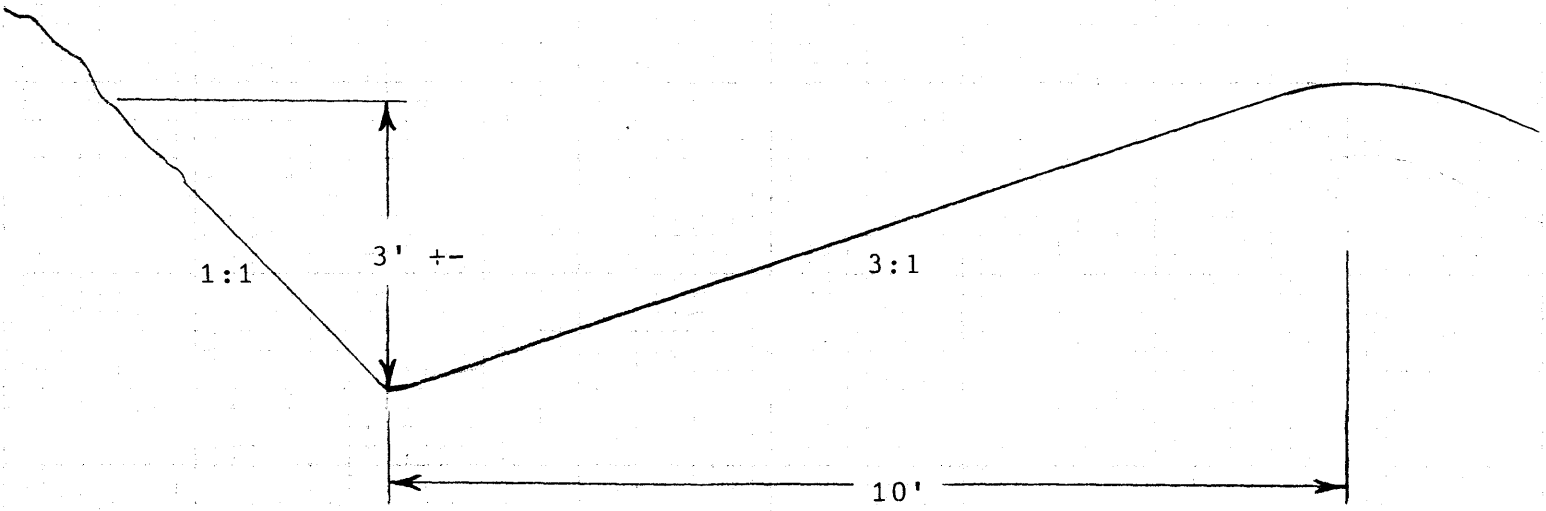


Figure V-1

Undisturbed Diversion UD-1

Note: (1) Shape or configuration on diversion may vary; however, a minimum cross-sectional area of 4 ft^2 will be maintained.

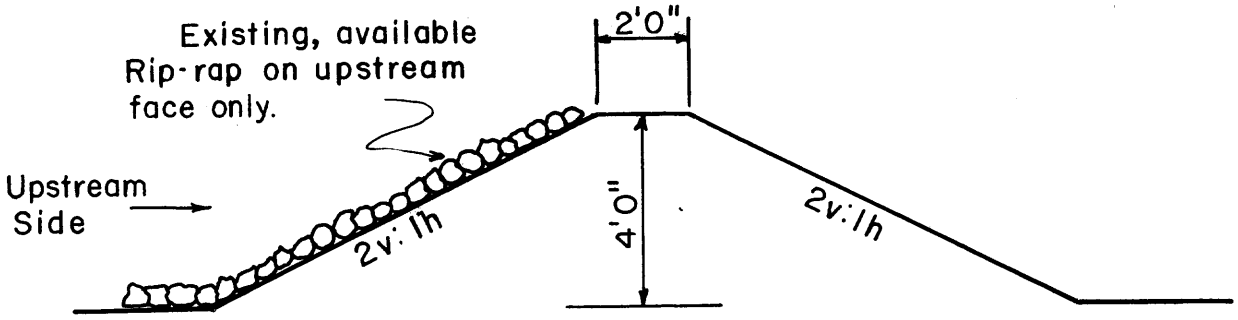
(2) Since the existing design is capable of carrying the 100 year - 6 hour event (and 100 year - 24 hour event) from the drainage area, the minimum cross- sectional area of UD-1 will also be maintained at 4 ft^2.

REGISTERED PROFESSIONAL ENGINEER
No. 4548
DAN W. GUY
7/12/90
STATE OF UTAH

Figure V-1A

Berm Details for Upper Diversion

Natural Drainage on furthest reach of previous UD-1 Extension
Scale: 1"= 4'0"



NOTE
Additional erosion control measures, approved by the Division, will be taken if erosion becomes apparent on the upstream face of the berm.

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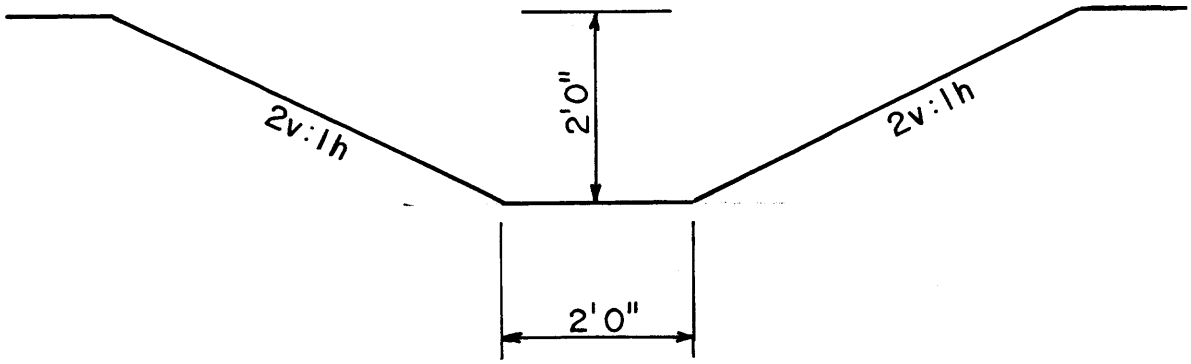
STATE OF UTAH

Figure V-1B

Channel Details for Lower Diversion

Natural Drainage in mid-section of previous UD-1 Extension

Scale: 1"= 2'0"



NOTE

Channel is constructed in existing material.

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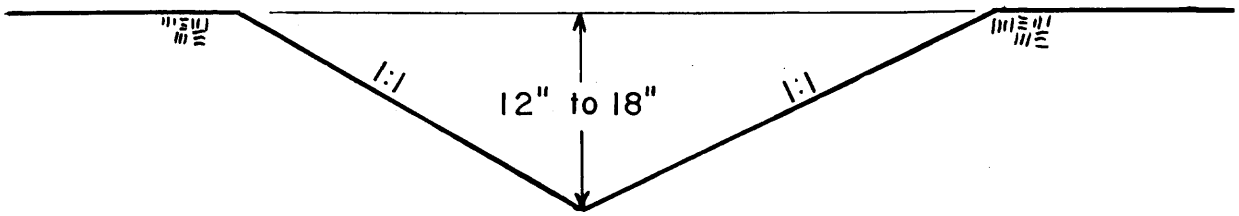
7-10-90

Figure V-1C

Disturbed Flow Ditch
Typical Section



Note: Ditch shape or configeration may vary; however minimum cross-sectional areas will be maintained for each according to Table IV - 13.

It is proposed to leave UD-1 as a permanent diversion for the following reasons:

1. The diversion has been in place for more than five years without any sign of failure or overflow;

2. The diversion was installed by others and is necessitated by the height of the Utah Railway grade to the east;

3. The original drainage, if restored, would drain into a large depression carved out for previous coal storage;

4. To restore the original channel would require a massive amount of non-available fill material, the installation of a large culvert beneath the Utah Railway, and a restored channel through the middle of the reclaimed loadout area;

5. The proposed, post-mining diversion is adequately sized to convey the runoff from a 100 year - 6 hour and even a 100 year - 24 hour precipitation event.

Permanent Impoundment - The permanent impoundment shown on Plate 2 is a 2-celled structure that catches most of the main canyon drainage from the west. The upper cell is a vegetated basin constructed by a previous owner. Upon surveying the upper cell, it was determined to be inadequate to contain runoff from a 100 year - 6 hour event for the area; therefore, a second, lower cell was constructed in the fall of 1991. The structures were resurveyed after completion, and now have adequate capacity (0.96 acre feet) to fully contain the runoff from a 100 year - 6 hour event (0.81 acre feet).

The upper cell is fitted with two 18" cmp overflows, one for primary overflow and one for emergency overflow. These culverts pass beneath the road between the cells and discharge into the lower cell via erosion - protected channels. The lower cell is equipped with an adequately sized open-notch overflow, protected by rip-rap. This overflow is for emergency purposes only, and will be used only for discharge of runoff beyond the design event (100 year - 6 hour). Details of the "As-Constructed" Permanent Impoundment are shown on Plate 18. Volume calculations and requirements are summarized on Tables V-7A and V-7B.

Upon final reclamation of the area, the two 18" cmp culverts between cells will be replaced by an open-notch overflow of the same size and design of that existing in the lower cell. The area will be reseeded according to the approved methodology and specifications in the MRP. The 2-celled pond will then be left

inplace as a permanent feature and allowed to go through natural succession. The upper cell of the impoundment has been inplace since approximately 1971, and has never overflowed or breached since that time. The lower cell will simply add to that level of protection. Leaving the impoundment inplace will provide for wildlife enhancement as well as runoff protection, through the establishment of a permanent waterhole to capture runoff.

The permanent impoundment will meet the requirements of R645-301-552.200 to allow authorization by the Division, based on the following:

1. The quality of the water will be suitable for wildlife watering, since it will contain only natural runoff;

2. The level of water will vary directly with runoff events, evaporation, and usage;

3. The impoundment will be in an area of controlled public access; however, the area will not be restricted to wildlife use;

4. No diminution of water quality or quantity is expected from this impoundment - it will be strictly runoff water, which has been captured in this impoundment for many years prior to the filing of this permit;

5. The impoundment does not meet the criteria or size of MSHA 30 CFR 77.216 (a);

6. The size of the impoundment is adequate for wildlife watering;

7. The impoundment has been, and will continue to be, suitable for the post-mining land use, which is wildlife watering;

8. Perimeter slopes are stable and do not exceed 2v:1h. Slopes are vegetated, as is the inlet area for erosion protection;

9. The impoundment is mostly incised, and does not have outlet structures; however, no discharge is expected since the pond is well oversized for a 100 year - 6 hour event (See Table V-7A).

10. The impoundment shall be maintained as necessary during the mining operation;

11. The impoundment design and construction is certified by

a registered, professional engineer.

ND-1 - Undisturbed runoff from the north and east is diverted through an existing drainage south of the main Gordon Creek Road. This is also a pre-existing drainage; however, this drainage is considered "natural", having been in existance for more than 20 years. The drainage shows signs of active erosion, typical of other natural drainages in this area; however, the source of the erosive flows is completely out of the area disturbed by the Wildcat Loadout. The drainage is ephemeral and flows southeast into the Garley Canyon Drainage (which shows similar signs of erosion from natural forces). This drainage is shown on Plate 2 as ND-2 (Natural Drainage 2). There are no plans to disturb, maintain, or reclaim these drainages in connection with this operation. The drainage ND-1 does pass through a culvert beneath the haul road. This culvert will be maintained and removed during reclamation, and the culvert area restored to natural conditions.

Upon final reclamation (Phase II) culverts C-33 and C-34 will be removed, and the drainage channels restored. Since both culverts are on undisturbed or natural drainage channels, it is proposed to establish a compatible channel dimension at the time of reclamation, since the channels will likely change in the interim. At the initiation of Phase I Reclamation, a typical cross section of the undisturbed diversion (UD-2) and natural channel (ND-1) will be established for 100' above and below the culverts. The restored channels will then be constructed (during Phase II) using the average dimension and area of the cross-sections as a minimum. Peak flows and velocities for the reconstructed drainages shall be those from Table IV-9A for culverts C-33 and C-34. The velocities indicate the expected flows to be marginally erosive; however, rip-rap protection will be provided through the area of reconstruction as described on Table V-14.

UD-2 - Drainage from the Beaver Creek property to the west is collected in a ditch on their property, conveyed to the north and then west beneath their access road and the railroad. This drainage then goes through access road culvert C-33 and into the natural drainage ND-1, as shown on Plate 2. This drainage is from areas outside the control of Andalex, and is therefore considered undisturbed; however, Andalex will maintain culvert C-33 to ensure proper operation and protection of its access road. Beaver Creek has reconstructed the ditch and culverts on its property, and is expected to be responsible for maintenance of those structures.

Undisturbed Diversion UD-2 will convey drainage from a portion of Small Area Exemption 1 as shown on Plate 2. This drainage is

also from a portion of the Beaver Creek property which is unused and to which Beaver Creek has granted Andalex the right of use (see letter of agreement in Appendix B). This area drains approximately 2.30 acres through three culverts and also empties into access road culvert C-33 and to ND-1. Andalex has included this diversion within its permit boundary and agrees to maintain the culverts C-30, C-31, C-32 (and C-33), along with the diversion to provide for design flows as shown on Tables V-9A and V-12. Erosive protection will be provided for culvert C-33 as per specifications in Table V-14. Unless the B.L.M. and Utah Railway prefer a different scenario, the diversion will be left in place upon final reclamation.

The diversion will be maintained to the minimum cross-sectional area shown on Table V-12; however, shape and configuration may vary due to maintenance, regrading, etc.

UD-3 through UD-7 - The undisturbed diversions UD-3 through UD-7 are shown on Plate 2. These "diversions" are primarily natural drainage areas into which the various sediment ponds would discharge. The diversions are out of the area of operation and disturbance; however, since they may convey drainage from the site, they are considered diversions to the permit boundary.

There are no plans to disturb these diversions; however, Andalex will maintain the diversions to the extent necessary to assure they have required minimum flow areas and to prevent erosion. The diversions will be restored if necessary during final reclamation, when the sediment ponds are removed. The diversions may vary in size, depth, and configuration; however, they will be maintained to the minimum cross-sectional areas shown on Table V-12.

Diversions UD-3 and UD-4 have potentially erosive velocities as shown on Table V-12; therefore, these diversions will be fitted with rip-rap erosion protection according to the specifications on Table V-14.

Rip-rap size is based on velocities in Table V-12 and the rip-rap chart in Figure V-4. See Figure V-2A for typical section.

UD-8 - Undisturbed diversion UD-8 as shown on Plate 2 is a small diversion to carry natural runoff from the hillside to the northwest into the depression area. This diversion will be maintained to the minimum cross-sectional area shown on Table V-12. The depression area does not drain; however, it is more than adequate in size to contain runoff from this diversion and drainage area.

Culverts

There are 20 culverts located on the Wildcat Loadout Facility for drainage control. In addition, each pond uses culverts for principal spillways and two for emergency spillways. All culverts are shown on Plate 2; each is listed by number designation and size. The culverts, along with flow characteristics and sizing requirements, are summarized on the following tables, V-8 and V-9 Culvert Specifications. All culverts within a given drainage area are sized in accordance with the maximum peak flow calculated for that area. In addition, culverts noted for pond outlets are sized for peak flows from the respective drainage areas.

Culvert flow capabilities are based on the "Culvert Nomograph", Figure V-2.

Erosion protection requirements are discussed on Tables V-8 and V-9 and in this section under "Erosion Protection".

TABLE V-8

Drainage Culvert Specifications

Culvert	Size (in.)	Drainage Area	Design Flow (cfs)	[1]Capacity Flow (cfs)	[2]Velocity (fps)	[5]Erosion Protec. (y/n)
C1	18	E	4.66	9.00	3.12	N
C2	24	E	4.66	18.00	1.76	N
C3	24	C	5.64	18.00	1.80	[3]Y
C4	24	C	5.64	18.00	3.59	N
C4A	24	C	5.64	18.00	3.59	N
C4B	24	C	11.27	18.00	3.59	N
C5	12	C	2.82	3.20	3.59	N
C5A	12	C	2.82	3.20	3.59	N
C6	15	C	5.64	5.50	4.59	[3]Y(cmp)
C7	15	A	2.75	5.50	2.36	[3]Y(rock)
C7A	12	A	2.75	3.20	3.50	N
C8	12	A	2.75	3.20	3.50	N
C9A	15	A	4.43	5.50	3.80	N(belt)
C10	12	B	3.22	3.20	4.10	N
C11	18	C	7.51	9.00	4.24	N
C12	18	E	4.66	9.00	2.63	N
C24	15	E	4.66	5.50	3.79	N
C25	15	E	4.66	5.50	3.79	N
C26	12	E	2.33	3.20	2.97	N
C27	12	A	2.75	3.20	3.50	N

[1]Based on a minimum of H/D = 1.5 (See Figure V-2)
[2]Velocity based on Q = AV
Culverts on 3% Slope (minimum)
[3]Rip-rap protection provided or required
[5]Erosion protection may prove to be required at any or all locations. Outfalls will be checked for erosion and protection provided as needed. A "Y" on Erosion Protection means protection will be provided "as necessary", to be determined by field inspections.

TABLE V-8 (con't)

Additional Notes

[6]Flow in culvert C-4b is controlled by inlet conditions. The culvert is 400 feet long, and will be fitted with a trash rack at the inlet. The rack will consist of a steel frame 30" x 30" with 3/4" rebar (or steel rods) welded vertically on 4" centers.

TABLE V-9

Pond Culvert Specifications

Culvert	Size (in.)	Pond	Design Flow (cfs)	[1]Capacity Flow (cfs)	[2]Velocity (fps)	[3]Erosion Protection (y/n)
C13	18	A	6.96	11.00	3.94	Y
C14	12	B	2.93	4.00	2.59	Y
C15	18	C	15.31	11.33	8.66	Y
C16	18	C	19.29	22.00	10.92	Y
C17	18	D	6.45	11.00	3.65	Y
C18	18	D	8.04	22.00	4.55	Y
C19	18	E	6.50	11.00	3.68	Y
C20	18	F	6.26	[4]6.30	7.47	Y

[1]Based on headwater depth H/D = 2.0 (See Figure IV-2)

[2]Based on V = Q/A
Culverts on 3% Slope (minimum)

[3]Y on Erosion Protection means protection will be provided "as necessary", to be determined by field inspections.

[4]Based on H/D=4.0; adequate headwater depth available.

TABLE V-9A

Access Road and UD-2 Culverts

Culvert	Size (in.)	Drainage	Design Flow (cfs)	**** Capacity Flow (cfs)	***Velocity (fps)	Erosion Prot. (y/n)
C-30	15	UD-2	0.67	5.51	3.49	N
C-31	12	UD-2	0.67	3.20	0.85	N
C-32	24	UD-2	0.67	18.00	0.21	N
C-32A	12	UD-2	0.67	3.20	0.85	N
* C-33	24	UD-2	8.76	18.00	6.95	Y
**C-34	36	ND-1	32.39	48.50	4.58	N

* Access Road Culvert - Includes drainage from UD-2 and 44.5 acres from Beaver Creek Property.

** Access (Haul) Road Culvert - Runoff area planimetered from Plate 15.

*** Based on V = Q/A

**** 1.5 foot minimum headwall

NOTE: Y on Erosion Protection means protection will be provided "as necessary", to be determined by field inspections.

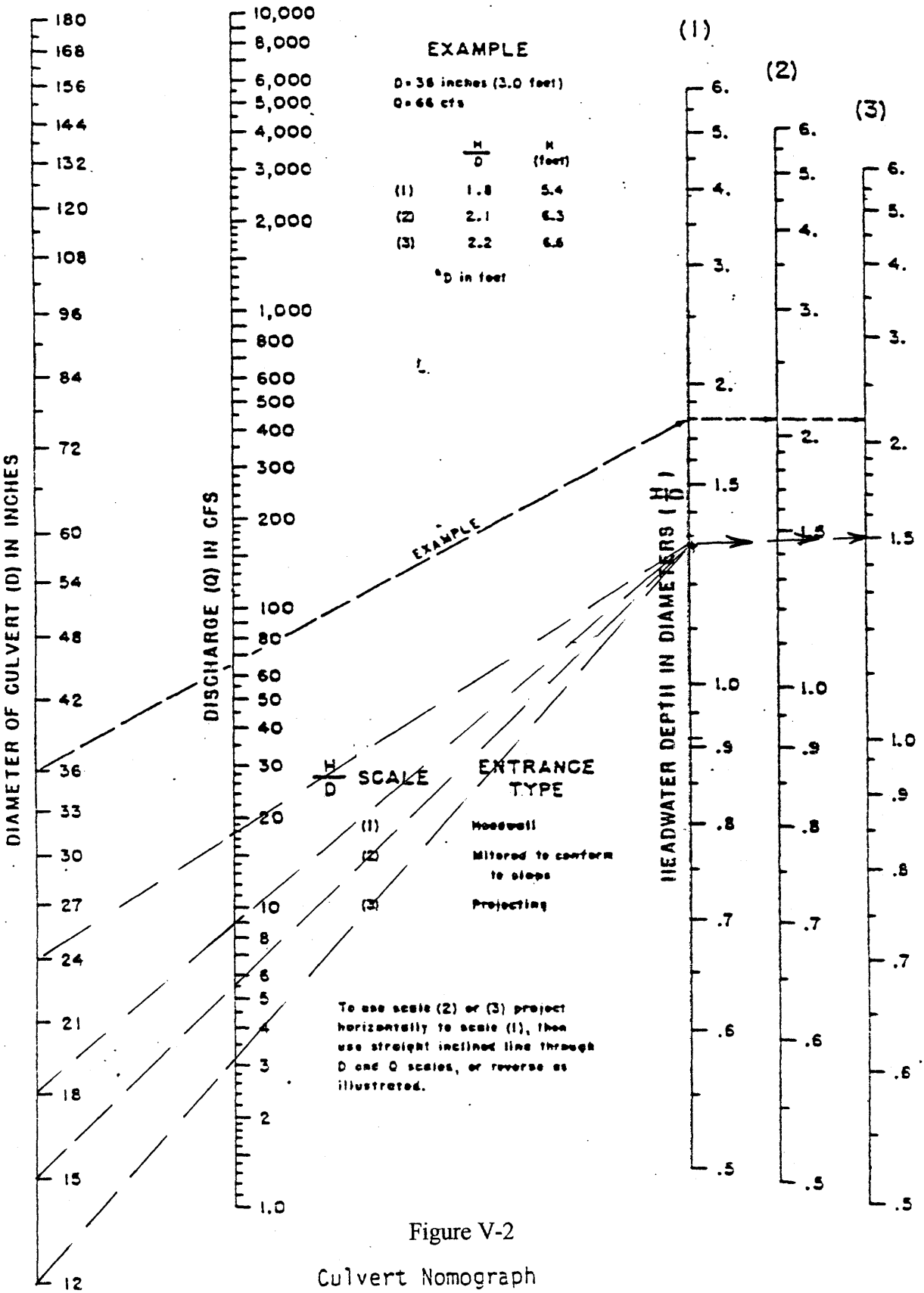
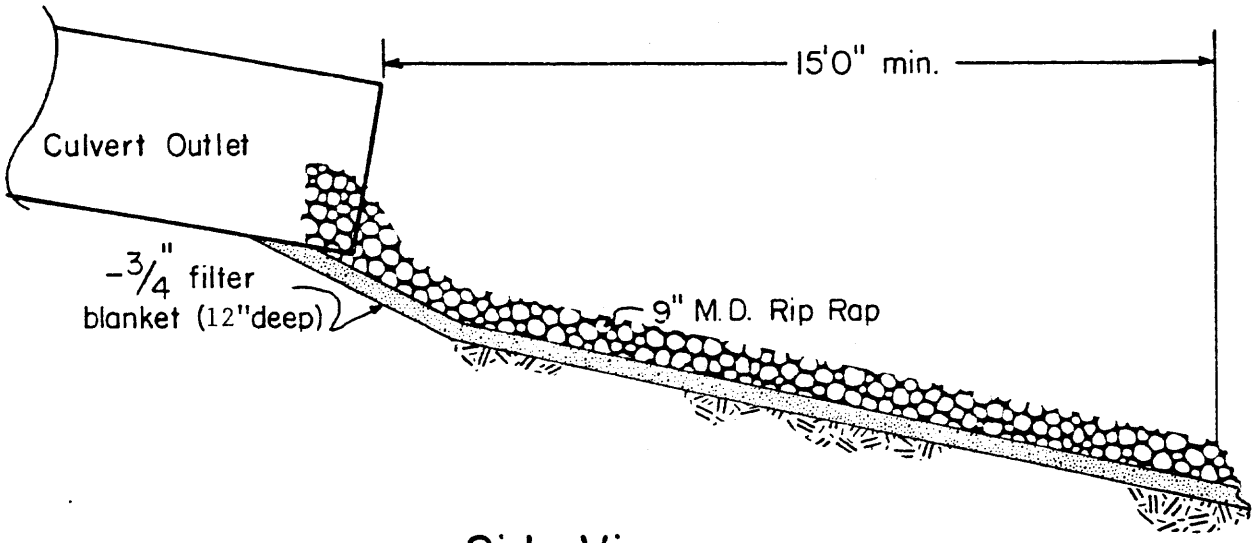


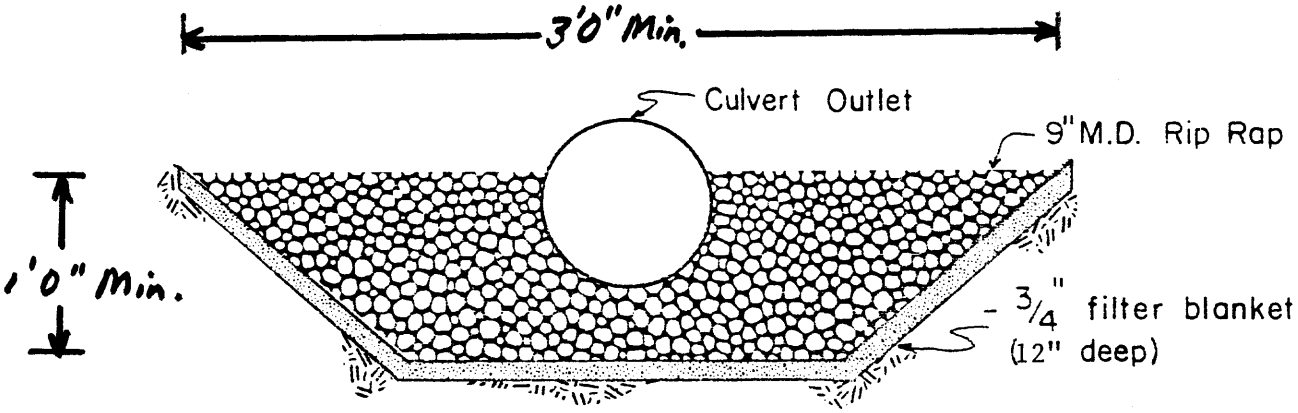
Figure V-2

Culvert Nomograph

Headwater depth for corrugated-metal pipe culvert with entrance control. (U.S. Bureau of Public Roads.) 28-D-2909.



Side View



Front View

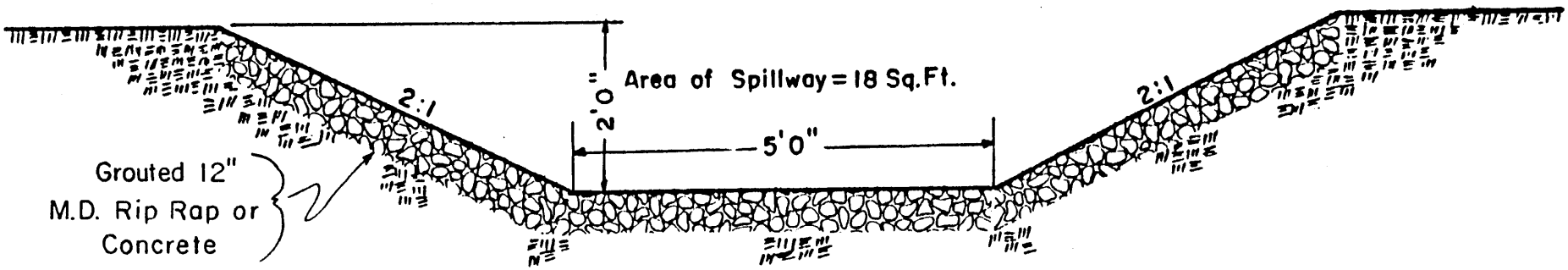
Figure V-2A

Sediment Pond Outlet Protection

ANDALEX RESOURCES, INC.

Price, Utah

WILDCAT LOADOUT FACILITY



Typical Section of Emergency Spillways

Scale: 1" = 2'0"

Date: 8-20-81

Figure V-2B

Disturbed Flow Ditches

Disturbed area runoff is diverted to the ponds through a series of ditches and culverts as shown on Plate 2. The disturbed flow ditches are designated as D-1, D-2, ..., and the culverts are noted as C1, C2, ... The disturbed flow ditches will vary in depth and configuration; however, all ditches will be maintained at the minimum cross-sectional area shown on Table V-13, "Disturbed Flow Ditch Summary". A typical section of the Disturbed Flow Ditches is shown in Figure V-1C. As shown on Table V-13, most velocities are expected to be less than 5 fps, with the majority less than 4 fps. These velocities are considered moderately erosive, and as a result, erosion protection may prove to be necessary. Andalex will continue to observe potential erosion locations throughout the life of the loadout. Where erosion has become evident as demonstrated by observation, energy dissipators have been installed and erosion protection has been installed to reduce flow velocities, as discussed under Section 5 "Erosion Control" below.

To date energy dissipators have consisted of straw bales, spaced adequately to help control the erosion. More permanent energy dissipators are not proposed for the disturbed area ditches, due to the frequency of cleaning and regrading ditches.

Disturbed area diversions are designed, constructed, and maintained to prevent additional contributions of suspended solids to streamflow and to runoff outside the permit area. Appropriate gradients and energy dissipators as required, will be used to control sediment contributions. All diversions will be maintained with a minimum freeboard of at least 0.3 feet. Excess or cleaned material shall be disposed of in an approved refuse disposal area with material cleaned from the sediment ponds.

It should be noted that the junction of drainages to Ponds A, B, and C, shown on Plate 2, represent the "worst case" scenario for drainages to these points from this area. This is a coal pad area, and is in a constant state of change - as a result, drainage patterns within the pad are subject to frequent change. Temporary ditches, such as the one recently placed in the Pond B drainage, may be placed to direct runoff over the short-term; however, such ditches are only temporary and are likely to be changed or eliminated with changes in the pile.

One ditch, designated D-17, is located adjacent to the waste coal area, and will carry the runoff from this area to Pond F. Under the new regulations, this ditch must be sized to carry runoff from a 100 year - 6 hour event; therefore, the calculations on Table V-13 reflect the 100 year - 6 hour design for this ditch only. The calculated runoff is based on a 100 year - 6 year

event of 1.91", a CN of 90 and an area of 1.47 acres for the refuse/waste coal area.

All ditches are shown on Plate 2.

Erosion Control

The majority of calculated velocities of culverts and ditches fall between 3 and 5 fps. Although it has been common practice to consider flows less than 5 fps as non-erosive, the Division has recommended that 3 fps be used on this site as the limit for non-erosive flow. Andalex will therefore commit to the following:

Constant observation of all ditches and in particular those which may have an erosive flow will be made periodically as well as following precipitation events to determine whether excessive erosion has occurred. Those ditches which may have an erosive flow according to the calculations are noted below:

Ditch D-3	Near Pond D Inlet
Ditch D-7	Near Pond C Inlet
Ditch D-9	Mid-Point
Ditch D-11	Upper Portion of Ditch
Ditch D-13	Mid-Point
Ditch D-14	Mid-Point
Ditch D-17	Upper Portion of Ditch

Observations of these ditches were made periodically and following precipitation events. It was determined that erosion was going to be a constant problem in many of these ditches due to the nature of the soil material at Wildcat. Therefore, where erosion was consistently observed, the ditches were lined either with conveyor belt or half-round culvert. The following specific actions were taken after these observations were made. Diversion D-3 has shown erosion at the sedimentation pond inlet and therefore 24" half round culvert has been installed. Diversion D-7 has also shown erosion at the Sediment Pond C inlet and therefore 24" half round culvert has been installed. Erosion has not been noted in Diversion D-9; in fact, Diversion D-9 has to be regularly cleaned out. Similarly Diversion D-11 must be periodically cleaned; erosion has not been observed. Erosion has also not been observed in Diversion D-13 except at the inlet to Sediment Pond A where the inlet culverts now spill onto conveyor belting. Diversion D-14 is also periodically cleaned; erosion has not been noted. The same note may be made on D-14 regarding the Sediment Pond A inlet. Diversion D-17 is periodically cleaned; the erosion which was noted is at the inlet to Sediment Pond F where 24" half round culvert has been installed. Plate 2 reflects all of these installations. It should also be noted

that in addition to those ditches mentioned above, all pond inlets are equipped with erosion control. Also, Diversion D-1 has been lined entirely with 24" half round culvert. Diversion UD-1 near SAE 4 is equipped with 24" half round on one particularly steep slope. None of the other diversions have erosion problems but are cleaned periodically.

In addition, erosion protection is already in place at various culvert outlets and on disturbed ditch D-1 (see Plate 2). Rip-rap protection and specifications are summarized in Table V-14.

Erosion protection on diversions may consist of the following:

1. Rip-rap
   a. Installed per Table V-14.

2. Half-round culverts or full culverts. (See Plate 2)

3. Velocity Controls
   a. Straw Bales

4. Revegetation

5. Other proven or approved structures.
   a. Upon consultation with the Division.

Erosion protection is also provided at all pond emergency spillways as shown in Figure V-2B.

Inlets on Pond F (Plate 7) are equipped with conveyor belting below the half round culverts to aid in erosion protection.

The main form of erosion control used on the property in addition to half round culvert is revegetation. All topsoil piles, sediment pond embankments, and other disturbed areas no longer needed for the operation have been reseeded using an interim seed mix for this site.

Effects of Operation on Surface Water

Since this is a surface processing and loadout operation, no mining or extraction will be done at this site; therefore, the only effects from this operation on surface water would be from disturbed area runoff. The control plans described earlier in this chapter are designed to direct and control runoff and to prevent erosion as required by regulation. Adequate maintenance of these facilities will ensure proper operation and minimize effects on surface water.

Since the area on which the loadout facility is located was previously disturbed by another lessee, the implementation of approved drainage controls will likely have a positive effect on the quality of surface water within and below the permit area.

Mitigation and Control Plans

The permit area and adjacent area contain no renewable groundwater or surface water resources; therefore, water right protection or mitigation measures are not anticipated to be required at this operation. The sediment control structures are adequate to prevent impacts to the hydrologic regime. These structures will be maintained to function as designed for the life of the operation. Failure or malfunction of any of the control structures will be corrected as soon as practicable after discovery and any adverse impacts (erosion, structure damage, etc.) will be repaired as soon as practicable thereafter.

Water Monitoring Plans

Four surface water monitoring stations will be established as shown on Plate 15. Two of the stations will be located in undisturbed drainage above the site and two stations will be in the same drainages below the site. This configuration will show any affects of the operation on the drainage of the area.

Since this is a new permit and no baseline data has been gathered, the stations will be monitored according to the Baseline Criteria (parameters and frequency) listed in Table V-10, "Surface Water Baseline and Operational Water Quality Parameter List", for the first two years. After that time, the stations will be monitored according to the parameter and frequency requirements of the operational portion of Table V-10. Reclamation monitoring will also follow the requirements of the Postmining portion of Table V-11.

Water monitoring stations will be designated as WCW-1 through WCW-4 for surface monitoring points. In addition, each pond discharge will be monitored according to N.P.D.E.S. requirements. These station numbers will be designated WCW-A through WCW-F for Ponds A through F respectively (see Plates 2 and 15).

Monitoring results will be submitted to the Division quarterly, within sixty days following the end of the reporting quarter.

Samples will be collected during or shortly after precipitation events to establish baseline parameters.

Baseline monitoring will consist of eight samples analyzed for the baseline chemical parameters on Table IV-10 (four per annum,

collected quarterly during precipitation events). A rain gauge will also be installed at the site, and a log of precipitation events will be maintained on site.

TABLE V-10

Surface Water Baseline and Operational
Water Quality Parameter List

Field Measurements:

* - Water Levels or Flow
* - pH
* - Specific Conductivity (umhos/cm)
* - Temperature (C°)

Laboratory Measurements: (mg/1)IONS AND METALS ANALYSES ARE DISSOLVED, EXCEPT AS NOTED

* - Total Settleable Solids
* - Total Suspended Solids
* - Total Dissolved Solids
* - Total Hardness (as $CaCO_3$)
* - Acidity
- Aluminum (Al)
- Arsenic (As)
- Barium (Ba)
- Boron (B)
* - Carbonate (CO_3^{-2})
* - Bicarbonate ($HCO_3^{-)}$
- Cadmium (Cd)
* - Calcium (Ca)
* - Chloride ($Cl^{-)}$
- Chromium (Cr)
- Copper (Cu)
- Fluoride ($F^{-)}$
* - Iron (FE) (TOTAL)
* - Iron (Fe) (DISSOLVED)
- Lead (Pb)
* - Magnesium (Mg)
* - Manganese (Mn) (Total)
* - MANGANESE (MN) (Dissolved)
- Mercury (Hg)
- Molybdenum (Mo)
- Nickel (Ni)
- Nitrogen: Ammonia (NH_3)
- Nitrate ($NO_3^{-)}$
- Nitrite (NO_2)
* - Potassium (K)
- Phosphate (PO_4^{-3})
- Selenium (Se)
* - Sodium (Na)
* - Sulfate (SO_4^{-2})
- Sulfide ($S^{-)}$

	-	Zinc (Zn)
*	-	Oil and Grease
*	-	Cation-Anion Balance

-Baseline *Operational

TABLE V-11

Surface Water Sampling

	Baseline	Operational	Postmining
Type of Sampling Site	Surface Water Bodies	Surface Water Bodies	Surface Water Bodies
Field Measurements (See Table V-10)	Performed during water level/flow measurements	Performed during water level/flow measurements	Performed during water level/flow measurements
Sample Frequency	Quarterly for lakes, reservoirs, and impoundments (water level and quality); monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams determined at predesign conference.	Quarterly for lakes, reservoirs, and impoundments (water level and quality); monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams determined at predesign conference.	Two per annum for perennial streams (high & low flow); two per annum during snowmelt and rainfall for intermittent streams.

TABLE V-11 (con't)

Surface Water Sampling

	Baseline	Operational	Postmining
Sampling Duration	Two years (one complete year of data before submission of PAP.	Yearly until two years after surface reclamation activities have ceased.	Until termination of bonding.
Type of Data Collected & Reported	Flow and/or water levels and water quality.	Flow and/or water levels and water quality.	Flow and/or water levels and water quality per operational parameters.
Comments	All field measurements should be performed concurrently with water level/flow measurements.	All field measurements should be performed concurrently with water level/flow measurements.	All field measurements should be performed concurrently with water level/flow measurements.
Comments		For every fifth year preceding re-permitting, one sample at low flow and and high flow each should be taken for base-line water quality parameters.	

TABLE V-12

Undisturbed Diversion Summary

Structure	UD-1 (Overall)	**UD-1 (Near Pond F)	UD-2	*UD-3	*UD-4
Drainage Area (ac.)	10.29	10.29	2.30	6.61	18.03
10 yr.-24 hr. event (in.)	1.85	1.85	1.85	1.85	1.85
25 yr.-24 hr. event (in.)	2.15	2.15	2.15	2.15	2.15
100 yr.-24 hr. event (in.)	2.75	2.75	2.75	2.75	2.75
Time of Conc. (hrs.)	0.10	0.10	0.13	-	-
Curve Number	65	65	65	-	-
Manning's Number	.025	.032	.025	.025	.025
Ditch Slope (%)	4.00	7.00	6.67	13.85	12.86
Peak Flow/10 (cfs)	1.45	1.45	0.67	10.33	22.54
Peak Flow/25 (cfs)	3.05	3.05	1.00	12.84	28.02
Peak Flow/100 (cfs)	6.43	6.43	1.83	N/A	N/A
Min. Str. Area ($ft.^2$)	4.00	4.00	1.00	2.00	3.75
Req'd Area/10 ($ft.^2$)	0.37	0.19	0.16	0.94	1.71
Req'd Area/25 ($ft.^2$)	0.65	0.63	0.21	1.10	2.02
Req'd Area/100 ($ft.^2$)	1.13	1.10	0.34	N/A	N/A
Velocity (fps)	3.92	4.02	4.24	11.04	13.15
Hydraulic Length (ft.)	1600	-	400	N/A	N/A
Elev. Diff. (ft.)	64	-	16	N/A	N/A
Channel Bottom Width (ft.)	0.10	0.10	0.10	0.10	1.00
Channel Top Width (ft.)	6.00	6.00	2.00	3.00	4.00
Channel Depth (ft.)	1.50	1.50	1.00	1.50	1.50
Flow Depth/10 (ft.)	0.41	0.40	0.35	0.59	0.90
Flow Depth/25 (ft.)	0.54	0.54	0.41	0.66	1.01
Flow Depth/100 (ft.)	0.73	0.72	0.53	N/A	N/A

* Ditches conveying sediment pond outflow to natural drainage.

** Erosion-controlled portion of diversion - may be fitted with rip-rap or 1/2 - round, 24" cmp culvert.

TABLE V-12 (con't)

Undisturbed Diversion Summary

Structure	*UD-5	*UD-6	*UD-7	UD-8
Drainage Area (ac.)	2.29	7.85	7.50	13.79
10 yr.-24 hr. event (in.)	1.85	1.85	1.85	1.85
25 yr.-24 hr. event (in.)	2.15	2.15	2.15	2.15
100 yr.-24 hr. event (in.)	2.75	2.75	2.75	2.75
Time of Conc. (hrs.)	-	-	-	0.10
Curve Number	-	-	-	65
Manning's Number	.025	.025	.025	.025
Ditch Slope (%)	6.67	10.00	11.25	2.00
Peak Flow/10 (cfs)	3.22	11.03	8.79	4.31
Peak Flow/25 (cfs)	4.00	13.71	10.93	6.46
Peak Flow/100 (cfs)	N/A	N/A	N/A	N/A
Min. Str. Area (ft.^{2})	2.00	2.00	2.00	2.00
Req'd Area/10 (ft.^{2})	0.52	1.11	0.90	1.00
Req'd Area/25 (ft.^{2})	0.61	1.30	1.05	1.35
Req'd Area/100 (ft.^{2})	N/A	N/A	N/A	N/A
Velocity (fps)	6.15	10.54	9.80	4.30
Hydraulic Length (ft.)	N/A	N/A	N/A	300
Elev. Diff. (ft.)	N/A	N/A	N/A	80
Channel Bottom Width (ft.)	1.00	1.00	1.00	1.00
Channel Top Width (ft.)	3.00	3.00	3.00	3.00
Channel Depth (ft.)	1.00	1.00	1.00	1.00
Flow Depth/10 (ft.)	0.38	0.66	0.57	0.62
Flow Depth/25 (ft.)	0.43	0.75	0.64	0.77
Flow Depth/100 (ft.)	N/A	N/A	N/A	N/A

* Ditches conveying sediment pond outflow to natural drainage.

TABLE V-13

Disturbed Flow Ditch Summary

Ditch	Min. X-Sect. Area (ft.^{2})	Drainage Area	Design Flow (cfs)	Slope (%)	Velocity (fps)
D-1a	1.00	E	2.33	3.33	4.44
D-1b	1.00	E	2.33	2.50	3.99
D-1c	1.96	E	4.66	2.54	4.76
D-1d	1.00	E	2.33	3.75	4.64
D-1	1.96	E	4.66	5.20	6.23
D-2	1.96	E	4.66	3.33	5.27
D-3	1.96	D	5.16	4.00	5.79
D-4a	1.96	C	5.64	2.80	5.18
D-4	1.96	C	5.64	8.00	7.68
D-5a	1.96	C	2.82	2.00	3.84
D-5b	1.96	C	2.82	2.00	3.84
D-5	1.96	C	5.64	4.55	6.21
D-6	1.69	C	2.82	2.67	4.28
D-7	1.00	C	2.82	5.33	5.56
D-8	1.00	C	2.82	3.66	4.82
D-9	1.96	C	5.64	2.85	5.21
D-10a	1.00	A	1.87	2.00	3.47
D-10	1.69	A	1.87	1.00	2.67
D-11a	1.00	A	1.87	2.00	3.47
D-11	1.00	A	1.87	6.67	5.46
D-12	1.96	A	2.75	1.67	3.57
D-13	2.16	A	4.43	2.62	4.72
D-15	1.69	B	3.22	3.57	4.94
D-16	1.00	B	1.61	3.00	3.90
D-17a	1.00	F	2.20	3.28	4.35
D-17	1.96	F	4.40	2.50	4.66
D-18	1.96	F	4.40	2.45	4.63
D-15T*	1.69	B	3.22	3.57	4.94

Note: (1) Velocities are based on Manning's Formula:

$$V = \frac{1.49\ R^{2/3}\ S^{1/2}}{n};\ \text{where}$$

$n = 0.025$, s = slope ft./ft.

(2) Erosion protection may prove necessary for any or all ditches. Erosion will be monitored and protection provided as necessary.

(3) See Figure IV-1C for typical ditch section.

* Temporary Ditch

TABLE V-13 (Con't)
Undisturbed Flow Ditch Summary

Ditch	Bottom Width (ft.)	Top Width (ft.)	Channel Depth (ft.)	Flow Depth (ft.)	Erosion Protection Y/N
D-1a	0.10	2.00	1.00	0.68	Y
D-1b	0.10	2.00	1.00	0.72	N
D-1c	0.10	2.80	1.40	0.94	Y
D-1d	0.10	2.00	1.00	0.66	Y
D-1	0.10	2.80	1.40	0.82	Y
D-2	0.10	2.80	1.40	0.89	Y
D-3	0.10	2.80	1.40	0.90	Y
D-4a	0.10	2.80	1.40	0.99	Y
D-4	0.10	2.80	1.40	0.81	Y
D-5a	0.10	2.80	1.40	0.81	N
D-5b	0.10	2.80	1.40	0.81	N
D-5	0.10	2.80	1.40	0.90	Y
D-6	0.10	2.60	1.30	0.76	Y
D-7	0.10	2.00	1.00	0.66	Y
D-8	0.10	2.00	1.00	0.72	Y
D-9	0.10	2.80	1.40	0.99	Y
D-10a	0.10	2.00	1.00	0.69	N
D-10	0.10	2.60	1.30	0.79	N
D-11a	0.10	2.00	1.00	0.69	N
D-11	0.10	2.00	1.00	0.54	Y
D-12	0.10	2.80	1.40	0.83	N
D-13	0.10	3.00	1.50	1.00	Y
D-14	0.10	2.80	1.40	0.93	Y
D-15	0.10	2.60	1.30	0.76	Y
D-16	0.10	2.00	1.00	0.59	N
D-17a	0.10	2.00	1.00	0.66	Y
D-17	0.10	2.80	1.40	0.92	Y
D-18	0.10	2.80	1.40	0.93	Y
D-15T	0.10	2.60	1.30	0.76	N/A

TABLE V-13A

Post-Mining Ditch Summary

Ditch	Min. X-Sect. Area (ft.^{2})	Drainage Area	Design Flow (cfs)	Capacity Flow (cfs)	Slope (%)	[3]Vel. (fps)	Erosion Prot. (y/n)
RD-1	4.00	D	9.42	30.24	6.67	7.56	Y
RD-2	4.00	D	9.42	20.92	3.20	5.23	Y
RD-3	4.00	[1]C	9.26	37.00	10.00	9.25	Y
RD-4	4.00	[2]C	18.52	37.00	10.00	9.25	Y
RD-5	4.00	[1]C	9.26	25.52	4.76	6.38	Y
RD-6	4.00	A	14.26	29.28	6.25	7.32	Y
RD-7	4.00	F	8.79	26.84	5.26	6.71	Y
RD-8	4.00	F	8.79	35.28	9.09	8.82	Y

Notes:

[1] 1/4 Drainage Area "C" Runoff

[2] 1/2 Drainage Area "C" Runoff

[3] Velocities based on Manning's Formula:

$$V = \frac{1.49\ R^{2/3}\ S^{1/2}}{n}\ ;\ \text{where}$$

n = 0.032 (Rip-rap), s = slope in ft./ft.

TABLE V-14

Rip-Rap Specifications

Structure	Rip-Rap Size (in.) D15	D50	D85	Minimum Depth (in.)	Filter Blanket Depth (in.) (-3/4" Gravel)
UD-1 (Berms)	3.75	9.00	14.50	13.5	13.5
UD-1 (New Pond F)	7.50	18.00	28.75	27.0	27.0
UD-2 (C-33)	2.50	6.00	9.50	9.0	9.0
ND-1 (C-34)	2.50	6.00	9.50	9.0	9.0
UD-3 (Outfall)	7.50	18.00	28.75	27.0	27.0
UD-4 (Outfall)	10.00	24.00	38.50	36.0	36.0
C-6	2.50	6.00	9.50	9.0	9.0
C-9B	2.50	6.00	9.50	9.0	9.0
C-13 thru C-20	3.75	9.00	14.50	13.5	13.5
*D-1C	2.50	6.00	9.50	9.0	9.0
**D-1	2.50	6.00	9.50	9.0	9.0
*D-3	2.50	6.00	9.50	9.0	9.0
*D-4a	2.50	6.00	9.50	9.0	9.0
*D-4	3.75	9.00	14.50	13.5	13.5
*D-5	2.50	6.00	9.50	9.0	9.0
*D-7	2.50	6.00	9.50	9.0	9.0
*D-9	2.50	6.00	9.50	9.0	9.0
*D-11	3.75	9.00	14.50	13.5	13.5
*D-13	2.50	6.00	9.50	9.0	9.0
*D-14	2.50	6.00	9.50	9.0	9.0
*D-17	2.50	6.00	9.50	9.0	9.0
*D-18	2.50	6.00	9.50	9.0	9.0
RD-1 Thru RD-8	5.00	12.00	19.25	18.0	18.0

* To be installed only if erosion is evident. Other erosion protection may also be provided, such as half-round culverts, belting, downspouts, etc.

** Conveyor Belting presently used.

Other Sediment Control - ASCA

All topsoil piles are equipped with berms and have been revegetated. Andalex will not allow any topsoil pile to report directly to a sedimentation pond. This would result in a loss of topsoil material. The areas around these topsoil piles have been graded and revegetated to prevent erosion. A straw dike has been placed downstream from Pond B to prevent waterborne coal fines from leaving the permit area. This dike will be maintained throughout the life of the project.

There are seven (7) small areas which do not drain to sedimentation ponds (alternate sediment control areas {ASCA}). These are designated ASCA and all are shown on Plate 2. The areas each have an alternate sediment control method, consisting of strawbales, berms, vegetation or a combination of each. The total ASCA for this site is 17.51 acres or 26.07% of the total disturbed area. Drainage from each of these areas will be monitored for compliance with State and Federal limitations, to the extent possible. This will be accomplished by attempting to collect samples (as available) from points of discharge below the strawbales or other sediment controls. Topsoil piles with earth berms, which are ASCA's, will also be designed so that water will not be impounded. That is, berms will be notched so that water can flow through the notch. The straw berm will be placed in the notch and will function as alternate sediment control. The topsoil piles have berms only so that topsoil in the piles will not be lost.

Strawbales are placed on the ground to prevent undercutting or routing of flows around the bales. Berms and bales are maintained on a regular basis and cleaned, repaired or changed out as needed. All control structures will be removed upon final reclamation of the site.

Table V-15 is a summary of each of the ASCA along with size, runoff volume and treatment methods.

TABLE V-15
ASCA

ASCA Area*	Area (Acres)	*Runoff Volume (ac. ft.)	Treatment Method
1	0.84	0.07	Vegetation
2	0.44	0.04	Vegetation
3	9.98	0.84	Straw Bales/Vegetation
4	3.42	0.29	Straw Bales/Vegetation
5	2.00	0.17	Straw Bales/Vegetation/Berm
6	0.57	0.05	Vegetation
7(F)	0.26	0.02	Vegetation/Berm
Totals	17.51	1.48	---

*Runoff Volumes are based on a 10 year - 24 hour event and a runoff CN of 90.

Post Mining Hydrology

Introduction

The purpose of this section is to describe the plan for control of the permit and adjacent area hydrology during and after reclamation until bond release.

Methodology

The plans herein described are based on requirements of the regulations and on proven, accepted reclamation techniques used in the Carbon-Emery area. The post-reclamation hydrology is designed to protect the reclaimed site from erosion, to protect the hydrologic regime from adverse impacts, and to meet requirements of DOGM and the landowner, BLM.

Reclamation Hydrology

Upon completion of operations, all structures will be removed and the area will be recontoured as shown on Plate 8. All culverts and unnecessary ditches and ponds will be removed at that time. The post-reclamation drainage will be as shown on Plates 8 and 9.

Undisturbed diversions will remain in place, since these were installed prior to the operation, and they have been shown to be adequate to carry a 100 year, 24 hour precipitation event.

Sedimentation Ponds A, C, D, and F will remain in place until revegetation standards are reached (Phase I). At that time, the ponds will be removed and reclaimed (Phase II). Disturbed drainage flow paths will be reconstructed during reclamation to direct reclaimed area runoff to the various ponds. The reconstructed flow paths are shown on Plates 8 and 9, and are designated RD-1, RD-2, ... for Reconstructed Ditch. Design specifications for the reconstructed interior ditches are shown on Table V-13A, "Post-Mining Ditch Summary". All reconstructed ditches will be built to a minimum cross-sectional area of 4 $ft.^2$, and will be rip-rapped with a minimum of 12" D50 rock overlying a filter blanket of 3/4" gravel. A typical section of the restored channel is shown on Figure V-3. Rip-rap design is based on the chart in Figure V-4. Once the ponds are removed, the drainage flow paths will be extended as shown on Plate 9. The retained ponds are shown "dotted" on Plate 8 to show the pond in relation to the reclaimed drainage pattern prior to and after its' removal. Ponds B and E will be eliminated during the first phase of reclamation. These are small ponds and the drainage is redirected to Ponds A, C, and D respectively, which are adequately oversized to contain the extra runoff. As shown on Table V-6A, all retained ponds have adequate capacity. Post-

mining pond sizing is shown on Tables V-2A through V-6A. For additional information including detail on removal of surface structures, please refer to this chapter, re: Reclamation.

As shown on Plate 8, berms will be employed to direct drainage during Phase I Reclamation. Berms will consist of straw bales (1 bale high) or native earth a minimum of 24" high x 36" minimum at the base x 12" minimum across the top. All berms will be removed during Phase II Reclamation, and any disturbed areas will be regraded as necessary and reseeded along with removal of the sediment ponds (See Plate 9 for final configuration).

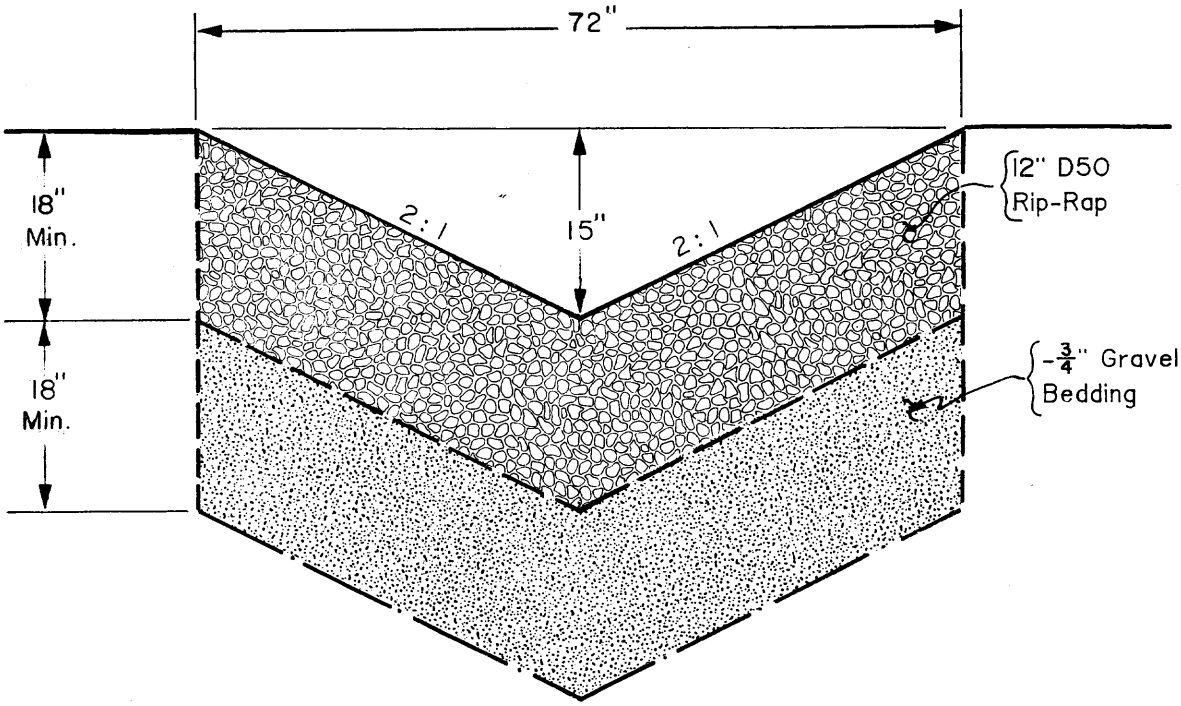
Access roads will not be reclaimed until Phase II. At this time, roads and culverts will be removed and the areas revegetated. Straw bale berms will be placed along the downstream ends of the reclaimed roads to control sediment.

During Phase I reclamation, when Ponds B and E are removed, diversion UD-5 will also be eliminated to the permit boundary. This will be accomplished by filling in the diversion with adjacent material. Straw bales will be placed as necessary to control sediment from the reclaimed pond and diversion.

As sediment ponds are removed, any contaminated material will be hauled off to an approved disposal site. The ponds will be recontoured and drainage through the area re-established as shown on Plate 9. Longitudinal profiles of the reclaimed ponds are shown on Plates 3, 4, 5, 6, and 7. As indicated earlier, the 2-celled Permanent Impoundment will be left inplace for wildlife enhancement.

Reclamation Water Monitoring

Water monitoring of the surface stations and remaining ponds will continue after reclamation, until bond release. The frequency of monitoring will be as shown on Table V-11 for "Postmining". Parameters monitored will be the same as those for operational sampling.



NOTE

Ditch configuration may vary; however interior slopes will not be steeper than $1\frac{1}{2}$ H : 1 V and minimum cross-sectional areas will not be less than 4 ft.^{2}.

REGISTERED PROFESSIONAL ENGINEER
No. 4548
DAN W. GUY
12/16/88
STATE OF UTAH

Figure V-3

Post Mining Ditch Typical Section

12-15-88

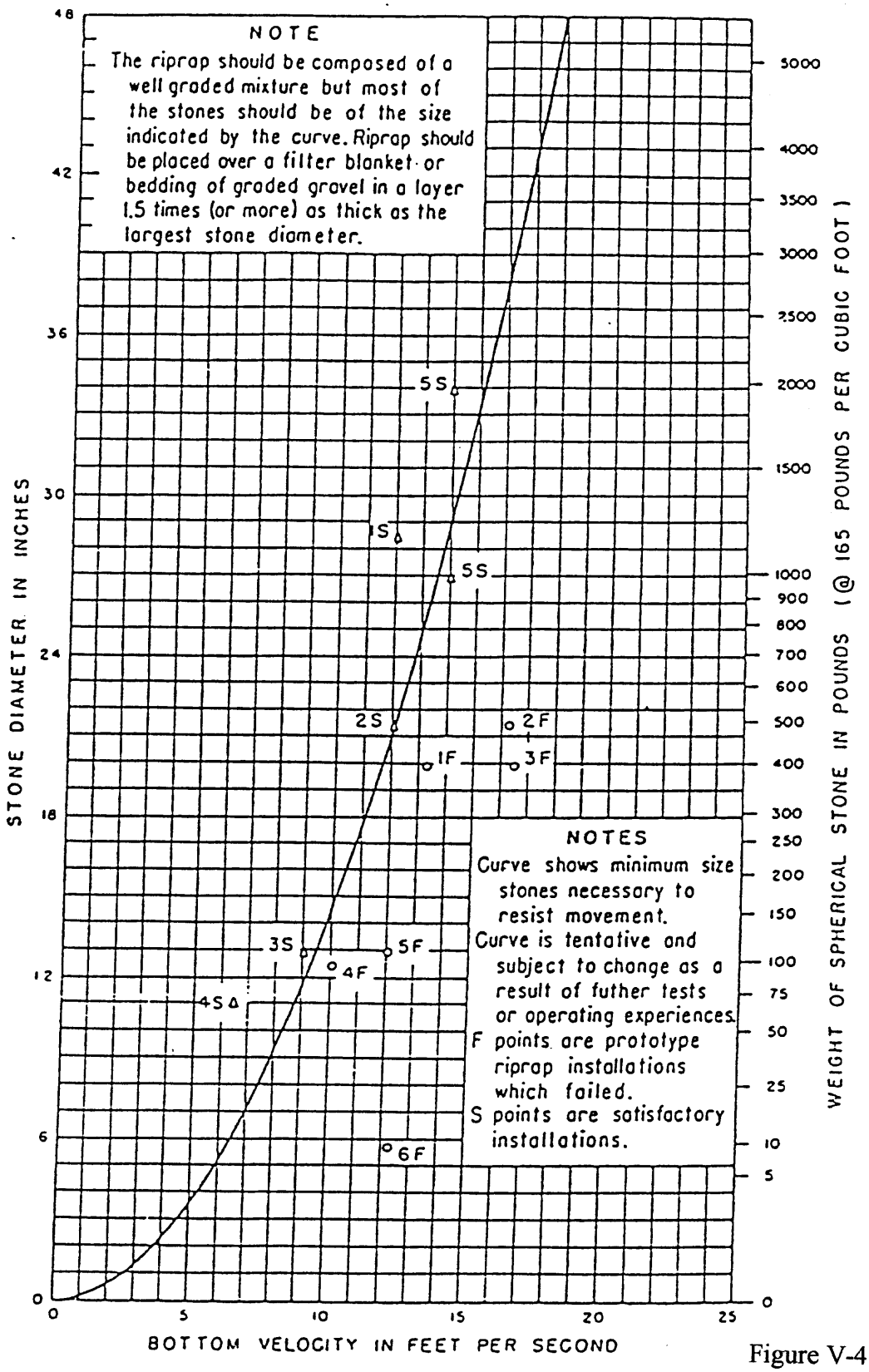


Figure V-4

FIGURE 165.—*Curve to determine maximum stone size in riprap mixture.*

From: Peterka, A.J., "Hydraulic Design of Stilling Basins and Energy Dissipators", U.S. Bureau of Reclamation, Engineering Monograph No. 25.

R645-301-512.250. PRIMARY ROADS

All roads within the permit area are classified as "Primary Roads" in accordance with R614-301-527.100. Primary roads on the site are of 2 typical designs:

1. Single-lane, gravel-surfaced roads approximately 16' wide; and

2. Double-lane, either gravel or asphalt surfaced roads, approximately 26' wide.

Although all roads on site are not used for coal hauling, each road is constructed to the respective typical design and dimensions shown on Plates 17 and 17A.

Because of the variance in road types, widths and lengths, the primary roads have been designated on Plate 1 with numbers (i.e. PR-1= Primary Road 1) to facilitate the description of each:

Primary Road 1 (PR-1) - This section is a double-lane, asphalt surfaced road connecting the county road to the Wildcat Facilities. The road serves as both a main access and a coal haul road. This section of road is approximately 800' long and runs on a grade of approximately 4.875%. The finished width of the road is approximately 26', as shown on the typical section on Plate 17.

Primary Road 2 (PR-2) - This section is a single-lane, gravel surfaced road connecting the Mine Run Coal Storage Truck Loop to the previously described Primary Road 1. This road is used primarily by coal trucks bringing coal onto the site. This road section is approximately 2050' long and runs on a grade of 1.25% to a maximum of 8,000% a the top of the loop. The top width of the road is approximately 16' as shown on Plate 17A.

Primary Road 3 (PR-3) - This section of road is a double-lane, asphalt surfaced road connecting the truck scale area to the county road on the northeast end of the site. The road is used primarily for coal haulage exiting the site; however, it is also used as a secondary access to the property. The road is approximately 490' long and is on a grade of approximately 0.20%. The finished width of the road is approximately 26' as shown on Plate 17.

Primary Road 4 (PR-4) - This section is a double-lane gravel-surfaced road leading from the Beaver Creek Shop/Warehouse Road to the northern truck dump at the Wildcat Facility, and single-lane around the truck loop. This road is used primarily for coal haulage, but also provides access to the permit area north of the

railroad. The double-lane portion of the road is approximately 700' long and is on a grade averaging less the 2.10%. The single-lane portion is approximately 550' long around the truck loop, and also averages less than 4% in grade, with the maximum grade at 7.06%. The double-lane road width is approximately 26' as shown on Plate 17, and the single-lane portion is approximately 16' wide as shown on Plate 17A.

Primary Road 5 (PR-5) - This road leads from the Primary Road 2 (Mine Run Truck Loop) to the Loadout Tower. The road is used primarily for access by support equipment, this is a single-lane, gravel-surfaced road, approximately 2100' long and runs on an average grade of 2.5%. The finished road width is approximately 16' as shown on Plate 17A.

Primary Road 6 (PR-6) - This road runs from the Loadout Tower area along the east edge of the railroad to the Truck Scale Area. This road is also used primarily for access by support equipment, although the northern portion is occasionally used for coal haulage. This is a single-lane, gravel-surfaced road, approximately 2150' long and runs on an average grade of 2.26%, with a maximum grade of 9.80% for less than 100'.

Primary Road 7 (PR-7) - This road lends from the northern truck dump around to the Permanent Impoundment Area and south to the Waste Coal Storage Area. This road is used primarily for support equipment access and occasionally for waste coal haulage. The road is approximately 1300' long and runs on a grade of a minimum of 0.09% on the southern area to a maximum of 2.00% between the truck dump and impoundment area. The road width is approximately 16' as shown on Plate 17A.

Primary Road 8 (PR-8) - This road leads from the northern truck dump, through the "Depression Area" and connects to Primary Road 7 near the southern end. The road is used primarily for access to the west property and "Depression Area" by support vehicles and loaders; however, coal and coal refuse are also occasionally hauled here. The road is approximately 800' long and runs on a grade from a minimum of 0% on the southern end to a maximum of 9.26% for approximately 100' near the truck loop. The road width is approximately 16', single-lane, gravel-surface as shown on Plate 17A.

Primary Road 9 (PR-9) - This road runs between Primary Road 5 and Primary Road 6, and provides access to the Coal Stockpile as well as to other facilities. The road is used primarily for access by support vehicles. The road is approximately 740' long and runs on an average grade of 2.00%. Road width is approximately 16'; single-lane, grave-surfaced as shown on Plate 17A.
Primary Road 10 (PR-10) - This road connects Primary Road 5 to

Primary Road 6 near the Loadout Tower. This is a single-lane, gravel-surfaced road, approximately 380' long. The grade on this road runs from 0% to a maximum of 2.86%. The road is used primarily for support vehicle access. Road width is approximately 16' as shown on Plate 17A.

Actual coal haul roads are those designated Primary Roads 1 through 4; however, since all roads are classified as primary, and since each was constructed according to a standard design as shown on Plates 17 and 17A, the following information is applicable to all roads at this site.

All primary roads at this site have been designed and constructed to meet the requirements of R614-301-534.300 and R614-301-742.420, and are certified as such.

All roads are located on the most stable surface available, generally on natural ground. There are no stream fords at this site; however, ephemeral channel crossings are provided by approved, adequately sized culverts. Drainage control is provided along all roads by the use of adequately sized ditches and culverts as necessary.

All roads are constructed and maintained to minimize disturbance and adverse impacts on fish, wildlife and related environmental values. This is accomplished through the use of current, prudent engineering design practices, proper drainage control, dust control, speed control and frequent maintenance. Roads are maintained to meet applicable design standards throughout their use by blading, watering, treatment with dust control agents such as magnesium chloride, and resurfacing as necessary.

Roads are located, designed, constructed, used, maintained, and will be reclaimed so as to prevent or control damage to public or private property; they will use non-acid and non-toxic forming substances in surfacing; and they will have a static safety factor or 1.3 or greater for all embankments.

Roads will be reclaimed immediately after they are no longer required for the operations. Road reclamation will take place simultaneously with the property reclamation, during Phases I and II. Roads will be reclaimed as per the plan, including: (1) Restoring natural drainage patterns; (2) Reshaping cut fill slopes to be compatible with the post-mining land use; (3) Removal of all structures (culverts, bridges, etc.); (4) Revegetation. No roads are planned to be left at this site after final reclamation.

R645-301-512.260. VARIANCE FROM APPROXIMATE ORIGINAL CONTOUR

N/A - The site will be reclaimed to approximate original contour.

R645-301-513. COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS

A great emphasis is put on assuring a safe mine operation and the mine and surface facilities will be operated within prudent standards to insure the health and safety of all employees. The facilities will be carefully inspected by company-trained safety engineers and state and federal mine inspectors.

The operation will abide by Utah State Coal Mine Regulations and the 1969 Federal Coal Mine Health and Safety Act. In addition, these regulations will be supplemented by a company safety policy. Various training programs will be utilized such as the following:

Methane Measurements
Roof and Rib Control
Oxygen Deficiency Testing
Ventilation
First Aid
Mine Rescue
Mine Electrical Certification
Self Rescue Training
Use of Personal Protective Equipment
Recognition of Electrical Hazards
General Accident Prevention
Mine Communications
Job Safety Training

Many of the training programs will run continuously, such as those involving roof control and ventilation. Other programs are held annually with many oriented toward new employees.

R645-301-513.100. COAL PROCESSING WASTE DAMS AND EMBANKMENTS

N/A - See R645-301-512.230

R645-301-513.200. IMPOUNDMENTS AND SEDIMENTATION PONDS MEETING MSHA CRITERIA

N/A

R645-301-513.300. WASTE DISPOSED IN UNDERGROUND MINE WORKINGS

N/A

R645-301-513.400. REFUSE PILES

A refuse pile is permitted at the Wildcat Loadout facility for disposal of coal processing waste and sediment cleaned from sediment ponds. This pile is permitted by MSHA with I.D. number 1211-UT-09-01864-01.

The pile is constructed, maintained and inspected in accordance with MSHA regulations, 30 CFR 77.214 and CFR 77.215.

Pile design and operation are detailed in Section R645-301-512-230 and Appendix O.

R645-301-513.500. MINE OPENINGS

N/A

R645-301-513.600. DISCHARGES INTO AN UNDERGROUND MINE

N/A

R645-301-513.700. SURFACE COAL MINING CLOSER THAN 500 FEET TO AN ACTIVE UNDERGROUND MINE

N/A

R645-301-513.800. COAL MINE WASTE FIRES

See R645-301-512.230

R645-301-514. INSPECTIONS

All engineering inspections, excepting those described under R645-301-514.330, will be conducted by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

R645-301-514.100. EXCESS SPOIL

N/A - There are no excess spoil piles.

R645-301-514.110. QUARTERLY INSPECTIONS AND CRITICAL CONSTRUCTION PERIODS

N/A

R645-301-514.111. FOUNDATION PREPARATION, TOPSOIL REMOVAL

N/A

R645-301-514.112. UNDERDRAINS AND PROTECTIVE FILTER SYSTEMS

N/A

R645-301-514.113. FINAL SURFACE DRAINAGE SYSTEMS

N/A

R645-301-514.114. FINAL GRADED AND REVEGETATED FILL

N/A

R645-301-514.120. CERTIFIED REPORTS

N/A

R645-301-514.130. CERTIFIED REPORTS ON DRAINAGE SYSTEM AND PROTECTIVE FILTERS

N/A

R645-301-514.131. PHASES OF CERTIFICATION

N/A

R645-301-514.132. UNDERDRAINS

N/A

R645-301-514.133. PHOTOGRAPHS

N/A

R645-301-514.140. INSPECTION REPORTS

N/A

R645-301-514.200. REFUSE PILES

The refuse pile is inspected quarterly by a registered professional engineer in accordance with this section and as required by 30 CFR 77.215.2. The disposal plan is detailed in Appendix O.

R645-301-514.210. REGULAR INSPECTIONS

See R645-301-514.200 and Appendix O.

R645-301-514.220. CRITICAL CONSTRUCTION PERIODS

See R645-301-514.200 and Appendix O.

R645-301-514.221. FOUNDATION PREPARATION AND TOPSOIL REMOVAL

Completed. There are no plans for additional foundation preparation or topsoil removal.

R645-301-514.222. UNDERDRAINS

N/A - There are no underdrains.

R645-301-514.223. FINAL SURFACE DRAINAGE SYSTEMS

As required by R645-301-514.210.

R645-301-514.224. FINAL GRADING AND REVEGATATION

As required by R645-301-514.210.

R645-301-514.230. CERTIFIED REPORT

A certified report is provided for Division review promptly after each inspection. The report includes appearances of instability, structural weakness and other hazardous conditions, as well as condition of surface drainage.

R645-301-514.240. SEPARATE CERTIFICATION FOR EACH PHASE OF CONSTRUCTION

N/A - There are no underdrains or protective filters.

R645-301-514.250. ON-SITE COPY OF CERTIFICATION REPORTS

A copy of each inspection report is maintained on-site.

R645-301-514.300. IMPOUNDMENTS

See R645-301-512.240.

R645-301-514.310. CERTIFIED INSPECTION

This is performed annually by a registered P.E.

R645-301-514.311. COMPLETION OF CONSTRUCTION AND YEARLY INSPECTIONS

See R645-301-514.310.

R645-301-514.312. CERTIFIED REPORTS

Certified reports are kept on-site, and submitted with Annual Reports.

R645-301-514.313. ON-SITE COPY OF CERTIFICATION REPORTS

See R645-301-514.312.

R645-301-514.320. WEEKLY INSPECTIONS

N/A

R645-301-515. REPORTING AND EMERGENCY PROCEDURES

R645-301-515.100. SLIDES AND OTHER DAMAGE

The Wildcat Loadout is located on relatively flat ground, making the probability of a slide extremely remote.

If a slide should occur which may have a potential adverse effect on public, property, health, safety, or the environment, Andalex will notify the Division by the fastest available means and comply with any remedial measures required by the Division

R645-301-515.200. IMPOUNDMENT HAZARDS

Safety Precautions

The ponds were built as per specifications and under supervision of a qualified, registered professional engineer. The ponds are inspected quarterly for safety and compliance. Inspection reports are maintained on-site, and submitted to the Division on an annual basis. Ponds will be cleaned at minimum when sediment reaches 60% of designed sediment volume. Measuring devices will be installed in the ponds to show when the ponds have filled with sediment to the clean-out level.

R645-301-515.300. TEMPORARY CESSATION OF OPERATIONS

Whenever it is known that operations are to be temporarily ceased for more than 30 days, Andalex Resources will submit to the Division a notice of intention to cease or abandon the operations, in accordance with R645-301-515.320 and to MSHA standards.

This notice will describe mitigation measures to be employed in accordance with the terms and conditions of the permit approval, such as a statement of the number of surface areas involved in the cessation, prior reclamation efforts accomplished on the property, and identification of all backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during the temporary cessation.

R645-301-515.310. TEMPORARY ABANDONMENT

See R645-301-515.300.

R645-301-515.311. SUPPORT AND MAINTENANCE

N/A

R645-301-515.312. SECURING SURFACE FACILITIES

Locked gates will be employed to prevent access to the site during temporary closures.

R645-301-515.320. NOTICE OF INTENT TO CEASE OR ABANDON OPERATIONS

See R645-301-515.300.

R645-301-515.321. STATEMENT OF CONDITIONS PRIOR TO CESSATION OR ABANDONMENT, UNDERGROUND

See R645-301-515.300.

R645-301-515.322. STATEMENT OF CONDITIONS PRIOR TO CESSATION OR ABANDONMENT, SURFACE

See R645-301-515.300.

R645-301-516. PREVENTION OF SLIDES

Andalex has agreed to interim stabilization of all slopes and embankments within the disturbed area and has done so. Andalex will notify the Division in the event of any slides or other damage.

R645-301-520. OPERATION PLAN

R645-301-521. GENERAL

Overview of Project

General Description

The new unit train loadout facility at Wildcat Junction is approaching the three million ton mark. To date, close to 350 unit trains have been loaded with no operating failures or significant difficulties.

The facility is designed to provide rapid train loading with an automatic sampling system meeting ASTM standards. The sampling system is a Redding Three Stage Sampler. The bulk weighing system is accurate to 0.1% and is certified by the State of Utah, Bureau of Weights and Measures every six months.

The stockpiling and reclaim system is designed to reduce handling and consequently degradation. It provides segregated stockpiles for each of the three seams which will be mined simultaneously from Andalex's Centennial Project. With segregated stockpiles,

Andalex will have the capability of either a single seam shipment or a blended seam shipment meeting any customer's requirements. The stockpile has been designed to provide adequate live storage to allow multiple unit-trains to be discharged from Wildcat successively in order to meet the demands of ship-loading and the export market.

Summary Description

Loadout Structure

5,000 tph loading rate, 300 ton surge bin, 120 ton weigh bin, programmable batch weighing system, 3 stage automatic sampler, operator control room.

Reclaim Conveyor

72" belt, 815 fpm, 1,200 hp, length = 1,035'. Four each 100' truss sections, 2 each support bents, vertical gravity take-up tower.

Reclaim Transfer Conveyor (3 each)

54" belt, 75 hp, length = 75'

Under-pile Reclaim

Nine each storage pile activators, 2,500 tph capacity each, flow control by double bladed slide gates, 30' diameter inlet cones, pile activators connected by 13' diameter multiplate tunnel. Total tunnel length = 700'.

Storage Pile

Height = 85', crest length = 468'. Three segregated piles: total storage = 106,000 t, live storage = 55,000 t. Extended (co-mingled) pile: total storage = 135,000 t, live storage = 70,000 t.

Radial Stacker

Underslung truss design, 110° arc of swing, 247' long, 36" Conv, 600 tph, 600 fpm, 100 hp drive.

Yard Conveyor From Crusher to Stacker Building (Conv Y)

36" belt. 600 tph, 450 fpm, 75 hp drive, length = 470', transfer structure at radial stacker supporting drive unit and electrical control room.

Crusher Building

600 tph impact crusher (125 hp), 2" x 0" product, 4' x 14' double deck screen, Conv T drive unit, electrical control room.

Conveyor From Truck Dump To Crusher Building
(Conv T)

48" belt, 600 tph, 250 fpm, 75 hp, length = 150'. Belt scale, metal detector, tramp iron magnet.

Truck Dump

100 ton surge capacity, drive-over grizzley for end or bottom dump trucks, dozer trap opening for reclaim of run of mine storage area with a capacity of 150,000 tons.

Unit-Train Loading Track

115 lb. rail, total length = 10,133', 1 each turnout, 3 each cross overs, 1 each bumper, 2 each high stand throw switches, 3 each spring switches.

Office Building

30' x 40' containing office, small warehouse, and lab.

Scale House

14' x 60' trailer, 60' platform scales.

Shop Building

40' x 40' metal building, concrete foundation

Magnesium Chloride Storage Tank

8' x 20' metal tank, concrete stand

<u>Electrical</u>

Substation

2,500 KVA, 46,000 V to 4,160 V transformers, capacitors for power factor correction, designed to comply with appropriate MSHA and UP&L requirements

Yard Power

4,160 V distribution reduced to 480 V at crusher building,

stacker, reclaim tunnel exit and loadout structure, transmission line = 2,600', 45' poles.

Electrical Control Rooms

Crusher Building

Motor controls, switchgear, and associated electrical controls for crusher, screen, Conv "T" drive, reclaim vent fan, scale, magnet, metal detector, water pump, and area lighting

Stacker Area (Control Room Located On Transfer Structure)

Motor controls, switchgear, and associated electrical controls for Conv "Y" drive, conveyor "S" drive, stacker propelling drive, water pump, office building, mobile equipment servicing station and area lighting

Reclaim Area (Control Room Located Near Tunnel Exit On West Side of Conv "R")

Motor controls, switchgear, and associated electrical controls for Conv "RT" drive, all storage pile activators, hydraulic power pack drives (for gate actuation), reclaim sensor scale, gate position feedback controls, methane monitors, and area lighting (including reclaim tunnel)

Loadout Area (Electrical Controls Located In Operators Control Room)

Motor controls, switchgear, and associated electrical controls for Conv "R" drive (4,160 V), batch weighing system, sampling system, car spotter, and area lighting

Electrical Class

All motors, starters, switchgear, and controls can be Class II, Div. II, even in the reclaim tunnel. However, 2 each methane monitors are to be installed in the reclaim tunnel and 1 each in the truck dump which will deactivate all electrics in the tunnel if methane is detected. Lighting in the tunnels must meet Class I, Div. I requirements.

Water

Tanks

2 ea., 10,000 gal., treated for culinary, 35 hp centrifugal pump, enclosed tankside pump houses

Tank Location

- At crusher building to serve crusher building and truck dump
- At office building (culinary usage)

Area of Operations

Proposed Permit Area

The proposed permit area consists of part of BLM right-of-way U-48027 and is shown on Plate 1 and revised Plate 22.

Surface Area to be Disturbed

The permit area has been previously impacted by mining and loading. The entire permit area at Wildcat has been used for loading and coal storage previously. The total existing surface area disturbed is 56.10 acres excluding the small area exemption. Facilities are indicated on Plates 1 & 22.

The disturbed area boundary has been modified to include additional area to the east of the main stockpile (radial stacker)(see Plate 22). This area has been lightly covered by wind-carried coal fines over the nine year history of Wildcat.

Therefore, it is necessary to include this additional 3.7 acres as part of Andalex's disturbed area. It should be noted that this additional acreage does not constitute a significant revision (6%). Upon final reclamation this area will be cleaned of wind-carried coal fines and revegetated in a similar fashion to existing disturbed areas. Runoff from this area is currently passed through straw dikes. These dikes will be maintained on an annual basis as necessary.

Andalex has used, from time to time, a vacuuming system to pick up wind-carried coal fines at the minesite. Andalex proposes to clean as many coal fines as is practical at the Wildcat Loadout in the area east of the main stockpile. This vacuum system will be utilized in the Spring of 1994 and thereafter as necessary.

It should also be noted that due to the reoccurring situation regarding wind-carried coal fines, Andalex proposes to construct additional drift-fences near the eastern boundary of the disturbed area. Drift-fences have proven to be effective in the past at Wildcat and, therefore, additional fences will aid in controlling wind-carried coal fines. These additional fences are depicted on the revised Plate 22.

Life of Project

The life of the project has been estimated at 30 years.

Schedule of Construction, Mine Development,Mining, and Reclamation

All surface facilities have been constructed for the Wildcat Loadout. Reclamation efforts, including, but not limited to, backfilling, grading, topsoil replacement, and revegetation, of all land that is disturbed by surface operations shall occur as contemporaneously as practicable with mining operations. Upon the conclusion of loading activities, the scheduled reclamation phase will begin immediately. Please refer to Part F of this Chapter re Reclamation.

Cessation of Operations

Temporary

Andalex will inform the division if it intends to cease operations for a period of more than thirty days. This notice will include information on any activities which may continue while the facility is not in use (water monitoring, etc.).

Permanent

Upon permanent cessation of operations, Andalex will reclaim all affected areas according to its' approved MRP and return the land to its' pre-mining conditions.

Wildcat Operations

Exploration and Development Drill Sites

Shallow holes for bedrock determination were drilled for foundation studies. Please see Appendix C.

Blasting

No blasting will occur at this facility.

Water Supply

Water is trucked into the facility by a local contractor and stored in 2 - 10,000 gallon storage tanks. One tank is used to supply culinary water to the bathhouse facilities and the other tank provides water for dust suppression for the preparation and loading operations.

There is no on-site development of surface or underground water for this facility. There are no wells.

Power Supply and Communication Facilities

Power and communications were pre-existing at this location. Andalex tapped the 46 KV powerline serving Beaver Creek Coal Company's mines and via an onsite substation, distributing 4160, 440, 220, and 110 V lines throughout the facility.

Landscaping

All disturbed areas are relatively flat, and vegetative cover has been promptly re-established to stabilize erosion.

Signs, Markers, Fences, and Gates

Signs of a uniform design, showing the company name, business address, and telephone number as well as the identification number of the current regulatory program permit authorizing the underground mining activities, have been placed at all access points to the permit area. These signs have been placed to be easily seen, are made of a durable material, and conform to local laws and regulations. The topsoil storage area is clearly marked.

As there are no perennial streams or a stream with a biological community on the permit area, buffer zone markers will not be necessary. The perimeters of all areas affected by surface operations and facilities are clearly marked. These signs and markers shall be maintained during all activities and retained and maintained until after the release of all bonds for the permit area.

Coal Handling Facilities

Please refer to this chapter, re: Description of Facilities.

Removal of Surface Structures

Upon completion of activities, all surface facilities will be removed. This includes all the facilities outlined in this chapter, re: Description of Facilities. Please refer to this chapter, re: Reclamation for the detailed plans. Also refer to this chapter, re: Reclamation Hydrology.

Operation Plan: Existing Structures

Construction and Design of Surface Facilities

Existing Structures

All existing structures are situated on Right-of-Way U-48027. Please refer to this chapter, re: Description of Facilities. Upon completion of loading activities, all buildings and structures not being utilized as part of the reclamation sequence, will be removed, according to the Reclamation Plan outlined in this chapter.

Construction

All of the above structures have been completed. Construction began in the spring of 1984 and was completed in the spring of 1985. Construction has been located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property in accordance with the regulations. All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values (particularly as this relates to powerline structures, regarding Fish and Wildlife). Andalex has also designed and constructed and will be maintained in a manner which prevents additional contributions of suspended solids outside the permit area. All activities shall be conducted in a manner which minimizes damage to railroads, electric and telephone lines, and water and sewage lines, which pass over or through the permit area. Andalex Resources realizes that

maintenance of the facilities is a key to optimum operation. Constant upkeep of all surface facilities and structures has resulted in their maintaining excellent condition.

Construction Methods

Major Equipment

The building sites were leveled using dozers and graders. Excavations for foundations was accomplished with backhoes and scrapers. Leveling was required at all the building sites; however, cut and fill was not implemented to a large degree because the area is relatively flat lying. Topsoil was removed and transported to a nearby area for storage. Topsoil was gathered using scrapers and graders. All topsoil storage piles are located within the permit area.

All surface pads have been stabilized and all other disturbed areas (pond embankments, other slopes, etc.) have been reseeded. Where possible, a rangeland seed drill was used.

R645-301-521.100. CROSS SECTIONS AND MAPS

See R645-301-510, Volume II

R645-301-532.110. PREVIOUSLY MINED AREAS

See R645-301-510, Volume II

R645-301-521.111. LOCATION AND EXTENT OF KNOWN WORKINGS

N/A

R645-301-521.112. EXISTING OR PREVIOUSLY SURFACE MINED AREAS

See R645-301-510 and Volume II.

R645-301-521.120. EXISTING SURFACE AND SUBSURFACE FACILITIES AND FEATURES

See R645-301-510.

R645-301-521.121. BUILDINGS IN AND WITHIN 1000 FEET OF THE PERMIT AREA

There are no buildings within 1,000 feet of the permit area except those used as part of the operation. They are shown on Plates 1 and 2.

R645-301-521.122. SURFACE AND SUBSURFACE MAN-MADE FEATURES WITHIN THE PERMIT AREA

There are no surface or subsurface man-made features within, passing through or passing over the permit area except the railroad, powerline, telephone cables, culverts, and etc., installed for the operation of this mine. See Plates 1 and 2 for their locations.

R645-301-521.123. PUBLIC ROADS IN OR WITHIN 100 FEET OF THE PERMIT AREA

The Consumers county road (Formerly State Highway 139) starts at highway 6 in Gordon Creek and bypasses the Andalex Resources' Wildcat Loadout (Plate 1). There are 2 entrances from the County Road into the permit area, as shown on Plate 1.

R645-301-521.124. EXISTING FACILITIES WITHIN THE PERMIT AREAS

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 Plates 1 and 2 for their locations.

R645-301-521.125. SEDIMENTATION PONDS AND IMPOUNDMENTS

See R645-301-512.240.

R645-301-521.130. LANDOWNERS AND RIGHT OF ENTRY AND PUBLIC INTEREST MAPS

The right-of-way for which we have the legal right of entry is shown on Plate 1.

R645-301-521.131. SURFACE AND SUBSURFACE OWNERS

Owners of Record of Surface and Subsurface Contiguous Areas

All surface and subsurface areas contiguous to the permit area are owned by the United States. The name and address of the responsible authority representing the federal government is as follows:

Bureau of Land Management
Utah State Office
Federal Building
Salt Lake City, Utah 84111
(801) 524-3004

R645-301-521.132. RIGHT TO ENTER AND CONDUCT MINING ACTIVITIES

See R645-301-114.230.

R645-301-521.133.1 OPERATIONS WITHIN 100 FEET OF ROAD RIGHT-OF-WAY

See R645-301-521.123.

R645-301-521.133.2 RELOCATING A PUBLIC ROAD

N/A

R645-301-521.140. MINE AND PERMIT AREA MAPS

Cross Sections, Maps, and Plans

The lands affected by this operation (surface only) are clearly shown on Plate 1. Plate 1 depicts all buildings, utilities, and facilities. All of the land within this permit area which is to be affected already has been. This is a surface facility only and involves no underground workings. The bond required by the Division is for the entire affected area including all the surface facilities.

Coal storage, topsoil storage, loading areas, coal preparation waste areas are all depicted on the surface facilities map. Additional detail on topsoil, diversions, and ponds can be found in Volume II on Plates 13, 2, and 3 through 7 respectively.

There is no storage of explosives at the Wildcat Loadout.

The final surface configurations will be similar to the surface prior to Andalex's involvement at Wildcat. Cross sections and a

surface configuration plate are included in Volume II as 10 and 9 respectively.

Surface water monitoring locations are shown on Plate 15.

After the completion of activities at this facility, no structures will remain with the exception of the railroad grade, the tracks, and it's associated drainage structures.

All maps requiring certifications by a registered person have been done so. Included are stamps from experts in related fields such as surveying.

PLATES

Plate #	Plate Title
Plate 1	As Constructed Surface Facilities
Plate 2	Surface Facilities Topography (Watershed & Drainage)
Plate 3	Sediment Pond A (As Constructed)
Plate 4	Sediment Pond B & D (As Constructed)
Plate 5	Sediment Pond C (As Constructed)
Plate 6	Sediment Pond E (As Constructed & As Proposed)
Plate 7	Sediment Pond F (As Constructed)
Plate 8	Final Reclamation Hydrology (Phase I)
Plate 9	Final Reclamation Contours & Revegetation
Plate 10	Cross Section
Plate 11	Soil Survey
Plate 12	Surface Geology
Plate 13	Topsoil Piles
Plate 14	Cross Section Reference Map
Plate 15	Watershed
Plate 16	Surface & Subsurface Ownership
Plate 17	Typical Road Cross Section, Double-Lane Roads
Plate 17-A	Typical Road Cross Section, Single-Lane Roads
Plate 18	Disturbed Area Photograph

PLATES, Continued

Plate #	Plate Title
Plate 19	Diversion UD-1 Profile
Plate 20	Diversion UD-1 Point of Diversion Cross Section
Plate 22	Proposed Expansion
Plate 23	Cut/Fill Locations
Plate 24	Pad Area Cut/Fill
Plate 25	Pad Area Cut/Fill
Plate 26	Pad Area Cut/Fill
Plate 27	Truck Loop Cut/Fill

R645-301-521.141. AFFECTED AREA

R645-301-521.142. UNDERGROUND WORKINGS AND SUBSIDENCE AREAS

N/A

R645-301-521.143. WASTE DISPOSAL SITES

See R645-301-510, Volume II.

R645-301-521.150. LAND SURFACE CONFIGURATION MAPS

See R645-301-510, Volume II.

R645-301-521.151. REQUIREMENTS

See R645-301-510, Volume II.

R645-301-521.152. PREVIOUSLY MINED AREAS

See R645-301-510, Volume II.

R645-301-521.160. MAPS OR CROSS SECTIONS OR PROPOSED FEATURES

See R645-301-510, Volume II.

R645-301-521.161. BUILDINGS, UTILITY CORRIDORS AND FACILITIES

See R645-301-510, Volume II.

R645-301-521.162. AREA AFFECTED ACCORDING TO SEQUENCE AND TIMING OF OPERATIONS

See R645-301-510, Volume II.

R645-301-521.163. BONDED AREA

See R645-301-510, Volume II.

R645-301-521.164. COAL HANDLING FACILITIES

See R645-301-510, Volume II.

R645-301-521.165. TOPSOIL AND WASTE STORAGE AREAS

See R645-301-510, Volume II.

R645-301-521.166. WASTE SOURCES AND DISPOSAL FACILITIES

See R645-301-510, Volume II.

R645-301-521.167. EXPLOSIVES STORAGE AND HANDLING FACILITIES

N/A

R645-301-521.168. AIR POLLUTION CONTROL FACILITIES

N/A

R645-301-521.169. COAL PROCESSING WASTE FACILITIES

See R645-301-510, Volume II.

R645-301-521.170. TRANSPORTATION FACILITIES MAPS

See R645-301-510, Volume II.

R645-301-521.180. OTHER INFORMATION

See R645-301-510, Volume II.

R645-301-521.190. OTHER RELEVANT INFORMATION REQUIRED BY THE DIVISION.

At this time, there has been no other information required by the division.

R645-301-521.200. SIGNS AND MARKERS SPECIFICATIONS

Signs of a uniform design, showing the company name, business address, and telephone number as well as the identification number of the current regulatory program permit authorizing the underground mining activities, have been placed at all access points to the permit area. These signs have been placed to be easily seen, are made of a durable material, and conform to local laws and regulations. The topsoil storage area is clearly marked.

As there are no perennial streams or a stream with a biological community on the permit area, buffer zone markers will not be necessary. The perimeters of all areas affected by surface operations and facilities are clearly marked. These signs and markers shall be maintained during all activities and retained and maintained until after the release of all bonds for the permit area.

R645-301-521.210. PLACEMENT AND REMOVAL

See R645-301-521.200.

R645-301-521.220. DESIGN

See R645-301-521.200.

R645-301-521.230. MAINTENANCE

See R645-301-521.200.

R645-301-521.240. MINE AND PERMIT IDENTIFICATION SIGNS

See R645-301-521.200.

R645-301-521.241. LOCATION, UNDERGROUND MINING

See R645-301-521.200.

R645-301-521.242. LOCATION, SURFACE MINING

N/A

R645-301-521.243. INFORMATION

See R645-301-521.200.

R645-301-521.244. REQUIREMENTS

See R645-301-521.200.

R645-301-521.250. PERIMETER MARKERS

See R645-301-521.200.

R645-301-521.251. SURFACE AFFECTED AREAS FOR UNDERGROUND MINING OPERATIONS

See R645-301-521.200.

R645-301-521.252. PERMIT AREA PERIMETER FOR SURFACE MINING OPERATIONS

N/A

R645-301-521.260. BUFFER ZONE MARKERS

N/A

R645-301-521.261. BOUNDARY MARKERS FOR SURFACE ACTIVITIES OF UNDERGROUND OPERATIONS

They consist of orange "Tee" posts which are clearly visible from one marker to the next.

R645-301-521.262. BOUNDARY MARKERS FOR SURFACE MINING OPERATIONS

N/A

R645-301-521.270. TOPSOIL MARKERS

See R645-301-521.200.

R645-301-522. COAL RECOVERY

N/A

R645-301-523. MINING METHOD

N/A

R645-301-523.100. SURFACE MINING OPERATIONS WITHIN 500 FEET OF AN UNDERGROUND MINE

N/A

R645-301-523.200. EXCEPTIONS TO SURFACE MINING OPERATIONS WITHIN 500 FEET OF UNDERGROUND WORKINGS

N/A

R645-301-523.210. RESOURCE RECOVERY OF ELIMINATION OF HAZARDS

N/A

R645-301-523.220. APPROVAL BY DIVISION AND MSHA

Appendix B; Appendix O

R645-301-524. BLASTING AND EXPLOSIVES

N/A - There will be no blasting conducted at this site.

R645-301-524.100. BLASTER CERTIFICATION

N/A

R645-301-524.110. CERTIFIED BLASTER

N/A

R645-301-524.120. BLASTING CERTIFICATES

N/A

R645-301-524.130. FIRING OF A BLAST

N/A

R645-301-524.140. RESPONSIBILITY

N/A

R645-301-524.200. BLAST DESIGN

N/A

R645-301-524.210. ALL BLASTING OPERATIONS

N/A

R645-301-524.211. BUILDINGS WITHIN 1000 FEET OUTSIDE THE PERMIT AREA

N/A

R645-301-524.212. WITHIN 500 FEET OF UNDERGROUND MINE

N/A

R645-301-524.220. BLAST DESIGN APPROVAL PRIOR TO BLAST

N/A

R645-301-524.230. BLAST DESIGN CRITERIA

N/A

R645-301-524.240. CERTIFICATION

N/A

R645-301-524.250. CHANGES TO BLAST DESIGN

N/A

R645-301-524.300. PRE-BLASTING SURVEY

N/A

R645-301-524.310. NOTIFICATION OF RESIDENTS

N/A

R645-301-524.320. REQUESTS FOR PRE-BLASTING SURVEY

N/A

R645-301-524.330. ASSESSMENT OF FACILITIES

N/A

R645-301-524.340. REPORT OF SURVEY

N/A

R645-301-524.350. COMPLETION OF SURVEY PRIOR TO BLAST

N/A

R645-301-524.400. BLAST SCHEDULE

N/A

R645-301-524.410. UNSCHEDULED BLASTS

N/A

R645-301-524.420. TIME PERIODS FOR BLASTING

N/A

R645-301-524.430. BLASTING NOTICES FOR UNDERGROUND MINING OPERATIONS

N/A

R645-301-524.440. BLASTING TIMES

N/A

R645-301-524.450. BLASTING SCHEDULE PUBLICATION AND DISTRIBUTION

N/A

R645-301-524.451. NEWSPAPER PUBLICATION

N/A

R645-301-524.452. DISTRIBUTION OF NOTICES

N/A

R645-301-524.453. REPUBLISHING AND REDISTRIBUTION

N/A

R645-301-524.460. BLASTING SCHEDULE CONTENTS

N/A

R645-301-524.461. OPERATOR IDENTIFICATION

N/A

R645-301-524.462. BLASTING LOCATION

N/A

R645-301-524.463. DATES AND TIME PERIODS OF DETONATIONS

N/A

R645-301-524.464. ACCESS CONTROL METHODS

N/A

R645-301-524.465. WARNING SIGNALS

N/A

R645-301-524.500. DESCRIPTION OF BLASTING SAFEGUARDS

N/A

R645-301-524.510. BLASTING SIGNS

N/A

R645-301-524.511. CONSPICUOUSLY PLACED SIGNS

N/A

R645-301-524.512. ENTRANCES FROM PUBLIC ROADS OR HIGHWAYS

N/A

R645-301-524.520. WARNINGS

N/A

R645-301-524.530. ACCESS CONTROL

N/A

R645-301-524.531. UNUSUAL HAZARDS

N/A

R645-301-524.532. ACCESS WITHIN THE BLASTING AREA

N/A

R645-301-524.600. CONTROL OF ADVERSE BLASTING EFFECTS

N/A

R645-301-524.610. GENERAL REQUIREMENTS

N/A

R645-301-524.620. AIR BLAST LIMITS

N/A

R645-301-524.621. MAXIMUM AIR BLAST LIMITS

N/A

R645-301-524.622. PREVENTION OF DAMAGE

N/A

R645-301-524.630. MONITORING

N/A

R645-301-524.631. MEASUREMENTS AND LOCATIONS

N/A

R645-301-524.632 MEASURING SYSTEMS

N/A

R645-301-524.633. FLY ROCK

N/A

R645-301-524.640. GROUND VIBRATION

N/A

R645-301-524.641. GENERAL

N/A

R645-301-524.642. MAXIMUM PEAK-PARTICLE VELOCITY

N/A

R645-301-524.643. SEISMOGRAPHIC RECORD

N/A

R645-301-524.650. ALLOWABLE CHARGE WEIGHT

N/A

R645-301-524.651. SCALED-DISTANCE EQUATION

N/A

R645-301-524.652. MODIFIED SCALED-DISTANCE FACTOR

N/A

R645-301-524.660. BLASTING-LEVEL CHART

N/A

R645-301-524.661. GROUND VIBRATION LIMITS

N/A

R645-301-524.662. PARTICLE VELOCITY AND VIBRATION FREQUENCY LEVELS

N/A

R645-301-524.670. DAMAGE PROTECTION

N/A

R645-301-524.680. SEISMIC MONITORING

N/A

R645-301-524.690. STRUCTURES NOT SUBJECT TO AIR BLAST AND GROUND VIBRATION LIMITS

N/A

R645-301-524.700. RECORDS OF BLASTING OPERATIONS

N/A

R645-301-524.710. RECORDS

N/A

R645-301-524.711. OPERATOR IDENTIFICATION

N/A

R645-301-524.712. BLAST LOCATION AND SCHEDULE

N/A

R645-301-524.713. BLASTER CERTIFICATION

N/A

R645-301-524.720. NEAREST DWELLING OR FACILITY OUTSIDE THE PERMIT AREA

N/A

R645-301-524.730. WEATHER CONDITIONS

N/A

R645-301-524.740. BLASTING RECORD

N/A

R645-301-524.741. TYPE OF MATERIAL BLASTED

N/A

R645-301-524.742. BLASTING PATTERN

N/A

R645-301-524.743. DIAMETER AND DEPTH OF HOLES

N/A

R645-301-524.744. TYPES OF EXPLOSIVES USED

N/A

R645-301-524.745. TOTAL WEIGHT OF EXPLOSIVES USED PER HOLE

N/A

R645-301-524.746. MAXIMUM WEIGHT OF EXPLOSIVES DETONATED IN AN EIGHT-MILLISECOND PERIOD

N/A

R645-301-524.747. INITIATION SYSTEM

N/A

R645-301-524.748. STEMMING

N/A

R645-301-524.749. MATS OR OTHER PROTECTIONS USED

N/A

R645-301-524.750. SEISMOGRAPHIC AND AIR BLAST INFORMATION

N/A

R645-301-524.751. INSTRUMENTATION

N/A

R645-301-524.752. LOCATION OF INSTRUMENTATION

N/A

R645-301-524.753. PERSONS COLLECTING DATA

N/A

R645-301-524.754. PERSONS ANALYZING DATA

N/A

R645-301-524.755. VIBRATION AND/OR AIR BLAST LEVEL RECORDED

N/A

R645-301-524.760. UNSCHEDULED BLASTS

N/A

R645-301-524.800. COMPLIANCE WITH OTHER APPROPRIATE REGULATIONS

N/A

R645-301-525. SUBSIDENCE

N/A - There is no mining at this location.

R645-301-525.100. SUBSIDENCE CONTROL PLAN

N/A

R645-301-525.110. MINING METHODS

N/A

R645-301-525.120. LIKELIHOOD OF SUBSIDENCE

N/A

R645-301-525.130. SUBSIDENCE CONTROL MEASURES

N/A

R645-301-525.200. SUBSIDENCE CONTROL

N/A

R645-301-525.210. SUBSIDENCE DESIGN

N/A

R645-301-525.211. PUBLIC BUILDINGS AND FACILITIES;

N/A

R645-301-525.212. CHURCHES, SCHOOLS, AND HOSPITALS;

N/A

R645-301-525.213. IMPOUNDMENTS GREATER THAN 20 ACRE-FEET

N/A

R645-301-525.214. PUBLIC WATER SUPPLY

N/A

R645-301-525.220. COMPLIANCE WITH SUBSIDENCE CONTROL PLAN

N/A

R645-301-525.230. OPERATOR REQUIREMENTS

N/A

R645-301-525.240. RESTRICTED FACILITIES

N/A

R645-301-525.300. PUBLIC NOTICE OF PROPOSED MINING

A copy of the newspaper advertisement of this Mining and Reclamation Plan and proof of publication of the advertisement is filed with the Division and made part of the complete application.

R645-301-525.310. MEASURES TO PREVENT OR MINIMIZE DAMAGE.

N/A

R645-301-525.311. KNOWN TECHNOLOGY TO PREVENT SUBSIDENCE DAMAGE

N/A

R645-301-525.312. MINIMIZE MATERIAL DAMAGE TO STRUCTURES UNLESS:

N/A

R645-301-525.312.1. OWNER CONSENT

N/A

R645-301-525.312.2. THREAT TO HEALTH AND SAFETY

N/A

R645-301-525.313. STANDARD ROOM-AND-PILLAR MINING

N/A

R645-301-525.400. SUBSIDENCE CONTROL PLAN CONTENTS

N/A

R645-301-525.410. MINING METHOD

N/A

R645-301-525.420. MAP OF WORKINGS

N/A

R645-301-525.430. PHYSICAL CONDITIONS

N/A

R645-301-525.440. SUBSIDENCE MONITORING

N/A

R645-301-525.450. SUBSIDENCE CONTROL MEASURES

N/A

R645-301-525.451. BACKSTOWING OR BACKFILLING OF VOIDS;

N/A

R645-301-525.452. LEAVING SUPPORT PILLARS OF COAL;

N/A

R645-301-525.453. OVERLYING AREA TO BE PROTECTED

N/A

R645-301-525.454. PROTECTION MEASURES ON SURFACE

N/A

R645-301-525.460. A DESCRIPTION OF ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

N/A

R645-301-525.470. BUILDINGS, DWELLINGS AND STRUCTURES

N/A

R645-301-525.480. REPLACEMENT OF WATER SUPPLIES

N/A

R645-301-525.490. OTHER INFORMATION REQUIRED BY DIVISION

N/A

R645-301-525.500. REPAIR OF DAMAGE

N/A

R645-301-525.510. SURFACE LANDS

N/A

R645-301-525.520. NON-COMMERCIAL BUILDINGS, DWELLINGS AND STRUCTURES

N/A

R645-301-525.530. DAMAGE TO OTHER STRUCTURES

N/A

R645-301-525.540. CAUSATION BY SUBSIDENCE

N/A

R645-301-525.541. DAMAGE WITHIN ANGLE OF DRAW

N/A

R645-301-525.542. APPROVAL OF ANGLE OF DRAW

N/A

R645-301-525.543. PRE=SUBSIDENCE SURVEY DENIED

N/A

R645-301-525.544. REBUTTAL OF PRESUMPTION

N/A

R645-301-525.545. RELEVANT AND AVAILABLE INFORMATION

N/A

R645-301-525.550. ADJUSTMENT OF BOND AMOUNT

N/A

R645-301-525.600. COMPLIANCE

N/A

R645-301-525.700. PUBLIC NOTICE OF PROPOSED MINING

N/A

R645-301-526. MINE FACILITIES

See R645-301-520 and Volume II.

R645-301-526.100. MINE STRUCTURES AND FACILITIES

See R645-301-520 and Volume II.

R645-301-526.110. EXISTING STRUCTURES

See R645-301-520 and Volume II.

R645-301-526.111. LOCATION

See R645-301-520 and Volume II.

R645-301-526.112. PLANS OR PHOTOGRAPHS

See R645-301-520.

R645-301-526.113. DATES OF CONSTRUCTION OF EXISTING STRUCTURES

See R645-301-520.

R645-301-526.114. MONITORING DATA

N/A

R645-301-526.115. COMPLIANCE PLAN

N/A

R645-301-526.115.1 DESIGN SPECIFICATION

See R645-301-520.

R645-301-526.115.2 CONSTRUCTION SCHEDULE

See R645-301-520.

R645-301-526.115.3 MONITORING SCHEDULES

N/A

R645-301-526.115.4 MINIMIZING RISK OR HARM TO ENVIRONMENT, HEALTH OR PUBLIC SAFETY

N/A

R645-301-526.116. PROTECTION OF PUBLIC AND LANDOWNERS

See R645-301-510 and R645-301-520.

R645-301-526.116.1 MINING OPERATIONS WITHIN 100 FEET OF THE RIGHT-OF-WAY OF A PUBLIC ROAD

N/A

R645-301-526.116.2 RELOCATING A PUBLIC ROAD

N/A

R645-301-526.200. UTILITY INSTALLATION AND SUPPORT FACILITIES

See R645-301-520.

R645-301-526.210. DESCRIPTION

See R645-301-520.

R645-301-526.220. COMPLIANCE REQUIREMENTS

See R645-301-520.

R645-301-526.221. PROTECTION

See R645-301-520.

R645-301-526.222. MINIMIZATION OF ENVIRONMENTAL IMPACT AND COMPLIANCE WITH EFFLUENT LIMITATIONS

See R645-301-520.

R645-301-526.300. WATER POLLUTION CONTROL FACILITIES

See R645-301-520.

R645-301-526.400. AIR POLLUTION CONTROL FACILITIES

Appendix B - DAQE-013-03 Air Quality Permit.

R645-301-527. TRANSPORTATION FACILITIES

Roads

All roads within the permit area are classified as "Primary Roads" in accordance with R614-301-527.100.

See R645-301-512.250 for details.

Railroad

The rail siding roughly bisects the permit area and runs in a north-south direction. The siding is part of a Utah Railroad lease agreement with the B.L.M.

Other Transportation Facilities

Transportation facilities will be designed, constructed, or reconstructed, and maintained to prevent, to the extent possible, damage to fish, wildlife, and related environmental values; and will control to the extent possible, additional contributions outside the permit area. This has been accomplished on the railroad siding through slope stabilization, revegetation, and adequate drainage. Andalex will minimize diminution or degradation of water quality and quantity; control and minimize erosion and siltation; control and minimize pollution; and prevent damage to public or private property to the extent possible. Please note that Andalex's rail siding parallels the existing Utah Railroad mainline and is owned by the Utah Railroad.

R645-301-527.100. ROAD CLASSIFICATION

R645-301-527.110. DESIGNATION OF ALL ROADS

See R645-301-527.

R645-301-527.120. PRIMARY ROADS

See R645-301-527.

R645-301-527.121. USED FOR TRANSPORTING COAL OR SPOIL;

See R645-301-527

R645-301-527.122. FREQUENT USE OR FOR PERIODS IN EXCESS OF 6 MONTHS

See R645-301-527.

R645-301-527.123. RETAINED FOR POSTMINING LAND USE

See R645-301-527.

R645-301-527.130. ANCILLARY ROADS

See R645-301-527.

R645-301-527.200. TRANSPORTATION FACILITIES

See R645-301-527.

R645-301-527.210. DESIGNS AND SPECIFICATIONS

See R645-301-527.

R645-301-527.220. RELOCATION OF A NATURAL DRAINAGEWAY

N/A

R645-301-527.230. MAINTENANCE AND REPAIRS

N/A

R645-301-527.240. GEOTECHNICAL ANALYSIS

N/A

R645-301-527.250. ALTERNATE SPECIFICATIONS OR STEEP CUT SLOPES

N/A

R645-301-528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE

See R645-301-512.230 and R645-301-520.

R645-301-528.100. COAL REMOVAL, HANDLING, STORAGE, CLEANING, AND TRANSPORTATION AREAS AND STRUCTURES

See R645-301-512.230.

R645-301-528.200. OVERBURDEN

N/A

R645-301-528.300. SPOIL, COAL PROCESSING WASTE, MINE DEVELOPMENT WASTE, AND NON-COAL WASTE REMOVAL

Coal Refuse

See R645-301-512.230

Acid and Toxic-Forming Materials

Please refer to Section R645-301-512-230, re: coal processing waste and re: leachate testing for potential acid- and toxic-forming materials. If it is determined through leach testing that the coal processing waste material is acid- or toxic-forming, then the disposal will consist of burial on the west side of Wildcat under four feet of fill material or haulage to another approved coal processing waste disposal area. Disposal will take place within 30 days after the acid or toxic forming materials are identified. The Division will be notified if the coal processing waste is to be moved off-site to another approved disposal area. If acid or toxic forming material is identified it will be buried as described above within 60 days of its discovery. There is no potential for any other acid- or toxic-forming materials within this permit area.

Non-Coal Waste

All combustibles (paper, garbage, paints, wood, etc.) are collected in trash containers and hauled to the local land fill. Non-coal wastes will be placed and stored in a controlled manner in a designated position of the permit area and will comply with R645 regulation. Please refer to Plate 1 for dumpster location.

Contingency Plans to Prevent Sustained Combustion

All which could burn would be small in quantity and consist of normal trash (cardboard, paper, etc.). The quantity would not exceed the volume of a small dumpster. The trash facility is segregated from any buildings or other structures and if ignited accidentally, could be extinguished quickly using either water or fire extinguishers. Spontaneous coal stockpile fires are generally quite small and are extinguished by frontend loaders immediately.

R645-301-528.310. EXCESS SPOIL

N/A

R645-301-528.320. COAL MINE WASTE

See R645-301-528.300.

R645-301-528.321. RETURN OF COAL PROCESSING WASTE TO ABANDONED UNDERGROUND WORKINGS

N/A

R645-301-528.322. REFUSE PILES

See R645-301-512.230 and R645-301-528.300.

R645-301-528.323. BURNING AND BURNED WASTE UTILIZATION

N/A

R645-301-528.323.1 COAL MINE WASTE FIRES

See R645-301-512.230.

R645-301-528.323.2 BURNING OR BURNED COAL MINE WASTE REMOVAL PLAN

See R645-301-512.230.

R645-301-528.330. NON-COAL MINE WASTE

See R645-301-528.300.

R645-301-528.331. DESIGNATION OF NON-COAL MINE WASTE MATERIALS

See R645-301-528.300.

R645-301-528.332. FINAL DISPOSAL OF NON-COAL MINE WASTES

See R645-301-528.300.

R645-301-528.333. RESTRICTIONS ON DISPOSAL ON NON-COAL MINE WASTE MATERIAL

See R645-301-528.300.

R645-301-528.334. HAZARDOUS WASTE MATERIALS

See R645-301-528.300.

R645-301-528.340. UNDERGROUND DEVELOPMENT WASTE

N/A

R645-301-528.350. DISPOSAL REQUIREMENTS

N/A

R645-301-528.400. DAMS, EMBANKMENTS AND OTHER IMPOUNDMENTS

See R645-301-512.240.

R645-301-529. MANAGEMENT OF MINE OPENINGS

N/A

R645-301-529.100. CLOSURE OF MINE OPENINGS

N/A

R645-301-529.200. UNDERGROUND MINING OPERATIONS

N/A

R645-301-529.210. TEMPORARILY INACTIVE OPERATIONS

N/A

R645-301-529.220. RETURN UNDERGROUND DEVELOPMENT WASTE, COAL PROCESSING WASTE OR WATER TO UNDERGROUND WORKINGS

N/A

R645-301-529.300. HOLES USED FOR BLASTING

N/A

R645-301-529.400. SURFACE MINING OPERATIONS

N/A

R645-301-530. OPERATIONAL DESIGN CRITERIA AND PLANS

All required surface structures for the Wildcat Loadout are presently in place and operating. Any additions, modifications or deletions will be submitted as amendments or revisions to this plan.

R645-301-531. GENERAL

All structures have been properly designed, approved and constructed. Sediment ponds, dams and impoundments are detailed in Section R645-301-512.240. Roads are discussed in Section R645-301-512.250. Refuse disposal is detailed in Section R645-301-512.230 and Appendix O.

R645-301-532. SEDIMENT CONTROL

See R645-301-512.240.

R645-301-532.100. MINIMIZING DISTURBANCES

The permit area has been previously impacted by mining-related and processing activities. The present disturbed acreage at this site is 56.10 acres. This site represents a very compact and efficient use of space when compared to similar processing sites in the area. This is also the smallest practicable area of disturbance for the existing operations.

R645-301-532.200. STABILIZING BACKFILLED MATERIAL

Whenever possible, areas such as embankments, topsoil piles and other non-traffic sites, area revegetated to stabilize the site and reduce runoff.

All disturbed areas will be backfilled and graded to as near as possible the approximate original contour, and to the most moderate slope possible. Slopes shall not exceed the angle of repose or such lessor slopes as required by the regulatory authority to maintain stability. Fill material will be compacted to assure stability.

R645-301-533. IMPOUNDMENTS

See R645-301-512.240.

R645-301-533.100. STABILITY

See R645-301-512.240.

R645-301-533.110. MSHA IMPOUNDMENTS

N/A

R645-301-533.200. FOUNDATION DESIGN

Appendix C

R645-301-533.210. STABILITY

Appendix C

R645-301-533.220. PREPARATION

Appendix C

R645-301-533.300. SLOPE PROTECTION

See R645-301-532.200.

R645-301-533.400. VEGETATION OF EMBANKMENTS

See R645-301-532.200.

R645-301-533.500. SUBMERGED HIGHWALLS

N/A

R645-301-533.600. MSHA IMPOUNDMENTS

N/A

R645-301-533.610. GEOTECHNICAL INVESTIGATIONS

N/A

R645-301-533.611. CERTIFICATION

N/A

R645-301-533.612. DESIGN AND CONSTRICTION REQUIREMENTS

N/A

R645-301-533.613. OPERATION AND MAINTENANCE

N/A

R645-301-533.614. PLANS FOR REMOVAL

N/A

R645-301-533.620. ENGINEERING DESIGN

See R645-301-512.240.

R645-301-533.700. NON-MSHA IMPOUNDMENTS DESIGN REQUIREMENTS

See R645-301-512.240.

R645-301-533.710. DESIGN PLAN FOR NON-MSHA IMPOUNDMENTS

See R645-301-512.240

R645-301-533.711. CERTIFICATION

See R645-301-512.240

R645-301-533.712. DESIGN AND CONSTRUCTION REQUIREMENTS

See R645-301-512.240

R645-301-533.713. OPERATION AND MAINTENANCE

See R645-301-512.240

R645-301-533.714. PLANS FOR REMOVAL

See R645-301-512.240

R645-301-534. ROADS

See R645-301-512.250.

R645-301-534.100. DESIGN, USE AND RECLAMATION

See R645-301-512.250.

R645-301-534.110. DAMAGE TO PUBLIC OR PRIVATE PROPERTY

See R645-301-512.250.

R645-301-534.120. NON-ACID OR NONTOXIC FORMING SUBSTANCES IN ROAD SURFACING

No acid or toxic-forming substances will be used for road surfacing.

R645-301-534.130. FACTOR OF SAFETY FOR ROAD EMBANKMENTS

See R645-301-512.250.

R645-301-534.140. REMOVAL AND RECLAMATION OF ROADS

See R645-301-512.250.

R645-301-534.150. VEGETATION/STABILIZATION EXPOSED SURFACES

See R645-301-512.250.

R645-301-534.200. SAFETY AND ENVIRONMENTAL PROTECTION

See R645-301-512.250.

R645-301-534.300. PRIMARY ROADS

See R645-301-512.250.

R645-301-534.310. LOCATION

See R645-301-512.250.

R645-301-534.320. SURFACING

See R645-301-512.250.

R645-301-534.330. MAINTENANCE

See R645-301-512.250.

R645-301-534.340. CULVERT DESIGN

See R645-301-512.240 and R645-301-512.250.

R645-301-535. SPOIL

N/A

R645-301-535.100. DISPOSAL OF EXCESS SPOIL

N/A

R645-301-535.110. MINIMUM FACTOR OF SAFETY

N/A

R645-301-535.111. LOCATION

N/A

R645-301-535.112. FOUNDATION INVESTIGATIONS

N/A

R645-301-535.113. KEYWAY CUTS OR ROCK TOE BUTTRESSES

N/A

R645-301-535.120. EXCESS SPOIL DISPOSED OF IN UNDERGROUND MINE WORKINGS

N/A

R645-301-535.130. PLACEMENT OF EXCESS SPOIL

The only spoil material generated at the Wildcat Loadout is coal processing waste or refuse and sediment cleaned from the ponds. This material is placed in the refuse pile as described in Section R645-301-512.230 and Appendix O.

R645-301-535.140. **SURFACE COAL OPERATIONS**

N/A

R645-301-535.141. **GEOLOGIC CONDITIONS**

N/A

R645-301-535.142. **SEEP AND SPRING SURVEY**

N/A

R645-301-535.143. **EFFECTS FROM SUBSIDENCE**

N/A

R645-301-535.144. **ROCK CHIMNEY CORES OR DRAINAGE BLANKETS**

N/A

R645-301-535.145. **STABILITY ANALYSIS**

N/A

R645-301-535.150. **SURFACE MINING OPERATIONS**

N/A

R645-301-535.151. **TEST BORINGS**

N/A

R645-301-535.152. **ENGINEERING SPECIFICATIONS FOR ROCK TOE BUTTRESS OR KEYWAY CUTS**

N/A

R645-301-535.200. **DISPOSAL OF EXCESS SPOIL: VALLEY FILLS / HEAD-OF-HOLLOW FILLS**

N/A

R645-301-535.210. ROCK CORE CHIMNEY DRAINS

N/A

R645-301-535.220. DESIGN AND CONSTRUCTION OF THE FILL

N/A

R645-301-535.221. DESIGN REQUIREMENTS

N/A

R645-301-535.222. FILTER SYSTEM

N/A

R645-301-535.223. GRADING AND DRAINAGE

N/A

R645-301-535.300. DISPOSAL OF EXCESS SPOIL: DURABLE ROCK RILLS

N/A

R645-301-535.310. RESTRICTION

N/A

R645-301-535.320. REQUIREMENTS

N/A

R645-301-535.330. FACTOR OF SAFETY

N/A

R645-301-535.340. UNDERDRAIN SYSTEMS

N/A

R645-301-535.400. DISPOSAL OF EXCESS SPOIL: PRE-EXISTING BENCHES

N/A

R645-301-535.410. PLACEMENT

N/A

R645-301-535.420. DESIGN

N/A

R645-301-535.430. GRADING AND HIGHWALL ELIMINATION

N/A

R645-301-535.440. GRAVITY TRANSPORTATION

N/A

R645-301-535.441. HAZARDS

N/A

R645-301-535.442. STABILITY

N/A

R645-301-535.443. SAFETY BERMS

N/A

R645-301-535.444. FINAL DISPOSITION

N/A

R645-301-535.500. FACEUP OPERATIONS

N/A

R645-301-536. COAL MINE WASTE

See R645-301-512.230.

R645-301-536.100. DISPOSAL FACILITY

See R645-301-512.230.

R645-301-536.110. STABILITY

See R645-301-512.230.

R645-301-536.120. FOUNDATION DESIGN

See R645-301-512.230.

R645-301-536.200. PLACEMENT

See R645-301-512.230.

R645-301-536.210. CONSTRUCTION

See R645-301-512.230.

R645-301-536.220. PUBLIC HAZARDS

See R645-301-512.230.

R645-301-536.230. PREVENT COMBUSTION

See R645-301-512.230.

R645-301-536.300. COAL MINE WASTE DISPOSED OF IN EXCESS SPOIL FILLS

N/A

R645-301-536.310. REQUIREMENTS

N/A

R645-301-536.320. NONTOXIC AND NON-ACID FORMING

N/A

R645-301-536.330. DESIGN STABILITY

N/A

R645-301-536.400. OTHER REQUIREMENTS

N/A

R645-301-536.410. RESTRICTIONS

N/A

R645-301-536.420. DESIGN PLAN

N/A

R645-301-536.500. DISPOSAL OF COAL MINE WASTE IN SPECIAL AREAS

See R645-301-512.230.

R645-301-536.510. OUTSIDE A PERMIT AREA

N/A

R645-301-536.520. UNDERGROUND DISPOSAL

N/A

R645-301-536.600. UNDERGROUND DEVELOPMENT WASTE

N/A

R645-301-536.700. COAL PROCESSING WASTE

See R645-301-512.230.

R645-301-536.800. COAL PROCESSING WASTE EMBANKMENTS

See R645-301-512.230.

R645-301-536.810. REQUIREMENTS

See R645-301-512.230.

R645-301-536.820. MSHA REQUIREMENTS

See R645-301-512.230 and Appendix O.

R645-301-536.821. BORINGS AND TEST PITS

N/A

R645-301-536.822. FOUNDATION DESIGN

See R645-301-512.230.

R645-301-536.823. SEEP AND SPRING SURVEYS

See R645-301-512.230.

R645-301-536.824. HAZARDS

See R645-301-512.230.

R645-301-536.900. REFUSE PILES

See R645-301-512.230 and Appendix O.

R645-301-537. REGRADED SLOPES

N/A

R645-301-537.100. GEOTECHNICAL ANALYSIS

N/A

R645-301-537.200. REGRADING SETTLED AND REVEGETATED FILLS

N/A

R645-301-537.210. RESTRICTIONS

N/A

R645-301-537.220. LOCATION

N/A

R645-301-537.230. STABILITY

N/A

R645-301-537.240. VEGETATION AND SURFACE RUNOFF CONTROL

N/A

R645-301-537.250. HAZARDOUS CONDITIONS

N/A

R645-301-540. RECLAMATION PLAN

R645-301-541. GENERAL

Reclamation will be uncomplicated since this area is flat lying and topographically simple. All disturbed areas no longer required for the conduct of operations were immediately revegetated. In the future, any areas no longer required for operations will also be immediately revegetated.

When buildings and final site preparation was completed, the topsoil was revegetated to prevent erosion.

When the project is expired, perhaps in 30 years, extraneous material will be removed. Roads will be regraded and using the most advanced technology at the time, Andalex will re-establish the terrain to as nearly the original as practical.

Reclamation Timetable

Reclamation will be accomplished in two phases. Phase I will commence immediately after the project has expired. Phase I involves the majority of the reclamation steps. It will bring the site to nearly complete with the exception of sedimentation ponds which will be left in place until revegetation has been determined complete. Prior to revegetation being complete, there is a possibility for runoff within the disturbed area to accumulate a sediment load. These ponds left in place will prevent this runoff from leaving the disturbed area. Once the vegetation has been established which will probably take a minimum of two years, Phase II of the reclamation will commence. This phase involves the removal of the four sediment ponds which were left, regrading, and revegetating these areas, and finally, Andalex's commitment to monitoring.

<u>Phase I</u>

The first step will be to remove structures. Since none of the structures will remain on site, this will be the largest part of the Phase I effort and will also be the most expensive. The following is a list of structures which will be brought down and removed either complete or as scrap/salvage.

1. 14 x 60 Scale House Trailer
2. Truck Scales
3. Substation
4. Truck Dump (west side)*
5. Crushing Plant (west side)*
6. Radial Stacker (west side)*
7. Reclaim Tunnel (west side)
8. Loadout Conveyor (west side)*
9. Control Building (west side)
10. Truck Dump & Reclaim (2 each)
11. Conveyor T
12. Crusher and Screening Plant
13. Lump Coal Belt
14. Stoker Radial Stacker
15. Conveyor Y, Y-1
16. Main Radial Stacker (2 each)
17. Loadout Reclaim Tunnel, port supports, hoppers
18. Conveyor R
19. Loadout Tower
20. Miscellaneous (Guard Rails, Office,Water Tanks, Motor Control Centers)
21. Powerline
22. 40' x 40' Shop Building and foundation * Portable

Refer to R645-301-521 of this chapter for more information on these various structures.

The next step will be to remove any coal remaining on the various storage areas. This will not amount to a large volume of material and it will either be hauled to an approved storage area off-site or it will be disposed of within the loadout permit area by burial. This will include the coal refuse pile currently stored at Wildcat. The refuse pile will be flattened and buried according to the reclamation plan regarding coal mine refuse.

Once the coal has been removed, then the recontouring and regrading portion will commence. It is anticipated that the structure removal will take approximately one year to complete so at this point, we would be into the reclamation about thirteen months. The first step in the recontouring and regrading would be the removal of the culverts. They have been left in until this point so the disturbed area would drain properly. The recontouring would primarily involve the primary and secondary roads, the loadout pad, and the coal stockpile areas. The undisturbed diversion west of the facility would become permanent at this point and would be capable of passing a 100 year precipitation event. The original natural drainage could not be restored because of the Utah Railroad. This natural drainage has been either blocked or diverted for the last 30 years by predecessors to Andalex.

It is estimated by the cross sections that approximately 74,000 cubic yards of material will have to be moved in this process of recontouring and grading (please see Table V-1 re Mass Balance Summary). This part of Phase I will include the removal of ponds B and E and establishing new drainages to Ponds A, C, and D. Recontouring will take one month.

TABLE V-1

Mass Balance Summary

	Cut	Fill
1 + 00	740.8	926.0
0 + 00	1,111.2	
1 + 00	3,333.6	
2 + 00	1,481.6	2,963.2
3 + 00	1,852.0	5,185.6
4 + 00		5,926.4
5 + 00	1,111.2	4,074.4
6 + 00		4,444.8
7 + 00		1,481.6
8 + 00	7,037.6	4,444.8
9 + 00	6,667.2	2,963.2
10 + 00	7,037.6	2,222.4
11 + 00	4,444.8	2,963.2
12 + 00	8,519.2	4,444.8
13 + 00	1,481.6	6,296.8
14 + 00		8,148.8
15 + 00	7,408.0	4,444.8
16 + 00	6,667.2	3,704.0
17 + 00	2,222.4	5,185.6
18 + 00	5,926.4	2,222.4
19 + 00	1,481.6	1,852.0
20 + 00		740.8
21 + 00	5,185.6	
Total	73,709.6	74,635.6

TABLE V-1A

Mass Balance
Expanded Wildcat Pad Cross Sections

	Cut	Fill
0+00 - 0+60	0	0
0+80	24.0	0
1+00	22.9	0
1+20	26.1	0
1+40	24.5	0
1+60	58.7	0
1+80 - 3+80	0	0
4+00	0	78.4
4+20	0	250.4
4+40	0	302.3
4+60	181.0	301.3
4+80	157.2	310.1
5+00	139.9	273.5
5+20	132.4	272.7
5+40	135.5	271.7
5+60	153.2	251.3
5+80	169.7	204.9
6+00	171.4	194.7
6+20	173.5	148.0
6+40	185.7	109.3
6+60	227.3	88.4
6+80	234.7	35.0
7+00	211.9	17.0
7+20	0	0
Totals	2,429.6	3,109.0
x 20% swell =	485.9	
	2,915.5	

Once all the areas have been recontoured and graded, the next part of the Phase I reclamation will be compaction and scarification of the regraded areas. During this operation, if it is determined that additional sediment control measures are needed for the diversions leading to the four ponds, they will be put in at this time. These measures might include rock check dams or straw dikes.

The next steps in Phase I will not take place until the fall of whatever year we are in at this point. Including compaction and scarification, so far the project has taken 14 to 15 months. The next two steps in the process are topsoil redistribution, where additional substitute will be hauled in if necessary, and revegetation. Once the topsoil is spread, the approved seed mixture will be spread using a rangeland drill. Areas which cannot be seeded mechanically will be hydroseeded and hydromulched. Included in this part of the operation will be the staking of any slopes which exceed 10%.

Finally in Phase I, monitoring will commence. Observations of revegetation success and slope stability will be observed. If any part of this is unsuccessful, thin corrective measures will be taken.

Since Andalex estimates a minimum of two years before vegetation has taken hold to prevent erosion, then the entire Phase I project will take at least 3-1/2 years.

Phase II

Phase II of the reclamation will commence as soon as the monitoring of Phase I allows.

All that is left at this point is the removal (recontouring) of Ponds A, C, D, and F and the removal of the field fence surrounding the permit area. Once the areas have been graded, they will be compacted and scarified prior to topsoil redistribution. At this point, if it is not already the fall season, Andalex will wait before redistributing the topsoil and revegetating. The same methods for revegetation will be used as in the Phase I reclamation.

Monitoring will then continue until the release of the bond.

Please note that earthwork will be done in both Phase I and II as much as possible during the dry seasons to avoid unnecessary erosion to the regraded areas. If dust becomes a problem, water will be used to control it.

R645-301-541.100. CESSATION OF MINING OPERATIONS

See R645-301-541.

R645-301-541.200. REMOVAL OF FACILITIES

See R645-301-541.

R645-301-541.300. POSTMINING FACILITIES AND MONITORING

See R645-301-541.

R645-301-541.400. COMPLIANCE REQUIREMENTS FOR RECLAMATION

See R645-301-240.

R645-301-542. NARRATIVES, MAPS AND PLANS

See R645-301-510.

R645-301-542.100. TIMETABLE

See R645-301-240 and R645-301-541.

R645-301-542.200. BACKFILLING AND GRADING PLAN

See R645-301-532.200.

R645-301-542.300. FINAL SURFACE CONFIGURATION MAPS

Plates 8 & 9.

R645-301-542.310. CERTIFICATION REQUIREMENTS

See R645-301-510 and Volume II.

R645-301-542.320. PERMANENT FACILITIES

The only permanent facilities to remain at the Wildcat Loadout after reclamation will be the Undisturbed Diversion (UD-1), Permanent Impoundment and the railroad. The undisturbed diversion and permanent impoundment are being left to provide drainage control for a drainage that was blocked off over 30 years ago by the railroad.

These structures are sized to carry runoff from a 100 year - 24 hour storm, as detailed in Section R645-301-512.240.

R645-301-542.400. FINAL ABANDONMENT OR BOND RELEASE

Reclamation Cost and Bonding

Cost of Reclamation

Introduction

The major elements in the reclamation of Wildcat will be the dismantling and removal of the large structures. This will be accomplished primarily with manpower and some large equipment including cranes. The major structures to be removed are the loadout tower, the two loadout conveyors, the reclaim tunnel, the two radial stackers, the yard conveyor, the crushing and screening plant, and the truck dump. Also, the coal refuse pile will be flattened and covered with suitable fill material.

Andalex forsees that the removal of these structures will be done in conjunction with a salvaging project as these structures and equipment will retain a great deal of value after they are dismantled. Therefore, the cost of removing these structures may be largely absorbed by the person or persons participating in the salvage operation. However, this savings was not considered in the bond estimate.

Bond or Surety Arrangement

Andalex has procured a reclamation bond in the amount established by the Divison. (See Appendix B)

Wildcat Loadout Facility (Phase I)

Restoration to the pre-mining land use will require:

PHASE I:

A.	Removal of Structures:		
	1.	14 x 60 Scale House Trailer and Truck Scales	$ 9,300
	2.	Substation	7,500
	3.	Truck Dump (west side)	6,000
	4.	Crushing Plant (west side)*	
	5.	Radial Stacker (west side)*	
	6.	Reclaim Tunnel (west side)	7,000
	7.	Loadout Conveyor (west side)*	

8.	Control Building (west side)	1,000
9.	Truck Dump & Reclaim	35,000
10.	Conveyor T	2,000
11.	Crusher and Screening Plant	9,500
12.	Lump Coal Belt	8,400
13.	Stoker Radial Stacker	8,400
14.	Conveyor Y	25,000
15.	Main Radial Stacker	34,000
16.	Loadout Reclaim Tunnel, port supports,	117,000
17.	Conveyor R	23,000
18.	Loadout Tower	27,900
19.	Miscellaneous (Guard Rails, Office, Water and Mag. Tanks, Motor Control Centers)	8,800
20.	Powerline	2,700
21.	40" x 40" Shop	14,000
	Total	$ 346,500

* Portable

B.	Cleanup Coal Piles: 1. Radial Stacker 2. Stoker, Lump 3. Mine Run and Lump 4. West Side Stoker 5. West Side Storage Pad	$ 20,000
C.	Recontouring and Regrading: (including covering of coal refuse storage pile) 1. Culvert Removal 2. Move 77,000 yds.^{3}	$ 81,000
D.	Compaction and Scarification: 1. 59.1 acres	$ 4,000
E.	Topsoil Redistribution: 1. 56.1 acres	$ 30,000
F.	Revegetation: 1. 69 acres	$ 69,000
G.	Monitoring Costs: Years 1, 2, 3, 5, 9, and 10 Water - 24 mandays (once per quarter) Revegetation - 6 mandays (once per monitoring year; will take place in the fall of the year) Erosion - 24 mandays (once per quarter) 54 mandays total @ $150.00/day =	$ 8,100

Phase I Subtotal	$ 558,600

Phase II:

A. Recontouring, Grading, Compaction, Topsoil Redistribution, Revegetation 1. Ponds A, C, D, and F	$ 17,000
B. Monitoring Costs: Years 9 and 10 Water - 8 mandays (once per quarter) Revegetation - 2 mandays (once per monitoring year; will take place in the fall of the year) Erosion - 8 mandays (once per quarter) 18 mandays total @ $150.00/day =	2,700
Phase II Subtotal	$ 19,700
Total Projected Reclamation Costs	$ 578,300
Contingency 10%	58,000
+4.6% Reclamation Mgmt Costs	$ 26,600
December, 1990	$ 662,900

Year	Esclation Factor	Escalated Total
1990	---	$ 662,900
1991	1.27%	671,300
1992	2.21%	686,100
1993	2.54%	703,500
1994	2.01%	718,300
1995	2.01%	733,400
1996	2.01%	748,800
1997	2.01%	764,500
1998	2.01%	780,600
1999	2.01%	797,000

Total reclamation cost (1999 dollars) is $797,000, which indicates Andalex's existing bond is adequate.

These costs are based on careful estimates of the time involved and the number of people required to perform each task. As can be seen from the above table, the cost of removing the structures is by far the highest cost of any of the reclamation steps and hence was detailed. The removal of each individual structure as outlined above is based on two things: 1) the cost involved in exposing the various structures so that they can be removed, and 2) the actual dismantling and cutting and loading of the structures either as used equipment or scrap. The cost of excavation which includes the equipment and the manpower is estimated at $2,400/day. This assumes the use of a track excavator, a frontend loader, and a D-8 or similar bulldozer with operators. Hourly rates of various pieces of equipment with operators was acquired from local contractors and labor costs are based on known rates for the Carbon and Emery County areas. Contingencies as noted above and escalations have been added on to assume future dollar values. The other cost assumes the use of a three man crew for stripping and cutting. For example, to remove the truck dump and reclaim system requires three days of excavation to expose the structure and four weeks to strip and dismantle the structure resulting in a total cost of close to $17,000. This includes $7,200 for excavation and roughly $9,800 for the stripping and dismantling. Estimates of time involved were based on experience during the construction phase. The cost of the structure removal therefore can be broken down into the two categories mentioned above at $125,000 and $161,000 respectively. Other estimates mentioned above, in particular, earthmoving (including coal pad restoration and topsoil redistribution), are based on quotations received from contractors pertaining to costs per square yard for moving such material. Cost of revegetation is based on previous work performed by Andalex at the Centennial Minesite. Estimates for monitoring costs assume simple observations of revegetation success and slope stability over a minimum ten year period for Phase I Reclamation.

The cost of Phase II Reclamation, although it has been lumped into one sum total, is based on the same criteria as Phase I Reclamation. Additional money was added for the monitoring which will take place during later years.

Equipment (based on local contacts, with operators):

1. Crane, one @ $150/hr.
2. Loader @ $80/hr.
3. Dump Trucks @ $50/hr.
4. Scrapers @ $80/hr. (2 each)
5. Dozer (for burial & excavation) @ $90/hr. (D8)

6. Track Excavator @ $100/hr.
7. Grader @ $80/hr.

8. Sheeps Foot @ $30/hr.
9. Tractor, scarifyer @ $40/hr.
10. Hydroseeder (including mulch) @ $250/acre
11. Miscellaneous (torches, hand tools, etc.)

Productivity will be sampled only during years 9 and 10. The reference area will be sampled during years 9 and 10.

G. Recovery and Conservation of Coal Resources

This section not applicable to the Wildcat Loadout.

H. Abandonment of Portals and Underground Workings

This section not applicable to the Wildcat Loadout.

1. Casing and Sealing of Drill Holes

All drill holes within the permit area have been sealed with cement from bottom to top (eight test holes referred to in Appendix C). No new holes will be drilled.

R645-301-542.500. IMPOUNDMENTS AND EMBANKMENTS

See R645-301-512.240 and R645-301-541.

R645-301-542.600. ROADS

All roads will be removed and reclaimed per Section R645-301-541.

R645-301-542.610. CLOSURE

See R645-301-541.

R645-301-542.620. REMOVAL OF BRIDGES AND CULVERTS

See R645-301-541.

R645-301-542.630. TOPSOIL REPLACEMENT AND REVEGATATION

See R645-301-541.

R645-301-542.640. REMOVAL OF ROAD SURFACING MATERIALS

See R645-301-541

R645-301-542.700. FINAL ABANDONMENT OF MINE OPENINGS AND DISPOSAL AREAS

Plates 8 & 9.

R645-301-542.710. DESCRIPTION

N/A

R645-301-542.720. DISPOSAL OF EXCESS SPOIL

N/A

R645-301-542.730. DISPOSAL OF COAL MINE WASTE

See R645-301-512.230.

R645-301-542.740. DISPOSAL OF NON-COAL MINE WASTES

See R645-301-541.

R645-301-542.741. PLACEMENT AND STORAGE

See R645-301-541.

R645-301-542.742. FINAL DISPOSAL

See R645-301-541.

R645-301-542.800. RECLAMATION COST ESTIMATE

See R645-301-240 and R645-301-542.400.

R645-301-550. RECLAMATION DESIGN CRITERIA AND PLANS

See R645-301-240.

R645-301-551. CASING AND SEALING OF UNDERGROUND OPENINGS

N/A

R645-301-552. PERMANENT FEATURES

See Section R645-301-542.320.

R645-301-552.100. SMALL DEPRESSIONS

See Section R645-301-542.320.

R645-301-552.200. PERMANENT IMPOUNDMENTS

See Sections R645-301-512.240 and R645-301-542.320.

R645-301-553. BACKFILLING AND GRADING

See Section R645-301-541.

R645-301-553.100. DISTURBED AREAS

See Section R645-301-541.

R645-301-553.110. AOC REQUIREMENTS

See Section R645-301-541.

R645-301-553.120. HIGHWALL AND SPOILS PILE ELIMINATION

See Section R645-301-541.

R645-301-553.130. SLOPE PROTECTION AND STABILITY

See Section R645-301-541.

R645-301-553.140. EROSION AND WATER POLLUTION

See Section R645-301-541.

R645-301-553.150. SUPPORT POSTMINING LAND USE

Upon completion of Andalex Resources' mining operation, the land will continue to be used for grazing and hunting. The limited resources, both physical and scenic, will dictate no future change in the land status. The nature of an underground mine of this size requires minimal surface disturbance. All disturbed areas shall be restored in a timely manner to conditions that are capable of supporting the uses which they were capable of supporting before any

mining including high priority wildlife habitat. Andalex is not proposing an alternate post-mining land use. Andalex is not requesting an approval for an alternate post-mining land use. The anticipated post-mining land use is likely to be achieved and does not present any actual or probable hazard to public health or safety or threat of water diminution or pollution. The post-mining land use is practical and can be implemented immediately following reclamation and will not result in any violation of federal, state, or local law.

R645-301-553.200. SPOIL AND WASTE

N/A

R645-301-553.210. REQUIREMENTS FOR DISPOSAL

N/A

R645-301-553.220. SPOIL PLACEMENT OUTSIDE MINED-OUT AREA

N/A

R645-301-553.221. CLEARING AND GRUBBING

N/A

R645-301-553.222. TOPSOIL REMOVAL AND STORAGE

N/A

R645-301-553.223. BACKFILLING AND GRADING

N/A

R645-301-553.230. FINAL SURFACE GRADING

See R645-301-541.

R645-301-553.240. FINAL CONFIGURATION

Plates 8 & 9.

R645-301-553.250. REFUSE PILES

See section R645-301-512.230; Plates 8 & 9.

R645-301-553.251. FINAL CONFIGURATION

See section R645-301-512.230 and Appendix O.

R645-301-553.252. COVER REQUIREMENTS

See section R645-301-512.230 and Appendix O.

R645-301-553.260. DISPOSAL OF COAL PROCESSING WASTES IN MINED-OUT SURFACE AREAS

N/A

R645-301-553.300. RESTRICTIONS AND REQUIREMENTS

N/A

R645-301-553.400. CUT-AND-FILL TERRACES

N/A

R645-301-553.410. COMPATIBILITY

N/A

R645-301-553.420. SPECIALIZED FACILITIES FOR IMPLEMENTING POSTMINING LAND USE

N/A

R645-301-553.500. PREVIOUSLY MINED AREAS

N/A

R645-301-553.510. RE-MINING AREAS CONTAINING HIGHWALLS

N/A

R645-301-553.520. HIGHWALL ELIMINATION

N/A

R645-301-553.530. REMAINING HIGHWALLS

N/A

R645-301-553.540. SPOIL ON OUTSLOPES

N/A

R645-301-553.600. APPROXIMATE ORIGINAL CONTOUR

See R645-301-523.200.

R645-301-553.610. HIGHWALL VARIANCE REQUIREMENTS

N/A

R645-301-553.611. SPOIL AND BACKFILL

N/A

R645-301-553.612. AVAILABLE SPOIL

N/A

R645-301-553.650. HIGHWALL MANAGEMENT

See R645-301-511.100.

R645-301-553.650.100 REMAINING HIGHWALL - SIZE

N/A

R645-301-553.650.200 REMAINING HIGHWALL - APPEARANCE

N/A

R645-301-553.650.300 REMAINING HIGHWALL - MODIFICATION

N/A

R645-301-553.650.400 REMAINING HIGHWALL - LAND USE

N/A

R645-301-553.650.500 REMAINING HIGHWALL -COMPATIBILITY

N/A

R645-301-553.700. BACKFILLING AND GRADING: THIN OVERBURDEN

N/A

R645-301-553.710. AVAILABLE SPOIL MATERIALS

N/A

R645-301-553.720. REQUIREMENTS

N/A

R645-301-553.800. BACKFILLING AND GRADING: THICK OVERBURDEN

N/A

R645-301-553.810. FINAL GRADING

N/A

R645-301-553.820. REQUIREMENTS

N/A

R645-301-553.830. EXCESS SPOIL

N/A

R645-301-553.900. SETTLED AND REVEGETATED FILLS

N/A

R645-301-560. PERFORMANCE STANDARDS

See R645-301-510 and R645-301-541.

R645-301-600. GEOLOGY

R645-301-610. INTRODUCTION

R645-301-611. GENERAL REQUIREMENTS

R645-301-611.100. GEOLOGY WITHIN AND ADJACENT TO THE PERMIT AREA

Introduction

The Wildcat Loadout is in the Gordon Creek area of the Wasatch Plateau which is one of the major physiographic features in the region. The plateau rises from a base at approximately 6,000 feet in elevation to over 9,000 feet.

Spring Canyon and Ford Ridge (Forge Mountain) are the major topographic features of the area. The Price River Canyon and Spring Canyon are the major area drainages.

Geologic Setting (Stratigraphy and Structure)

The permit area sits on the Masuk Member of the Mancos Shale. The Mancos Shale in this area is in access of 5,000 feet thickness. The Mancos Shale in the area is mainly dark bluish, gray shale which becomes sandy towards the top.

The oldest unit of the Mesa Verde Group is the Star Point Sandstone. It lacks coal and consists of three sandstone tongues. The beds of sandstone range in thickness from one to ten feet in most parts. The Mesa Verde Group immediately overlies the Mancos Shale. Overlying the starpoint sandstone, is the Blackhawk formation, also of the Mesa Verde Group. The major coal seams of the entire region lie within the Blackhawk formation. The Blackhawk formation consists of cliffy sandstone beds and lagoonal sediments.

Immediately, but disconformably overlying the Blackhawk formation, is the Castlegate sandstone, also of the Mesa Verde Group. It is a single bed of massive sandstone about 450 to 500 feet thick. Above the Castlegate sandstone are 900 to 1,000 feet of sandstone, shale, and sandy shale beds, a unit called the Price River Formation which is also a member of the Mesa Verde Group.

Structure

In the Wasatch Plateau, the cliff fronts roughly parallel the strike of the beds with gentle dips to the northwest. The Mancos Shale in this area exhibits the same trends.

The Wasatch Plateau contains three complex north trending fault zones of large lateral extent. This has a tendency to disrupt mining activities on the Wasatch Plateau but will have no impact on the Wildcat Loadout Facility as this is strictly a surface facility.

History of Mining

Mining and its' related activities have been the main industry in this region for many years.

Coal was discovered in the Wasatch Plateau as early as 1874. Coal exploration eventually spread to the Book Cliffs. As early as 1889, mines started operating in the area. The Castlegate and Sunnyside area was developed first. As the coal way usually discovered away from settled areas, the companies built houses for their employees.

There was increased production until 1920, thereafter declining during the 1920's and 1930's. However, as a result of the second World War, production bounced back to the 1920 levels and this production increase went up until 1957 when production once again declined.

Up to 75 percent of Utah's annual coal production has come from mines in the Book Cliffs.

Coal already extracted from the coal measures of the area is well over 200 million tons. Much coal remains and many mines are presently operating in the area.

Historically, coal loading activities had been the sole use for this permit area, even prior to being leased to Andalex Resources.

Geologic and Tectonic 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. During the Triassic times, the sediments probably came from all directions but, during the Jurassic time, the major source areas were mainly to the south and west.

During the early Cretaceous, a trough developed in the Colorado Rockies and the sea invaded the area. Gradually, the sea crept westward as the trough continued to subside, reaching the east edge of the Colorado Plateau by the early part of the Upper Cretaceous.

Unconformities and thinning of various members indicate that volcanic activity to the west caused sediments to fill the basin faster than it could subside, causing the shoreline to be pushed eastward. When hills developed as a result of this activity, the incoming sediments diminished, causing the sea to move westward once more. With each pulse, the boundaries of the depositional environments moved eastward and then returned westward. This was the period the sandstone tongues of the Mesa Verde group which project into the Mancos, were deposited. This is known as the Star Point Sandstone.

Despite the fact that the sea retreated, the area continued to receive sediments under continual conditions, a condition known to have lasted well into the Eocene time. The area began to rise in full earnest during Oligocene time. Erosion attacked the previously deposited formations, and in consequence, forming the present mountain ranges and cliffs.

Geologic Hazard

Although there are faults present in the area, they will have no impact on the Wildcat Loadout Surface Facility.

Detailed Description of Strata to be Disturbed by Surface Operations

Identification of Strata

The strata disturbed by surface operations consists of a slightly sandy shale. Surface disturbance was primarily in loose sediments and coal dumps.

R645-301-611.200. PROPOSED OPERATIONS

See R645-301-551. and R645-301-529.100.

R645-301-612. CROSS SECTION, MAPS AND PLANS

See R645-301-510.

R645-301-620. ENVIRONMENTAL DESCRIPTION

See R645-301-510.

R645-301-621. GENERAL REQUIREMENTS

See R645-301-510.

R645-301-622. CROSS SECTIONS, MAPS AND PLANS

Plate 12

R645-301-622.100. TEST BORINGS AND CORE SAMPLINGS

Appendix C

R645-301-622.200. COAL SEAMS AND BURDEN

N/A

R645-301-622.300. COAL OUTCROPS

N/A

R645-301-622.400. GAS AND OIL WELLS

There are no oil or gas wells within the permit area. In 2002, a drill pad was constructed by Conoco Phillips Company for a gas well adjacent to the east permit boundary, and actually encroached on the permit as shown on Plates 1 and 2; however, to date, no drilling has been done and future drilling will not occur within the permit boundary.

R645-301-623. GEOLOGIC INFORMATION

See R645-301-611.100.

R645-301-623.100. POTENTIALLY ACID OR TOXIC FORMING STRATA

Appendix C

R645-301-623.200. RECLAMATION REQUIREMENTS

See R645-301-240.

R645-301-623.300. SUBSIDENCE CONTROL PLAN

N/A

R645-301-624. GEOLOGIC INFORMATION

See R645-301-611.100.

R645-301-624.100. DESCRIPTION

See R645-301-611.100.

R645-301-624.110. CROSS SECTIONS, MAPS AND PLANS

See R645-301-510.

R645-301-624.120. OTHER INFORMATION

Alternative Water Supply Information

The Wildcat activities will not result in any contamination, diminution, or interruption of any surface water sources within the proposed permit area. Naturally drainages have been diverted around the disturbed area. It should be noted that these are ephemeral drainages. As no springs or seeps exist on or near the permit area, there are no groundwater sources to be disrupted. Andalex has water rights on the seep in Garley Creek and upon completion of activities this water right could be transferred for another use. To date, Andalex has not developed this water. If developed, it will be used for dust suppression.

R645-301-624.130. GEOLOGIC LITERATURE AND PRACTICES

See R645-301-611.100.

R645-301-624.200. SAMPLING AND ANALYSIS

Appendix C

R645-301-624.210. LOGS

Appendix C

R645-301-624.220. CHEMICAL ANALYSES

Appendix C

R645-301-624.230. ACID OR TOXIC FORMING MATERIALS

Appendix C, R645-301-513.300.

R645-301-624.300. TEST BORINGS AND DRILL CORES

Appendix C

R645-301-624.310. LOGS

Appendix C

R645-301-624.320. ACID OR TOXIC FORMING MATERIALS

Appendix C, R645-301-513.300.

R645-301-624.330. CHEMICAL ANALYSES

Appendix C

R645-301-624.340. ROOF AND FLOOR MATERIALS

N/A

R645-301-625. ADDITIONAL INFORMATION

Appendix C

R645-301-626. WAIVER FROM COLLECTION AND ANALYSIS

N/A

R645-301-627. OVERBURDEN

N/A

R645-301-630. OPERATION PLAN

See R645-301-511.100.

R645-301-631. CASING AND SEALING OF EXPLORATION HOLES AND BOREHOLES

See R645-301-551.

R645-301-631.100. TEMPORARY CASING AND SEALING OF DRILLED HOLES

N/A

R645-301-631.200. PERMANENT CASING AND SEALING OF EXPLORATION HOLES AND BOREHOLES

See R645-301-551.

R645-301-632. SUBSIDENCE MONITORING

N/A

R645-301-632.100. DEGREE OF SUBSIDENCE

N/A

R645-301-632.200. MONITORING LOCATIONS

N/A

R645-301-640. PERFORMANCE STANDARDS

See R645-301-551 and R645-301-529.100.

R645-301-641. ALL EXPLORATION HOLES AND BOREHOLES

See R645-301-551 and R645-301-529.100.

R645-301-642. MONUMENTS AND SURFACE MARKERS

N/A

R645-301-700. HYDROLOGY

R645-301-710. INTRODUCTION

It should be noted that the entire sedimentation and control plan, including impoundments, diversions and water monitoring plans are discussed in the Engineering Chapter 5 under Section R645-301-512.240. To prevent duplication and possible omissions during amendments, references are made from this chapter to that section wherever applicable.

R645-301-711. GENERAL REQUIREMENTS

See Sections R645-301-711.100 through R645-301-711.500

R645-301-711.100. EXISTING HYDROLOGIC RESOURCES

Existing Groundwater Resources

Regional Groundwater Hydrology

The groundwater resources of the Wasatch Plateau have not been studied to any great extent. The region has been characterized generally as one of regional groundwater recharge.[1] The lithologic nature of the upper cretaceous strata generally makes them unsuitable as significant aquifers. Much of the precipitation that falls in the Wasatch Plateau is removed by overland flow and evapotranspiration. The water that does enter the ground moves only short distances before discharging as springs and seeps, generally in the higher elevation areas. The regional water table is probably several hundred feet below the surface,[1] and probably coincides with the bottoms of the major streams, i.e., Price River.

The principal water bearing formations of the Wasatch Plateau are the sandstone units of the Mancos Shale Group. These include the Emery and Ferron Sandstones.[1] These sandstone units occur in the southern part of Emery County and probably do not extend into the Gordon Creek area.[2] The basal unit of the Mesa Verde Group, the Star Point Sandstone, is probably the principal aquifer in the Gordon Creek area; however, this unit is stratigraphically located

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[1]Price and Arnow, 1974

[2]Fisher, 1960

several hundred feet in elevation higher than the loadout facility. Price and Arnow (1979) do not identify the Gordon Creek area as a region for potential large scale groundwater development.

The Mancos formation consists of approximately 5,000 feet of dark blue-gray shale with several prominent members. The loadout facility is located in the Upper or Masuk Shale Member of the Mancos. This formation is characterized as a yellow to blue-gray sandy shale and is not regarded as an aquifer (please see Figure VII-1). Little data is available on the groundwater potential of the shales in the Lower Gordon Creek Area, since they are located below the minable coal seams and above the river bottoms, and thus have not been studied specifically. The extremely low groundwater potential of the general area, however, is supported by a field reconnaissance of the surrounding area. The drainages within a 1/2 mile radius of the loadout site are all ephemeral and no springs or seeps are known to exist within this distance, indicating a complete lack of groundwater in the shale unit in this area. The nearest water to be found in the general area is in a small seep in Garley Canyon about 1/2 mile to the southwest, and the Gordon Creek drainage located some 1-1/2 miles to the south. The flows are generally intermittent and are characterized by poor quality and a high salt content, typical of low volume flow in the Mancos Shale. Some groundwater has been measured in the Lower Mancos Shale units in Castle Valley, i.e., C.V. Spur. These areas are below the water tables of the Price River and various canals, and are likely fed by those units. An examination of available data in the MRP show groundwater quality in these areas is inconsistent and highly alkaline, commonly containing total dissolved solids in excess of 10,000 mg/l.

The spring/seep in Garley Canyon is located in the NW 1/4 NW 1/4 of Section 4, Township 13 South, Range 9 East, S.L.B.M., approximately 3/4 miles southwest of the loadout facility, as shown on Figure III-2. The spring outcrops at an elevation of approximately 6,155.0 feet, in the main drainage of Garley Canyon, near the Utah Railroad Crossing. The spring is located in the Quarternary Alluvium; however, it is likely the recharge is from the alluvial terraces to the northwest, with the water surfacing near the point where the alluvium meets the more impermeable Mancos Shale below. The flow from the spring is extremely low - approximately 5 g.p.m. - and the quality is typically poor for water in this area. Andalex has filed for the water rights to this spring, and a copy of the certificate of water right is included as Appendix G. Also included in the appendix is a water sample analysis of the spring. The spring is presently used only for occasional wildlife and stock watering; however, this use is highly limited since the spring has

not been developed for any specific purpose. Future use of the spring may include industrial water if Andalex decided to develop and utilize the water for its loadout operation.

Mine Plan Area Groundwater Hydrology

The processing/loadout facility is located on a low slope within the Masuk Shale Member of the Mancos Formation. Ridges adjacent to the area are capped by a loose deposit of boulders and gravels derived from the sandstones and limestones of the eroded plateaus. These gravel deposits are believed to be late tertiary or early quaternary in age.[3] Eight holes were drilled on site for a geotechnical analysis of soil foundation characteristics. Locations of the holes are shown on Figure No. 1 in Appendix C. The holes reached depths of 45', and show the top 15' to 20' to be a clayey silt and a gray shale below that depth. None of the holes intercepted any groundwater. Two additional holes were drilled up to 60' to set piling below the loadout, and no groundwater was intercepted in this drilling.

At the recommendation of the foundation consultant, Rollins, Brown, and Gunnell, the two deeper holes were left open to be monitored for groundwater infiltration. The 2-60' deep holes were left open for a period of two months and checked on a weekly basis. After two months, no groundwater had been detected in either hole and it was therefore concluded that groundwater did not exist in the area of drilling. No other data is available.

The drainages within, and adjacent to the permit area, are all ephemeral and there are no springs or seeps in this area.

There are no groundwater resources present on or adjacent to the permit area. This conclusion is based on the following:

1. Regional groundwater evaluations show minor perched aquifers in the upper (Mesa Verde Group) formations and minor groundwater occurrances in the Mancos in the valley floor below the river and canal water tables.

   The permit area lies within the Masuk Shale Member of the Mancos Formation, which is in between the recorded groundwater areas. This shale member is not regarded as a regional or localized aquifer;

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[3]Spieker, 1931

2. The drainages within and adjacent to the permit area are all ephemeral. The presence of groundwater would likely be shown by springs, seeps, or at least intermittent flows in some of the deeply eroded natural drainages;

3. There are no springs or seeps known to exist within or adjacent to the permit area;

4. On-site drilling reached depths of 60' and encountered absolutely no groundwater.

Effects of Operations on Groundwater

Regional and on-site studies, reconnaissance, and drilling indicate a complete lack of groundwater in the permit area and surrounding area. If groundwater does exist below the permit area, it is likely several hundred feet down, near the level of the valley floor. Since the operations at this site are confined to the immediate surface and since no mining extraction or subsidence will occur here, there will be no effect of the operation on groundwater.

Mitigation and Control Plans

Since there are no groundwater resources or impacts expected at this site, there will be no need for mitigation and control plans for groundwater protection. The operation will, however, be conducted in a sound and environmentally conscious manner. There will be mitigation and control plans for surface water and these plans will ensure protection of surface water which may become recharge for groundwater sources elsewhere.

Groundwater Monitoring

Since groundwater does not occur on or adjacent to the permit area, there is no baseline water quality or quantity information available, other than the drilling information on the site that confirmed no groundwater is present. As a result, no groundwater monitoring program is proposed for this operation.

Andalex Resources, Inc. will, however, perform a leachate test on the coal and reject materials stored on site as requested by the Division. Andalex will gather a special sample of the coal processing waste material for a special one time characterization. Andalex proposes to take this sample at approximately the center of the pile at a depth of approximately one foot. The sample will be a grab type sample unless the size of the specimen recovered is too

large. If so, Andalex will form a composite sample from four separate locations in a radius approximately 50 feet from the center of the pile. Only one sample will be required from this depth because in an ordinary coal processing waste year, only one two foot lift is added to the reject pile. As soon as this procedure has been approved by the Division, it will be implemented. The test will consist of saturating a representative sample of material with water for a period of 24 hours and then extracting a fluid sample. The leachate will then be analyzed for the normal surface water baseline parameters. This information will then be incorporated into the probable hydrologic consequences document for the facility.

The material to be leached will also be tested for acid- or toxic-forming potential at this time. The analysis will include the following parameters: pH, Ec, SAR, Se, B, Acid-Base Potential, % Organic Carbon, Saturation Percent, and Texture. If toxic- or acid-forming materials are found to occur, a plan will be developed to ensure that drainage from these materials will not be detrimental to vegetation or adversely affect surface waters.

The above described leachate analysis and sampling plan will be conducted annually and results will be submitted to the Division with the Annual Report for the facility.

Surface Water Hydrology

This section will provide a review of the surface water hydrology relevant to the Andalex Wildcat Loadout Facility, as well as methods and designs to control surface waters within compliance of DOGM regulations.

Methodology

The hydrologic study is based on a review of literature and available data obtained from the USGS, NOAA Atlas, and other mine permit applications. A field reconnaissance was also conducted to confirm the location and characteristics of surface water courses. Designs of control structures are based on requirements of the regulations.

Existing Surface Water Resources

Regional Surface Water Hydrology

Most of the regional area is drained by tributaries to the Green and Colorado Rivers. Principal tributaries are the Price and San

Rafael Rivers and Muddy Creek. The Green River flows through the eastern edge of the Central Utah Region.

A USGS Report entitled "Hydrologic Reconnaissance of the Wasatch Plateau - Book Cliffs Coal Field Area, Utah" considers the development of coal resources in Central Utah.[4] The Andalex Loadout Facility lies near the coal resource areas, below the head waters of tributaries to the Price River. Much of the water from the Price River is diverted for irrigation use.

Approximately 50 to 70 percent of the stream flow occurs during the May - July snowmelt runoff period.[4] Summer precipitation does not usually produce more runoff than the snowmelt, although intense rainfall may produce high runoff in localized areas. Storms in this area are usually intense, but of relatively short duration. The 100 year -6 hour precipitation event is approximately 2.5 inches in the mountain areas, and only slightly less in the valleys (1.91 inches).

Water quality in the Price River and its' tributaries is good at the higher elevations. In most cases, surface waters at higher elevations have dissolved solid concentrations of less than 250 mg/l and are of a calcium bicarbonate type. At lower elevations, the surface water degrades to a sodium sulfate type with dissolved solids ranging from 250 to more than 6,000 mg/l.[4] These changes are caused by irrigation return flows and natural runoff from areas underlain by Mancos Shale.

Mine Plan Area Surface Water Hydrology

There are no principal surface water courses found within 1/4 mile of the permit area, and no perennial streams within 1 mile of the permit area.

Wildcat Canyon, located approximately 3/8 mile to the north of the permit area, is an ephemeral drainage that drains a large portion of the area north of the Gordon Creek Road and leads into the Price River. No runoff from the permit area flows to Wildcat Canyon.

The North Fork of Gordon Creek is a perennial, low flow, and low quality stream, and is located approximately 1-1/4 miles to the south of the facility. No runoff from the permit area reaches this drainage.

A small ephemeral drainage known as Garley Canyon runs south of the

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[4]Waddell and Others, 1981

permit area and eventually drains into the Price River approximately 3-1/2 miles southeast of the permit area. Runoff from the permit area would flow into the Garley Canyon drainage and eventually into the Price River but not before passing through a sedimentation pond.

Garley Canyon is a drainage formed in the eroding Mancos slopes below Pinyon - Juniper covered plateaus located west of the permit area. The natural drainage is highly eroded, due to the sparse vegetative groundcover and resulting rapid runoff through the weathered Mancos Shale. This is typical of drainages within the Mancos Shale in this area, and results in a high sulfate, low quality water. Most of the water below the point where Garley Canyon meets the Price River, is diverted and used for irrigation.

The general drainage pattern of the area is shown on Figure III-2.

Surface Water Quality

Since this is a new site and only recently fell under the permitting regulations, no water quality data is available at this time from the permit area. Sampling sites will be established and baseline runoff data will be collected in accordance with the monitoring plans covered in xx.

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

See Appendix J - Probable Hydrologic Consequences and R645-301-711.100.

R645-301-711.300. COMPLIANCE WITH HYDROLOGIC DESIGN CRITERIA

Andalex will follow its approved Sedimentation and Drainage Control Plan and comply with the UPDES Permit No. UTG-040008, issued May 31, 2003 (see Appendix K).

Water monitoring plans, as well as all hydrologic design details, are discussed in Section R645-301-512.240.

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

R645-301-711.400. APPLICABLE HYDROLOGIC PERFORMANCE STANDARDS

All applicable hydrologic performance standards will be met.

R645-301-711.500. RECLAMATION ACTIVITIES

Reclamation and post-mining hydrology are discussed under Sections R645-301-512.240 and R645-301-541.

R645-301-712. CERTIFICATION

All cross-sections, maps and plans required have been prepared and certified according to R645-301-512.

R645-301-713. INSPECTIONS

All impoundment inspections are performed according to, and described under, Section R645-301-514.300.

R645-301-720. ENVIRONMENTAL DESCRIPTION

See R645-301-711.100.

R645-301-721. GENERAL REQUIREMENTS

See R645-301-711.100.

R645-301-722. CROSS SECTIONS AND MAPS

See R645-301-510.

R645-301-722.100. LOCATION AND EXTENT OF SUBSURFACE WATER

See R645-301-711.100.

R645-301-722.200. LOCATION OF SURFACE WATER BODIES

See R645-301-711.100.

R645-301-722.300 MONITORING STATIONS

See R645-301-712.240.

R645-301-722.400. WATER WELLS

N/A

R645-301-722.500. EXISTING LAND SURFACE CONFIGURATION

Plate 2

R645-301-723. SAMPLING AND ANALYSIS

See R645-301-712.240.

R645-301-724. BASELINE INFORMATION

See R645-301-712.240.

R645-301-724.100. GROUND WATER INFORMATION

See R645-301-711.100.

R645-301-724.200. SURFACE WATER INFORMATION

See R645-301-711.100.

R645-301-724.300. GEOLOGIC INFORMATION

See R645-301-711.100.

R645-301-724.310. PROBABLE HYDROLOGIC CONSEQUENCES

Appendix J

R645-301-724.320. RECLAIMABILITY

See R645-301-512.240.

R645-301-724.400. CLIMATOLOGICAL INFORMATION

Introduction

The permit area, which is near part of the Wasatch Plateau Coal Field, is located in a mid-latitude steppe climate with the land below the cliffs approaching desert conditions. The nearest weather recording station is located approximately seven miles

southeast of the Loadout in Price, Utah.

Temperatures at the site are 3 to 5°F cooler than at Price, seven miles southeast and 1,500 feet lower.

Average monthly temperatures at Price range from 25°F in January to 70-75° in July and August. Extreme temperatures of record are -31° and 108°F. Due to the elevation and a predominance of clear skies and dry air, daily temperature ranges are rather large, averaging 26° in winter and 33° in summer. Average annual precipitation is 9.5 inches at Price. The 100-year 6-hour precipitation event is 1.9 inches. Snowfall is generally light, averaging less than 33 inches annually, at Price. Potential evaporation is about 36 inches per year. The area is almost completely surrounded by mountains which act as a barrier to storms approaching from every direction except south.

Source of Data

National Oceanic and Atmospheric Administration, National Climatic Center, Asheville, North Carolina.

Department of the Interior, 1979. Final Environmental Statement, Development of Coal Resources in Central Utah.

Climatological Factors

Precipitation

The precipitation in the area, which is largely controlled by elevation, varies from five inches to twenty inches.

The principal rainfall is in late summer when the area is occasionally subjected to thunderstorm activity associated with moisture-laden air masses moving in from the Gulf of Mexico.

Snowfall is generally light, averaging less than 33 inches annually; however, as much as 95 inches have been reported in a single winter season.

The greatest and least monthly precipitation totals for the period of record are shown below on Table VII-1.

TABLE VII-1

Maximum and Minimum Monthly Precipitation

Month	Medium	Greatest	Year	Least	Year
January	0.60	2.50	1969	0	1948
February	0.61	2.44	1919	0	1967
March	0.83	2.58	1912	0	1934
April	0.47	2.22	1941	0	1948
May	0.46	2.19	1964	0	1927
June	0.54	3.69	1927	0	1950
July	0.73	3.84	1914	0.05	1963
August	1.05	4.32	1921	0	1911
September	0.60	5.91	1927	0	1934
October	0.90	4.34	1972	0	1952
November	0.38	2.84	1957	0	1932
December	0.60	2.86	1966	0	1930
Annual	9.47	19.55	1927	4.47	1942

The first column contains median precipitation values by month for the 30 year period from 1936-1965.

Extremes of precipitation occurring prior to 1936 are as follows:

Amount	Date
0.83	January, 1921
0.98	March, 1929
2.00	August, 1921
1.65	October, 1925

TABLE VII-2

ESTIMATED RETURN PERIODS FOR SHORT DURATION PRECIPITATION
(inches)

Station: Price Elevation: 5680
Latitude: 39° 37' Longitude: 110° 50'

DURATION

Years	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	12 Hr	24 Hr
1	.08	.13	.17	.23	.29	.37	.44	.62	.78	.95
2	.12	.18	.23	.32	.40	.49	.58	.80	1.00	1.20
5	.16	.25	.32	.44	.56	.68	.79	1.07	1.32	1.58
10	.20	.31	.39	.54	.68	.81	.94	1.25	1.53	1.82
25	.24	.37	.47	.65	.82	.98	1.13	1.50	1.83	2.18
50	.28	.43	.54	.75	.95	1.12	1.29	1.71	2.08	2.47
100	.31	.49	.62	.85	1.08	1.27	1.45	1.91	2.32	2.74

Table VII-3 shows the average monthly precipitation for the period 1936-1976.

The climatology summary by month for period 1936-1965 is given in Table VII-4.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Ann[1]
1936	0.51	1.21	0.54	0.15	0.20	0.55	2.73	1.72	0.70	1.00	0.05	2.08	11.44
1937	1.37	1.08	0.96	0.08	1.45	0.68	1.11	0.68	1.15	0.44	0.08	0.95	10.03
1938	0.56	0.39	1.81	0.13	1.12	1.22	0.91	1.05	1.57	1.53	0.20	0.58	11.07
1939	1.03	1.00	1.24	0.48	0.68	0.25	0.44	0.87	3.88	0.89	0.15	0.25	11.16
1940	1.77	1.40	0.15	0.57	0.21	0.50	0.10	1.12	4.39	0.76	0.32	0.83	12.12
1941	0.92	1.04	1.23	2.22	1.26	1.47	0.75	0.57	1.02	3.24	0.73	1.03	15.48
1942	0.16	0.23	0.43	0.72	0.04	0.00	0.33	0.59	0.40	1.14	0.25	0.18	4.47
1943	0.37	0.45	0.90	0.55	0.40	1.40	0.19	1.05	0.95	1.04	1.16	0.30	8.76
1944	1.38	0.62	1.29	1.86	0.80	1.10	0.35	0.30	0.02	0.31	0.56	0.18	8.77
1945	0.41	1.17	0.91	0.21	0.13	1.28	0.69	0.82	0.51	0.94	0.32	0.57	7.96
1946	0.44	T	1.04	0.23	0.24	0.02	0.38	1.06	0.05	1.76	1.45	0.92	7.59
1947	0.13	0.12	0.19	0.37	1.34	0.70	0.14	2.83	0.07	0.90	0.41	0.93	8.13
1948	0.00	0.59	0.40	0.00	0.07	1.41	0.90	0.66	0.22	1.58	0.09	1.55	7.47
1949	1.60	0.74	0.11	0.22	1.66	3.24	1.89	1.22	0.66	1.73	0.01	2.35	15.43
1950	0.92	0.27	0.37	0.08	0.14	0.00	1.98	0.11	0.70	T	0.56	0.49	5.62
1951	0.03	0.07	0.74	1.08	0.88	1.89	0.26	1.85	0.16	0.98	1.22	2.80	11.26
1952	1.09	0.17	1.97	0.81	0.79	1.06	0.27	1.59	0.37	0.00	0.21	1.58	9.91
1953	0.43	0.12	0.24	0.45	0.42	0.15	1.67	1.12	0.04	1.39	0.43	0.17	6.63
1954	0.76	T	0.80	0.57	0.35	0.52	1.80	0.92	2.38	0.79	0.49	0.62	10.00
1955	1.06	1.40	0.09	0.05	0.39	0.38	0.30	1.52	0.31	0.01	0.17	0.38	6.06
1956	1.44	0.15	0.00	0.35	0.44	T	0.69	0.42	0.15	0.50	0.00	0.19	4.33
1957	0.87	0.63	0.40	0.65	1.86	1.20	1.07	2.30	T	1.86	2.84	0.98	14.66
1958	0.10	1.17	2.12	0.81	1.19	0.12	0.10	0.83	1.41	0.22	0.43	0.06	8.56
1959	0.06	1.57	0.12	0.59	0.66	0.25	0.75	2.09	1.18	0.45	0.17	1.04	8.93
1960	0.98	1.20	-	0.51	0.40	0.31	0.54	0.23	1.35	2.93	0.67	0.00	-
1961	0.00	0.03	1.02	0.23	0.11	0.08	0.76	2.43	4.85	1.06	0.88	0.82	12.27
1962	0.92	2.36	0.58	0.13	0.23	0.26	0.70	0.00	2.07	1.05	0.03	0.05	8.38
1963	0.68	0.32	0.73	1.50	0.12	0.58	0.05	3.33	1.89	0.76	0.18	0.02	10.16
1964	0.12	0.06	1.06	1.05	2.19	0.76	-	1.26	0.33	0.01	0.69	2.29	-
1965	0.32	-	1.28	-	-	3.31	1.79	1.24	0.98	0.32	2.06	2.47	-

Table VII-3

Table VII-3

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annl
1966	.00	.87	.12	.00	.57	.32	1.16	1.25	.50	1.14	.14	2.86	8.93
1967	1.06	.00	.29	.65	1.40	1.42	.84	.66	1.14	.08	.19	2.01	9.74
1968	.48	1.11	1.04	1.41	1.03	-----	.79	1.82	.29	.49	T	.96	----
1969	2.50	1.37	.24	.28	.37	2.41	1.46	1.83	.59	.38	.33	.10	11.86
1970	.77	.01	.48	.12	.03	2.11	.65	.82	1.03	.56	.38	.38	7.34
1971	.22	.35	.03	.61	.80	.17	.68	.89	.24	3.26	.22	1.51	8.98
1972	.00	.00	.00	.19	.21	.66	.33	.91	1.33	4.34	.83	.68	9.48
1973	.62	.41	1.51	.84	1.15	1.40	1.97	1.17	.21	.56	.42	.36	10.62
1974	.81	.10	.07	.56	T	.04	2.12	.35	.21	4.08	.22	.53	9.09
1975	.76	.69	1.11	T	.74	.92	1.54	.06	1.26	.14	.45	.08	7.75
1976	T	1.16	.20	.91	.77	.13	.39	.30	1.62	.37	.03	.00	5.88

Source: National Oceanic and Atmospheric Administration,
National Climatic Center,
Asheville, North Carolina

Table VII-4

Climatological Summary

Means and Extremes for Period 1936 - 1965

Month	Temperature (°F)							Precipitation Totals (Inches)								Mean Number of days				
	Means			Extremes							Snow, Sleet						Temperatures			
																	Max.		Min.	
	Daily Maximum	Daily Minimum	Monthly	Record Highest	Year	Record Lowest	Year	Mean	Greatest Daily	Year	Mean	Maximum Monthly	Year	Greatest Daily	Year	Precip. + .1"	90° and above	32° and below	32° and below	0° and below
Jan.	37.1	11.0	24.1	58	1961	-29	1937	.68	.67	1956	9.2	21.5	1944	8.5	1956	2	0	8	31	4
Feb.	42.3	17.4	29.8	68	1958	-17	1963	.68	.80	1962	7.0	27.0	1939	13.0	1939	2	0	4	27	3
Mar.	51.6	25.2	38.4	75	1956	-7	1964	.78	.97	1938	3.9	26.0	1952	6.0	1963	3	0	-	27	-
Apr.	63.8	34.2	49.0	86	1946	8	1945	.57	.66	1944	0.1	2.0	1944	2.0	1944	2	0	0	12	0
May	74.1	42.9	58.5	94	1962	20	1959	.68	1.45	1937	0.4	10.0	1964	8.0	1964	2	1	0	2	0
June	83.6	50.0	66.9	101	1954	29	1939	.80	1.47	1941	0.0	T	1955	0.0		2	7	0	-	0
July	90.6	56.7	73.7	106	1938	40	1962	.82	1.05	1954	0.0	T	1954	0.0		2	20	0	0	0
Aug.	88.2	55.3	71.7	102	1940	32	1960	1.19	1.03	1949	0.0	0.0		0.0		3	12	0	-	0
Sep.	80.0	47.2	63.6	96	1950	23	1938	1.13	1.67	1962	0.1	2.5	1965	2.5	1965	3	2	0	6	0
Oct.	67.7	36.6	52.2	87	1963	15	1960	.99	1.75	1960	0.2	4.5	1949	3.5	1949	3	0	0	8	0
Nov.	50.5	23.7	37.1	73	1962	0	1959	.56	1.97	1957	2.4	12.5	1951	8.0	1951	2	0	-	26	-
Dec.	40.6	15.9	28.2	60	1962	-10	1948	.89	1.07	1964	8.8	42.0	1951	13.0	1951	3	0	6	28	2
Year	64.2	34.7	49.4	106	July 1938	-29	Jan. 1937	9.77	1.97	Nov. 1957	32.1	42.0	Dec. 1951	13.0	Dec. 1951	29	42	18	167	9

Temperature

The average annual maximum temperature for the period 1936-1965 was 64.2 degrees. The annual mean temperature was 49.4 degrees and the annual minimum temperature was 34.7 degrees. See Figure VII-3.

Summers are characterized by hot days and cool nights. However, the high temperatures are not oppressive since the relative humidity is low. The hottest month is July with the maximum temperature on most days nears 90 degrees and the lows in the upper 50's. The maximum temperature record was in July, 1925 at 108 degrees. Recorded summer lows have been 28 degrees in June, 1973 and 31 degrees in July, 1924.

The winters are cold and uncomfortable, but usually not severe, due in part to the protecting influence of the mountain ranges to the north and east which prevent cold arctic air masses from moving into the area. The coldest temperature on record is minus 31 degrees in December, 1924.

Temperatures of 100 degrees or higher during summer or 15 degrees below zero or colder during winter are likely to occur once every three years.

The freeze-free period, or growing season, averages about five months in length, from early May to early October.

Average dates of occurrence of various temperature values are given on Table VII-5.

TABLE VII-5

Occurrence of Various Temperatures

Temperature Equal to or Lower Than	Average Dates of Occurrence Last in Spring	First in Fall
32°	May 3	October 3
28°	April 27	October 15
24°	April 11	October 15
20°	March 29	November 7
16°	March 17	November 16

Table VII-6 gives the average monthly temperature for the area from 1936 - 1976.

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annl
1936	23.8	31.6	41.0	52.0	61.6	70.2	73.0	71.3	-	-	-	27.6	-
1937	26.0	20.1	37.5	44.5	-	66.1	72.9	75.6	-	52.6	38.6	31.4	-
1938	27.0	32.4	39.0	48.7	55.4	69.4	73.7	73.2	64.8	50.4	29.8	28.4	49.4
1939	24.2	16.1	39.0	51.2	60.3	64.8	-	73.0	63.0	50.0	41.7	32.6	-
1940	23.0	32.2	40.7	50.0	65.6	72.7	73.2	74.4	62.5	54.5	33.3	27.6	50.7
1941	21.8	31.4	41.4	43.9	58.3	-	70.6	70.0	58.9	47.6	37.6	29.9	-
1942	23.4	27.0	35.6	49.0	54.6	67.8	73.2	70.8	61.4	-	-	-	-
1943	24.9	-	-	-	-	66.4	75.1	71.8	67.4	54.0	39.1	31.3	-
1944	23.8	28.2	37.8	46.5	68.9	62.8	73.6	72.6	66.4	55.1	38.6	31.2	49.6
1945	30.5	35.4	38.5	45.0	59.6	63.9	74.5	73.0	62.5	52.6	35.2	23.3	49.5
1946	22.8	31.0	42.7	56.0	57.2	69.8	75.7	72.6	65.4	46.8	36.3	33.6	50.8
1947	25.8	36.3	43.4	49.0	62.6	63.8	75.2	71.2	67.2	56.0	33.2	29.0	51.1
1948	28.6	29.0	34.2	49.1	60.2	67.2	74.0	72.4	67.4	51.1	33.5	25.1	49.3
1949	16.9	20.1	41.2	54.1	58.8	63.6	74.3	72.5	66.0	47.8	43.5	23.6	48.5
1950	17.6	30.5	39.5	51.2	56.2	67.4	69.7	71.1	62.7	56.1	40.9	34.4	49.8
1951	27.7	32.0	39.2	50.0	58.8	64.4	76.9	71.6	65.2	50.3	34.2	20.8	49.3
1952	19.9	25.6	32.4	52.0	61.1	67.9	74.9	72.7	65.9	56.0	35.3	23.9	49.0
1953	28.1	31.9	42.3	47.8	52.9	-	76.6	70.5	66.6	52.6	40.3	27.5	-
1954	30.5	40.6	38.7	54.4	63.2	67.7	76.9	71.3	64.1	53.5	42.5	25.4	52.4
1955	18.0	17.1	35.3	46.6	57.9	66.0	74.7	74.0	66.1	53.3	35.3	30.8	47.9
1956	33.1	28.2	42.2	50.0	61.3	72.1	74.8	70.4	67.7	52.4	33.2	26.3	51.0
1957	24.4	33.9	42.5	47.2	54.8	68.3	73.5	-	-	49.5	33.7	29.4	-
1958	28.8	37.3	35.9	44.8	60.3	67.4	70.7	73.7	62.6	52.9	36.8	33.7	50.4
1959	27.4	32.8	38.9	48.8	54.9	69.4	73.8	70.6	62.4	52.2	38.1	30.6	50.0
1960	19.4	23.2	-	50.8	57.4	67.9	74.1	71.2	64.2	52.6	39.4	31.7	49.3
1961	29.0	33.4	38.2	46.1	57.5	69.8	73.6	61.4	55.3	47.9	33.8	23.5	48.3
1962	24.3	32.7	34.6	52.3	55.3	66.2	71.4	69.6	61.8	52.4	42.3	29.8	49.4
1963	16.3	38.0	36.4	45.2	60.3	63.7	73.7	70.0	64.4	55.3	39.1	25.6	49.0
1964	23.3	27.5	30.4	45.0	55.1	63.2	-	68.9	60.8	53.4	32.6	23.9	-
1965	31.5	-	37.1	-	-	62.0	69.9	68.5	54.8	53.6	41.4	26.9	-

Table VII-6

Table VII-6

Average Temperatures (°F.) [1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annl
1966	M	25.6	38.8	48.6	58.7	63.5	73.1	70.1	60.7	51.5	39.7	26.2	----
1967	22.0	30.8	39.9	41.7	52.8	61.0	73.4	71.2	62.7	51.1	42.4	17.8	47.2
1968	15.8	32.2	40.7	42.5	53.3	----	73.7	67.3	62.6	53.1	39.3	23.8	----
1969	26.8	25.8	33.0	50.4	61.6	64.1	75.5	75.4	65.6	45.2	39.0	33.3	49.6
1970	28.6	37.7	38.2	43.0	59.1	67.5	75.4	75.4	60.6	48.1	39.7	28.3	50.1
1971	27.8	33.4	37.6	48.1	55.3	67.6	74.3	75.4	59.7	49.6	35.8	24.7	49.1
1972	27.8	35.6	47.4	48.3	59.7	68.4	76.7	73.9	63.9	52.3	35.0	22.0	50.9
1973	16.9	26.8	37.1	45.1	57.9	65.1	71.9	72.3	63.9	55.7	38.4	29.2	48.4
1974	18.6	23.2	42.1	45.0	61.6	74.2	78.0	73.6	68.4	M	M	31.3	----
1975	25.0	31.6	41.3	43.7	53.6	59.9	72.3	71.0	63.9	52.1	M	----	----
1976	25.5	36.2	38.2	46.8	58.1	65.4	76.0	70.4	64.0	50.5	----	----	----

Source: National Oceanic and Atmospheric Administration,
National Climatic Center,
Asheville, North Carolina

R645-301-724.410. CLIMATOLOGICAL FACTORS

See R645-301-724.400.

R645-301-724.411. AVERAGE SEASONAL PRECIPITATION

See R645-301-724.400.

R645-301-724.412. PREVAILING WINDS

See R645-301-724.400.

R645-301-724.413. SEASONAL TEMPERATURE RANGES

See R645-301-724.400.

R645-301-724.420. OTHER INFORMATION

N/A

R645-301-724.500. SUPPLEMENTAL INFORMATION

N/A

R645-301-724.700. STREAMS

See R645-301-711.100.

R645-301-725. BASELINE CUMULATIVE IMPACT AREA INFORMATION

See R645-301-512.240.

R645-301-725.100. INFORMATION FROM FEDERAL OR STATE AGENCIES

See R645-301-512.240.

R645-301-725.200. INFORMATION FROM APPLICANT

See R645-301-512.240.

R645-301-725.300. **RESTRICTIONS ON PERMIT**

N/A

R645-301-726. **MODELING**

N/A

R645-301-727. **ALTERNATIVE WATER SOURCE INFORMATION**

N/A

R645-301-728. **PROBABLE HYDROLOGIC CONSEQUENCES (PHC) DETERMINATION**

Appendix J

R645-301-728.100. **DETERMINATION OF PHC**

Appendix J

R645-301-728.200. **BASIS OF DETERMINATION**

Appendix J

R645-301-728.300. **PHC DETERMINATION FINDINGS**

Appendix J

R645-301-728.310. **ADVERSE IMPACTS TO HYDROLOGIC BALANCE**

Appendix J

R645-301-728.320. **ACID FORMING OR TOXIC FORMING MATERIALS**

Appendix J

R645-301-728.330. IMPACT OF OPERATIONS

See R645-301-512.240

R645-301-728.331. SEDIMENT YIELD FROM DISTURBED AREA

R645-301-512.240.

R645-301-728.332. WATER QUALITY PARAMETERS

R645-301-512.240.

R645-301-728.333. FLOODING OR STREAM-FLOW ALTERATION

N/A

R645-301-728.334. GROUND WATER AND SURFACE WATER AVAILABILITY

See R645-301-711.100 and Appendix J.

R645-301-728.335. OTHER CHARACTERISTICS

Appendix J

R645-301-728.340. IMPACT ON SURFACE OR GROUND WATER

Appendix J

R645-301-728.350. IMPACT ON STATE-APPROPRIATE WATER

Appendix J

R645-301-728.400. PERMIT REVISIONS

Appendix J

R645-301-729. CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

(BY DIVISION)

R645-301-729.100. DIVISION ASSESSMENT

(BY DIVISION)

R645-301-729.200. PERMIT REVISIONS

N/A

R645-301-730. OPERATION PLAN

See R645-301-511.100.

R645-301-731. GENERAL REQUIREMENTS

See R645-301-511.100.

R645-301-731.100. HYDROLOGIC BALANCE PROTECTION

See R645-301-711-300.

R645-301-731.110. GROUND WATER PROTECTION

Appendix J and R645-301-711.100.

R645-301-731.111. GROUND WATER QUALITY

Appendix J and R645-301-711.100.

R645-301-731.112. SURFACE MINING OPERATIONS

N/A

R645-301-731.120. SURFACE WATER PROTECTIONS

Appendix J and R645-301-711.100.

R645-301-731.121. SURFACE WATER QUALITY

Appendix J, Appendix M and R645-301-711.100.

R645-301-731.122. SURFACE WATER QUANTITY PLAN

Appendix J and R645-301-711.100.

R645-301-731.200. WATER MONITORING

See R645-301-512.240.

R645-301-731.210. GROUND WATER MONITORING

See R645-301-512.240.

R645-301-731.211. GROUND WATER MONITORING PLAN

See R645-301-512.240.

R645-301-731.212. SAMPLING AND REPORTING DATA

See R645-301-512.240.

R645-301-731.213. NON-ESSENTIAL AQUIFERS

N/A

R645-301-731.214. DURATION

See R645-301-512.240.

R645-301-731.214.1 SUITABILITY

See R645-301-512.240.

R645-301-731.214.2 COMPLIANCE

See R645-301-512.240.

R645-301-731.215. EQUIPMENT, STRUCTURES AND OTHER DEVICES USED IN CONJUNCTION WITH MONITORING

See R645-301-512.240.

R645-301-731.220. SURFACE WATER MONITORING

See R645-301-512.240.

R645-301-731.221. SURFACE WATER MONITORING PLAN

See R645-301-512.240.

R645-301-731.222 DESCRIPTION

See R645-301-512.240.

R645-301-731.222.1 PARAMETERS

See R645-301-512.240.

R645-301-731.222.2 POINT SOURCE DISCHARGES

See R645-301-512.240 and Appendix K.

R645-301-731.223. SAMPLING AND REPORTING DATA

See R645-301-512.240.

R645-301-731.224. DURATION

See R645-301-512.240.

R645-301-731.224.1 SUITABILITY

See R645-301-512.240.

R645-301-731.224.2 COMPLIANCE

See R645-301-512.240.

R645-301-731.225. EQUIPMENT, STRUCTURES AND OTHER DEVICES USED IN CONJUNCTION WITH MONITORING

See R645-301-512.240.

R645-301-731.300. ACID AND TOXIC FORMING MATERIALS

See R645-301-512.240 and Appendix J.

R645-301-731.310. DRAINAGE INTO SURFACE AND GROUND WATER

See R645-301-512.240.

R645-301-731.311. MATERIAL ADVERSELY AFFECTING WATER QUALITY

See R645-301-512.240.

R645-301-731.312. STORING MATERIALS

See R645-301-512.240.

R645-301-731.320. DISPOSAL PROVISIONS

See R645-301-512.240.

R645-301-731.400. TRANSFER OF WELLS

No transfer of wells has taken place, nor is any transfer anticipated.

R645-301-731.500. DISCHARGES

See R645-301-512.240.

R645-301-731.510. DISCHARGES INTO AN UNDERGROUND MINE

N/A

R645-301-731.511. DEMONSTRATION

N/A

R645-301-731.511.1 PREVENTION OF DAMAGE

N/A

R645-301-731.511.2 VIOLATION OF WATER QUALITY STANDARDS OR EFFLUENT LIMITATIONS

N/A

R645-301-531.511.3 COMPLIANCE REQUIREMENTS

N/A

R645-301-731.511.4 MEET WITH THE APPROVAL OF MSHA

N/A

R645-301-731.512. DISCHARGE LIMITATIONS

N/A

R645-301-731.512.1 WATER

N/A

R645-301-731.512.2 COAL PROCESSING WASTE

N/A

R645-301-731.512.3 FLY ASH

N/A

R645-301-731.512.4 SLUDGE FROM ACID MINE DRAINAGE TREATMENT

N/A

R645-301-731.512.5 FLUE-GAS DESULFURIZATION SLUDGE

N/A

R645-301-731.512.6 INERT MATERIALS USED FOR STABILIZING UNDERGROUND MINES

N/A

R645-301-731.512.7 UNDERGROUND MINE DEVELOPMENT WASTE

N/A

R645-301-731.513. DIVERTING MINE WATER INTO UNDERGROUND WORKINGS

N/A

R645-301-731.520. GRAVITY DISCHARGES FROM MINE WORKINGS

N/A

R645-301-731.521. DISCHARGE CONTROL

See R645-301-512.240.

R645-301-731.522. PREVENTION OF DISCHARGE

N/A

R645-301-731.530. REPLACEMENT OF STATE-APPROPRIATED WATER SUPPLY

N/A

R645-301-731.600. STREAM BUFFER ZONES

N/A

R645-301-731.610. BUFFER ZONE LOCATIONS

N/A

R645-301-731.611. VIOLITION OF WATER QUALITY STANDARDS OR EFFLUENT LIMITATIONS

Coal processing and reclamation operations will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quantity and quality of other environmental resources of the stream.

R645-301-731.612. STREAM DIVERSIONS

See R645-301-512.240, Culvert Design

R645-301-731.620. BUFFER ZONE SIGNS AND MARKERS

N/A

R645-301-731.700. CROSS SECTIONS AND MAPS

Plate 2.

R645-301-731.710. WATER SUPPLY INTAKES

N/A

R645-301-731.720. WATER HANDLING AND STORAGE FACILITIES

Water is trucked from Price for culinary use and is stored in one 12,000-gallon tank on the property.

R645-301-731.730. MONITORING LOCATIONS

See R645-301-512.240 and Plate 15.

R645-301-731.740. MAPS

See Volume II, R645-301-510.

R645-301-731.750. CROSS SECTIONS

See Volume II, R645-301-510.

R645-301-731.760. OTHER RELEVANT DRAWINGS

See R645-301-512.240.

R645-301-731.800. WATER RIGHTS AND REPLACEMENT

Appendix G

R645-301-732. SEDIMENT CONTROL MEASURES

See R645-301-512.240.

R645-301-732.100. SILTATION STRUCTURES

See R645-301-512.240.

R645-301-732.200. SEDIMENTATION PONDS

See R645-301-512.240.

R645-301-732.210. COMPLIANCE REQUIREMENTS

See R645-301-512.240.

R645-301-732.220. MSHA REQUIREMENTS

N/A

R645-301-732.300. DIVERSIONS

See R645-301-512.240.

R645-301-732.400. ROAD DRAINAGE

See R645-301-512.240., also R645-301-512.250.

R645-301-732.410. ALTERATION OR RELOCATION OF A NATURAL DRAINAGEWAY

See R645-301-512.240.

R645-301-732.420. INLET PROTECTIONS

See R645-301-512.240.

R645-301-733. IMPOUNDMENTS

See R645-301-512.240.

R645-301-733.100. GENERAL PLANS

See R645-301-512.240.

R645-301-733.110. CERTIFICATION

See R645-301-512.240 and Appendix H.

R645-301-733.120. MAPS AND CROSS SECTIONS

See R645-301-512.240., also R645-301-510.

R645-301-733.130. NARRATIVE

See R645-301-512.240.

R645-301-733.140. SURVEY RESULTS

Appendix J

R645-301-733.150. HYDROLOGIC IMPACT

Appendix J

R645-301-733.160. DESIGN PLANS AND CONSTRUCTION SCHEDULE

See R645-301-512.240.

R645-301-733.200. PERMANENT AND TEMPORARY IMPOUNDMENTS

See R645-301-512.240.

R645-301-733.210. REQUIREMENTS

See R645-301-512.240.

R645-301-733.220. DEMONSTRATION FOR PERMANENT IMPOUNDMENTS

See R645-301-512.240.

R645-301-733.221. ADEQUACY FOR INTENDED USE

See R645-301-512.240.

R645-301-733.222. WATER QUALITY AND EFFLUENT LIMITATIONS

See R645-301-512.240.

R645-301-733.223. WATER LEVEL

See R645-301-512.240.

R645-301-733.224. FINAL GRADING

See R645-301-512.240.

R645-301-733.225. **DIMINUTION OF QUALITY AND QUANTITY OF WATER UTILIZED BY OTHERS**

See R645-301-512.240.

R645-301-733.226. **SUITABILITY FOR POSTMINING LAND USE**

See R645-301-512.240.

R645-301-733.230. **TEMPORARY IMPOUNDMENTS**

See R645-301-512.240.

R645-301-733.240. **HAZARD NOTIFICATIONS**

See R645-301-512.240.

R645-301-734. **DISCHARGE STRUCTURES**

See R645-301-512.240.

R645-301-735. **DISPOSAL OF EXCESS SPOIL**

See R645-301-513.300.

R645-301-736. **COAL MINE WASTE**

See R645-301-513.300.

R645-301-737. **NON-COAL MINE WASTE**

See R645-301-513.300.

R645-301-738. **TEMPORARY CASING AND SEALING OF WELLS**

N/A

R645-301-740. **DESIGN CRITERIA AND PLANS**

See R645-301-512.240.

R645-301-741. GENERAL REQUIREMENTS

See R645-301-512.240.

R645-301-742. SEDIMENT CONTROL MEASURES

See R645-301-512.240.

R645-301-742.100. GENERAL REQUIREMENTS

See R645-301-512.240.

R645-301-742.110. DESIGN

See R645-301-512.240.

R645-301-742.111. PREVENTION

See R645-301-512.240.

R645-301-742.112. EFFLUENT LIMITATIONS

Appendix K

R645-301-742.113. EROSION PROTECTION

See R645-301-512.240.

R645-301-742.120. MEASURES AND METHODS

See R645-301-512.240.

R645-301-742.121. RETAINING SEDIMENT WITHIN DISTURBED AREAS

See R645-301-512.240.

R645-301-742.122. DIVERTING RUNOFF AWAY FROM DISTURBED AREAS

See R645-301-512.240.

R645-301-742.123. DIVERTING RUNOFF USING PROTECTED CHANNELS

See R645-301-512.240.

R645-301-724.124. PHYSICAL TREATMENT TO REDUCE FLOW OR TRAP SEDIMENT

See R645-301-512.240.

R645-301-742.125. CHEMICAL TREATMENT

N/A

R645-301-742.126. IN-MINE TREATMENT

N/A

R645-301-742.200. SILTATION STRUCTURES

See R645-301-512.240.

R645-301-742.210. GENERAL REQUIREMENTS

See R645-301-512.240.

R645-301-742.211. DESIGN

See R645-301-512.240.

R645-301-742.212. REQUIREMENTS

See R645-301-512.240.

R645-301-742.213. SILTATION STRUCTURES WHICH IMPOUND WATER

See R645-301-512.240.

R645-301-742.214. POINT SOURCE DISCHARGES

See R645-301-512.240 and Appendix K.

R645-301-742.220. SEDIMENTATION PONDS

See R645-301-512.240.

R645-301-742.221. USE

See R645-301-512.240.

R645-301-742.221.1 INDIVIDUALLY OR IN SERIES

See R645-301-512.240.

R645-301-742.221.2 LOCATION

See R645-301-512.240., Plate 2

R645-301-742.221.3 DESIGN, CONSTRUCTION AND MAINTENANCE

See R645-301-512.240.

R645-301-742.221.31 SEDIMENT STORAGE VOLUME

See R645-301-512.240.

R645-301-742.221.32 DETENTION TIME

See R645-301-512.240.

R645-301-742.221.33 DESIGN EVENT

See R645-301-512.240.

R645-301-742.221.34 DEWATERING DEVICE

See R645-301-512.240.

R645-301-742.221.35 SHORT CIRCUITING

See R645-301-512.240.

R645-301-742.221.36 SEDIMENT REMOVAL

See R645-301-512.240.

R645-301-742.221.37 EXCESSIVE SETTLEMENT

See R645-301-512.240.

R645-301-742.221.38 EMBANKMENT MATERIAL

See R645-301-512.240.

R645-301-742.221.39 COMPACTION

See R645-301-512.240.

R645-301-742.222. MSHA SEDIMENTATION PONDS

N/A

R645-301-742.223. OTHER SEDIMENTATION PONDS

See R645-301-512.240.

R645-301-745.223.1 OPEN CHANNEL SPILLWAY

See R645-301-512.240.

R645-301-742.223.2 LINING

See R645-301-512.240.

R645-301-742.224. TEMPORARY IMPOUNDMENT - EXCEPTION

N/A

R645-301-742.225. EXCEPTION TO LOCATION

N/A

R645-301-742.225.1. IMPOUNDMENTS MEETING 30 CFR SEC.77.216(a)

N/A

R645-301-742.225.2. OTHER MSHA IMPOUNDMENTS

N/A

R645-301-742.230. OTHER TREATMENT FACILITIES

N/A

R645-301-742.231. DESIGN EVENT

N/A

R645-301-742.232. REQUIREMENTS

N/A

R645-301-742.240. EXEMPTIONS

N/A

R645-301-742.300. DIVERSIONS

See R645-301-512.240.

R645-301-742.310. GENERAL REQUIREMENTS

See R645-301-512.240.

R645-301-742.311. REQUIREMENTS

See R645-301-512.240.

R645-301-742.312. DESIGN

See R645-301-512.240.

R645-301-742.312.1 STABILITY

See R645-301-512.240.

R645-301-742.312.2 FLOOD PROTECTION

See R645-301-512.240.

R645-301-742.312.3 SUSPENDED SOLIDS

See R645-301-512.240.

R645-301-742.312.4 COMPLY WITH OTHER REGULATIONS

See R645-301-512.240.

R645-301-742.313. TEMPORARY AND PERMANENT DIVERSIONS

See R645-301-512.240.

R645-301-742.314. ADDITIONAL DESIGN CRITERIA

See R645-301-512.240.

R645-301-742.320. DIVERSION OF PERENNIAL AND INTERMITTENT STREAMS

N/A

R645-301-742.321. BUFFER ZONE REQUIREMENTS

N/A

R645-301-742.322. DESIGN CAPACITY

N/A

R645-301-742.323. DESIGN EVENT

N/A

R645-301-742.324. CERTIFICATION

N/A

R645-301-742.330. DIVERSION OF MISCELLANEOUS FLOWS

See R645-301-512.240.

R645-301-742.331. REQUIREMENTS

See R645-301-512.240.

R645-301-742.332. DESIGN

See R645-301-512.240.

R645-301-742.333. DESIGN EVENT

See R645-301-512.240.

R645-301-742.400. ROAD DRAINAGE

See R645-301-512.240., .250.

R645-301-742.410. ALL ROADS

See R645-301-512.240., .250.

R645-301-742.411. PROTECTION AND SAFETY

See R645-301-512.240., .250.

R645-301-742.412. INTERMITTENT OR PERENNIAL STREAM RESTRICTION

N/A

R645-301-742.413. DOWNSTREAM SEDIMENTATION AND FLOODING

See R645-301-512.240.

R645-301-742.420. PRIMARY ROADS

See R645-301-512.240., .250.

R645-301-742.421. EROSION PROTECTION

See R645-301-512.240., .250.

R645-301-742.422. STREAM FORDS

N/A

R645-301-742.423. DRAINAGE CONTROL

See R645-301-512.240.

R645-301-742.423.1 PRIMARY ROAD DESIGN CRITERIA

See R645-301-512.250.

R645-301-742.423.2 DRAINAGE PIPES AND CULVERTS

See R645-301-512.240.

R645-301-742.423.3 DRAINAGE DITCHES

See R645-301-512.240.

R645-301-742.423.4 NATURAL STREAM CHANNELS

See R645-301-512.240.

R645-301-742.423.5 REQUIREMENTS

See R645-301-512.240.

R645-301-743. IMPOUNDMENTS

See R645-301-512.240.

R645-301-743.100. GENERAL REQUIREMENTS

See R645-301-512.240.

R645-301-743.110. MSHA IMPOUNDMENTS

N/A

R645-301-743.120. CERTIFICATION AND FREEBOARD REQUIREMENTS

See R645-301-512.240.

R645-301-743.130. SPILLWAYS

See R645-301-512.240.

R645-301-743.131. APPROVAL OF SINGLE OPEN CHANNEL SPILLWAY

The Division may approve a single-open channel spillway that is:

R645-301-743.131.1. NON-ERODIBLE CONSTRUCTION

See R645-301-512.240

R645-301-743.131.2. EARTH- OR GRASS-LINED WITH NON-EROSIVE FLOWS

N/A

R645-301-743.131.3. REQUIRED DESIGN EVENT

See R645-301-512.240

R645-301-743.131.4. NRCS CLASS B OR C DAMS

N/A

R645-301-743.131.5. MSHA IMPOUNDMENTS

N/A

R645-301-743.131.6. NON-MSHA IMPOUNDMENTS

See R645-301-512.240

R645-301-743.132. ALTERNATE SEDIMENT POND CRITERIA

N/A

R645-301-743.140. INSPECTIONS

See R645-301-512.240.

R645-301-743.200. SPILLWAY DESIGN EVENT FOR PERMANENT IMPOUNDMENTS

See R645-301-512.240.

R645-301-743.300. SPILLWAY DESIGN EVENT FOR TEMPORARY IMPOUNDMENTS

See R645-301-512.240.

R645-301-744. DISCHARGE STRUCTURES

See R645-301-512.240.

R645-301-744.100. EROSION CONTROL

See R645-301-512.240.

R645-301-744.200. DESIGN

See R645-301-512.240.

R645-301-745. DISPOSAL OF EXCESS SPOIL

See R645-301-513.300.

R645-301-745.100. GENERAL REQUIREMENTS

See R645-301-513.300.

R645-301-745.110. DISPOSAL AREA

See R645-301-513.300.

R645-301-745.111. EFFECTS ON SURFACE AND GROUND WATER

See R645-301-513.300.

R645-301-745.112. IMPOUNDMENTS ON FILL

N/A

R645-301-745.113. COVER

See R645-301-513.300.

R645-301-745.120. DRAINAGE CONTROL

N/A

R645-301-745.121. DIVERSIONS

N/A

R645-301-745.122. UNDERDRAINS

N/A

R645-301-745.200. VALLEY FILLS AND HEAD-OF-HOLLOW FILLS

N/A

R645-301-745.210. REQUIREMENTS

N/A

R645-301-745.220. DRAINAGE CONTROL

N/A

R645-301-745.221. RESTRICTIONS

N/A

R645-301-745.222. RUNOFF CONTROL

N/A

R645-301-745.300. DURABLE ROCK FILLS

N/A

R645-301-745.310. REQUIREMENTS

N/A

R645-301-745.320. UNDERDRAINS

N/A

R645-301-745.330. RUNOFF CONTROL

N/A

R645-301-745.400. PRE-EXISTING BENCHES

N/A

R645-301-746. COAL MINE WASTE

See R645-301-513.300.

R645-301-746.100. GENERAL REQUIREMENTS

See R645-301-513.300.

R645-301-746.110. PLACEMENT

See R645-301-513.300.

R645-301-746.120. EFFECTS ON SURFACE AND GROUND WATER

See R645-301-513.300.

R645-301-746.200. REFUSE PILES

See R645-301-513.400.

R645-301-746.210. REQUIREMENTS

See R645-301-513.400.

R645-301-746.211. SEEPS AND SPRINGS

N/A

R645-301-746.212. UNCONTROLLED SURFACE DRAINAGE

N/A

R645-301-746.213. UNDERDRAINS

N/A

R645-301-746.220. SURFACE AREA STABILIZATION

N/A

R645-301-746.221. SLOPE PROTECTION

N/A

R645-301-746.222. IMPOUNDMENT RESTRICTIONS

N/A

R645-301-746.300. IMPOUNDING STRUCTURES

N/A

R645-301-746.310. COAL MINE WASTE

See R645-301-513.300.

R645-301-746.311. REQUIREMENTS

See R645-301-513.300.

R645-301-746.312. MSHA IMPOUNDING STRUCTURE

N/A

R645-301-746.320. SPILLWAYS AND OUTLET WORK

N/A

R645-301-746.330. DRAINAGE CONTROL

N/A

R645-301-746.340. WATER STORAGE

N/A

R645-301-746.400. RETURN OF COAL PROCESSING WASTE TO ABANDONED UNDERGROUND WORKINGS

N/A

R645-301-746.410. HYDROLOGIC IMPACTS

N/A

R645-301-746.420. MONITORING WELLS

N/A

R645-301-746.430. PNEUMATIC BACKFILLING

N/A

R645-301-747. DISPOSAL OF NON-COAL MINE WASTE

See R645-301-513.300.

R645-301-747.100. REQUIREMENTS

See R645-301-513.300.

R645-301-747.200. PLACEMENT AND STORAGE

See R645-301-513.300

R645-301-747.300. FINAL DISPOSAL

See R645-301-513.300.

R645-301-748. CASING AND SEALING OF WELLS

N/A

R645-301-750. PERFORMANCE STANDARDS

All coal mining and reclamation operations will be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area and support approved postmining land uses in accordance with the terms and conditions of the

approved permit and the performance standards of R645-301 and R645-302.

R645-301-751. WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS

Discharges or water from areas disturbed by coal processing and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

R645-301-752. SEDIMENT CONTROL MEASURES

Sediment control measures must be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-512.240,R645-301-732, R645-301-742 and R645-301-760.

R645-301-752.100. SILTATION STRUCTURES AND DIVERSIONS

See R645-301-512.240.

R645-301-752.200. ROAD DRAINAGE

See R645-301-512.250.

R645-301-752.210. CONTROL OF EROSION AND POLLUTION

See R645-301-512.240.

R645-301-752.220. CONTROL OF SUSPENDED SOLIDS

See R645-301-512.240.

R645-301-752.230. COMPLIANCE WITH EFFLUENT STANDARDS

See R645-301-512.240.

R645-301-752.240. MINIMIZE DIMINUTION OF DEGRADATION OF WATER QUALITY

See R645-301-512.240.

R645-301-752.250. ALTERATION OF STREAM FLOW OR CHANNELS

See R645-301-512.240.

R645-301-753. IMPOUNDMENTS AND DISCHARGE STRUCTURES

See R645-301-512.240.

R645-301-754. DISPOSAL OF EXCESS SPOIL, COAL MINE WASTE AND NON-COAL MINE WASTE

See R645-301-513.300.

R645-301-755. CASING AND SEALING OF WELLS

N/A

R645-301-760. RECLAMATION

See R645-301-240.

R645-301-761. GENERAL REQUIREMENTS

See R645-301-240.

R645-301-762. ROADS

See R645-301-512.250.

R645-301-762.100. RESTORING NATURAL DRAINAGE PATTERNS

N/A

R645-301-762.200. REGRADING

See R645-301-532.200.

R645-301-763. SILTATION STRUCTURES

See R645-301-512.240.

R645-301-763.100. RESTRICTIONS

See R645-301-512.240.

R645-301-763.200. REQUIREMENTS

See R645-301-512.240.

R645-301-764. STRUCTURE REMOVAL

See R645-301-240.

R645-301-765. PERMANENT CASING AND SEALING OF WELLS

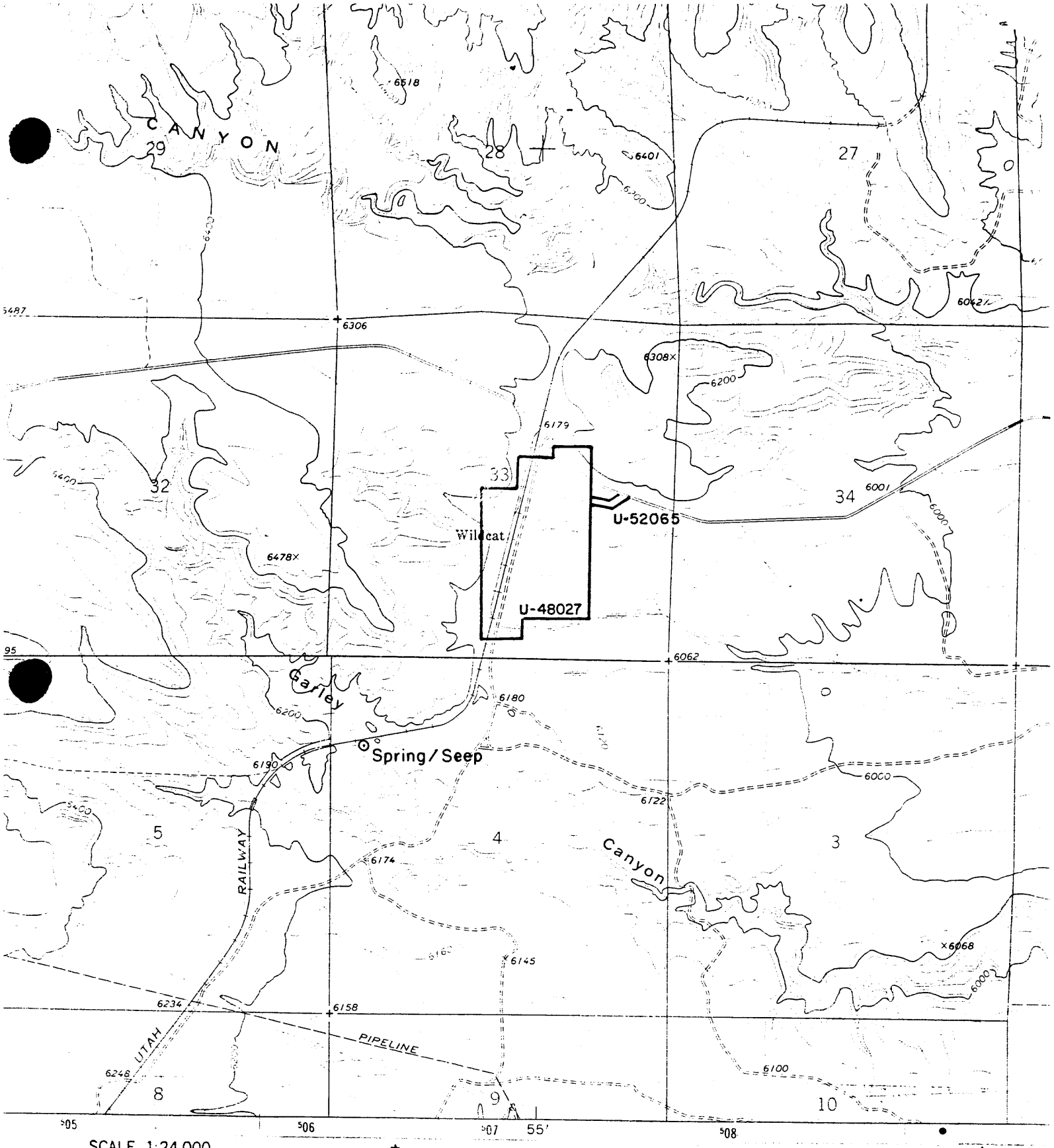
N/A

GENERALIZED STRATIGRAPHIC SECTION
FOR THE
CENTRAL AND SOUTHERN PART
OF THE
WASATCH PLATEAU

(AFTER DOELLING, 1972 MONOGRAPH SERIES)

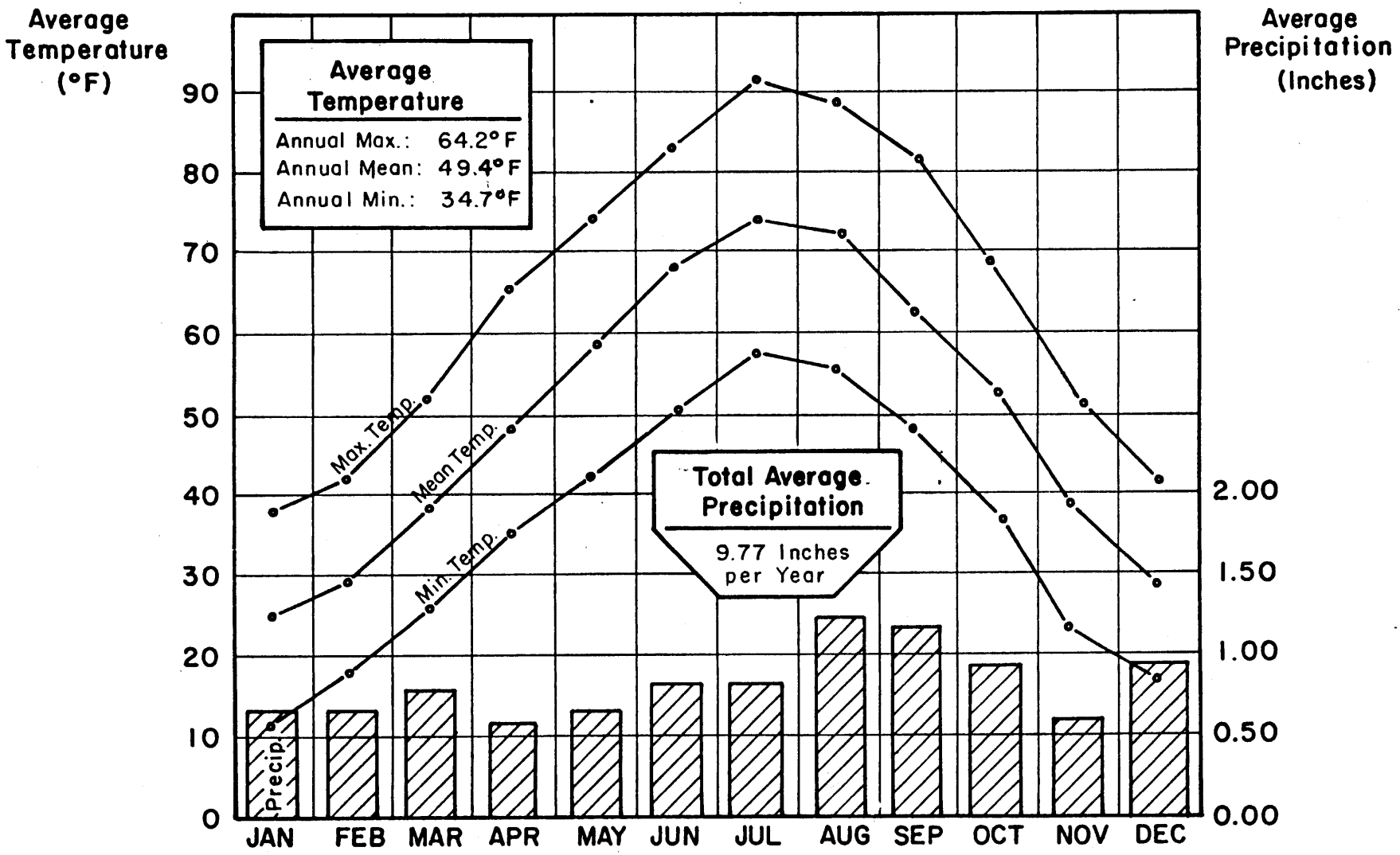
System	Stratigraphic Unit		Thickness (feet)	Description
Tertiary	WASATCH GROUP	North Horn Formation	500 - 2,500	Variegated shales with subordinate sandstone, conglomerate and fresh-water limestone, slope former; sandstone and limestone units may supply limited quantities of ground water.
Cretaceous	MESA VERDE GROUP	Price River Formation	600 - 1,000	Gray to white gritty sandstone interbedded with subordinate shale and conglomerate, ledge and slope former, little potential for ground water.
		Castlegate Sandstone (Unconformity)	150 - 500	White to gray, coarse-grained often conglomeratic sandstone, cliff former, weathers to shades of brown, good aquifer material, ground water not present if outcrops occur nearby.
		Blackhawk Formation MAJOR COAL SEAMS	700 - 1,000	Yellow to gray, fine-to-medium-grained sandstone, interbedded with subordinate gray and carbonaceous shale, several thick coal seams; perched ground water may occur in sandstone units, springs and seeps common.
		Star Point Sandstone	90 - 1,000	Yellow-gray massive cliff-forming sandstone, often in several tongues separated by Masuk Shale; ground water present, but generally a poor aquifer.
	MANCOS SHALE	Masuk Shale	300 - 1,300	Yellow to blue-gray sandy shale, slope former.
		Emery Sandstone COAL	50 - 800	Yellow-gray friable sandstone tongue, cliff former. Coal present in subsurface; major regional aquifer.
		Blue Gate Member	1,500- 2,400	Pale blue-gray, nodular and irregularly bedded marine mudstone and siltstone with several arenaceous beds, weathers into low rolling hills and badlands.
		Ferron Sandstone Member MAJOR COAL SEAMS	50 - 950	Alternating yellow-gray sandstone, sandy shale and gray shale with important coal beds of Emergy coal field, resistant cliff former; major regional aquifer.
		Tununk Shale Member	400 - 650	Blue-gray to black sandy marine shale slope forming mudston

Figure VII-1



STANDARDVILLE QUADRANGLE
UTAH–CARBON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC
NW/4 CASTLE GATE 15' QUADRANGLE

Figure VII-2



Price Climatological Summery
Monthly Average 1936-1965

Figure VII-3

R645-301-800. **BONDING AND 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

R645-301-812.700. ADEQUATE BOND COVERAGE AT ALL TIMES

N/A -- DIVISION

R645-301-820. REQUIREMENT TO FILE A BOND

Andalex currently holds a bond, approved by UDOGM in the amount of $813,795.00 and it is included in this MRP in Appendix B.

See also Appendix B

R645-301-820.100. PRIOR TO PERMIT ISSUANCE

Appendix B

R645-301-820.110. AREAS COVERED BY BONDING

Appendix B

R645-301-820.111. REQUIREMENTS

Appendix B

R645-301-820.112. INCREMENTAL BONDING

Appendix B

R645-301-820.113. BONDING MAP

Plates 8 & 9

R645-301-820.114. REQUIREMENTS

An estimate is provided in the Reclamation Cost Projection in Section R645-301-542.400. Andalex frequently requires the use of dirt contractors and is therefore current on equipment rental costs, labor costs, and productivity, since we have a great deal of experience with construction projects. Andalex has used its experience in construction and earth moving projects to estimate the amount of time which will be required and the equipment needed for individual reclamation activities. Andalex has also been involved with several revegetation projects from which it drew estimates. Andalex has provided, on Plates 9 & 10, accurate as built versus reclaimed cross sections which show the mass balance

for earthwork. The approximate original contours will be achieved using the material cut out to create the fill areas. No material will be hauled in. Maps depicting accurately the surface facilities including topsoil areas, structures and facilities are included in Volume II and also specific topsoil maps and cross sections are included.

R645-301-820.120. ACTIVITY RESTRICTION PRIOR TO BONDING

See R645-301-820.114.

R645-301-820.130. BONDING SCHEMES

See R645-301-820.114.

R645-301-820.131. PERFORMANCE BOND FOR ENTIRE PERMIT AREA

N/A

R645-301-820.132. CUMULATIVE BOND SCHEDULE AND PERFORMANCE BOND

Appendix B

R645-301-820.133 INCREMENTAL BOND SCHEDULE AND PERFORMANCE BOND

N/A

R645-301-820.200. FORM OF THE PERFORMANCE BOND

Appendix B

R645-301-820.210. FORM

Appendix B

R645-301-820.220. ALLOWABLE TYPES OF BONDS

Appendix B

R645-301-820.221. SURETY BOND

Appendix B

R645-301-820.222. COLLATERAL BOND

N/A

R645-301-820.223. SELF BOND

N/A

R645-301-820.224. COMBINATION OF BOND TYPES

N/A

R645-301-820.300. PERIOD OF LIABILITY

Appendix B

R645-301-820.310. REQUIREMENTS

Appendix B

R645-301-820.320. BOND PHASES

See R645-301-542.400.

R645-301-820.330. RESTRICTIONS

N/A

R645-301-820.340. INTENSIVE AGRICULTURAL POSTMINING LAND USE

N/A

R645-301-820.350. GENERAL

N/A

R645-301-820.351. BOND LIABILITY

N/A

R645-301-820.352. IMPLEMENTATION OF ALTERNATIVE POSTMINING LAND USE

N/A

R645-301-830. DETERMINATION OF BOND AMOUNT

R645-301-830.100. BONDED AREAS

See Plate 9, R645-301-542.400, Appendix B

R645-301-830.110. DETERMINATION BY DIVISION

See R645-301-820.114.

R645-301-830.120. REQUIREMENTS OF APPROVED PERMIT AND RECLAMATION PLAN

See R645-301-820.114.

R645-301-830.130. DIFFICULTY OF RECLAMATION

See R645-301-820.114.

R645-301-830.140. DETAILED COST ESTIMATE

See R645-301-240 and R645-301-542.400.

R645-301-830.200. MINIMUM BOND AMOUNT

See R645-301-240.

R645-301-830.300. INFLATION

See R645-301-240.

R645-301-830.400. ADJUSTMENT OF AMOUNT

N/A -- DIVISION

R645-301-830.410. CONDITIONS OF ADJUSTMENT

N/A -- DIVISION

R645-301-830.420. DIVISION ACTION

N/A -- DIVISION

R645-301-830.421. NOTIFICATION

N/A -- DIVISION

R645-301-830.422. INFORMAL CONFERENCE

N/A -- DIVISION

R645-301-830.430. REQUEST FOR ADJUSTMENT BY PERMITTEE

N/A -- DIVISION

R645-301-830.440. PERMIT REVISIONS

N/A -- DIVISION

R645-301-830.500. SUBSIDENCE

Appendix B

R645-301-840. GENERAL TERMS AND CONDITIONS OF THE BOND

Appendix B

R645-301-840.100. AMOUNT

Appendix B

R645-301-840.200. PAYABLE TO DIVISION

Appendix B

R645-301-840.300. PERFORMANCE

Appendix B

R645-301-840.400. DURATION

Appendix B

R645-301-840.500. GENERAL

Appendix B

R645-301-840.510. NOTICE REQUIREMENTS

Appendix B

R645-301-840.520. INADEQUATE BOND COVERAGE

Appendix B

R645-301-850. BONDING REQUIREMENTS FOR UNDERGROUND MINING OPERATIONS

Appendix B

R645-301-850.100. RESPONSIBILITIES

Appendix B

R645-301-850.200. LONG-TERM PERIOD OF LIABILITY

Appendix B

R645-301-850.210. PERIOD OF LIABILITY

Appendix B

R645-301-850.220. SURFACE FACILITIES AND STRUCTURES

Appendix B

R645-301-850.230. CONTINUOUS BOND COVERAGE

Appendix B

R645-301-850.240. EXTENDED RESPONSIBILITY

Appendix B

R645-301-850.300. BOND FORFEITURE

Appendix B

R645-301-850.310. CONTINUOUS COVERAGE

Appendix B

R645-301-850.320. EXTENDED RESPONSIBILITY

Appendix B

R645-301-860. FORMS OF BONDS

Appendix B

R645-301-860.100. SURETY BONDS

Appendix B

R645-301-860.110. EXECUTION

Appendix B

R645-301-860.120. TERMS

Appendix B

R645-301-860.200. COLLATERAL BONDS

N/A

R645-301-860.210. CONDITIONS

N/A

R645-301-860.211. CUSTODY

N/A

R645-301-860.212. MARKET VALUE

N/A

R645-301-860.213. ASSIGNMENT

N/A

R645-301-860.214. F.D.I.C. LIMITS

N/A

R645-301-860.220. LETTERS OF CREDIT

N/A

R645-301-860.221. QUALIFICATIONS

N/A

R645-301-860.222. IRREVOCABLE AND CONTINUOUS

N/A

R645-301-860.223. PAYABLE ON DEMAND

N/A

R645-301-860.230. REAL PROPERTY

N/A

R645-301-860.231. CONDITIONS

N/A

R645-301-860.232. SCHEDULE OF REAL PROPERTY

N/A

R645-301-860.232.1 DESCRIPTION

N/A

R645-301-860.232.2 FAIR MARKET VALUE

N/A

R645-301-860.232.3 PROOF OF POSSESSION AND TITLE

N/A

R645-301-860.233. RESTRICTIONS

N/A

R645-301-860.240. CASH ACCOUNTS

N/A

R645-301-860.241. BOND SUPPLEMENTS

N/A

R645-301-860.242. INTEREST

N/A

R645-301-860.243. CERTIFICATES OF DEPOSIT

N/A

R645-301-860.244. F.D.I.C. LIMITATIONS

N/A

R645-301-860.250. BOND VALUE OF COLLATERAL

N/A

R645-301-860.251. BOND MARGIN

N/A

R645-301-860.252. EVALUATION AND ADJUSTMENTS

N/A

R645-301-860.260. NOTIFICATION

N/A

R645-301-860.300. SELF-BONDING

N/A

R645-301-860.310. DEFINITIONS

N/A

R645-301-860.320. CONDITIONS

N/A

R645-301-860.321. RESIDENT AGENT

N/A

R645-301-860.322. CONTINUOUS OPERATION

N/A

R645-301-860.322.1 JOINT VENTURES OR SYNDICATES

N/A

R645-301-860.322.2 CALCULATION OF BUSINESS DURATION

N/A

R645-301-860.323. FINANCIAL INFORMATION

N/A

R645-301-860.323.1 BOND RATING

N/A

R645-301-860.323.2 TANGIBLE NET WORTH

N/A

R645-301-860.323.3 ASSETS AND LIABILITIES

N/A

R645-301-860.324. SUBMITTAL

N/A

R645-301-860.324.1 AUDITED FINANCIAL STATEMENTS

N/A

R645-301-860.324.2 UNAUDITED FINANCIAL STATEMENTS

N/A

R645-301-860.324.3 ADDITIONAL UNAUDITED INFORMATION

N/A

R645-301-860.324.4 ANNUAL REPORT

N/A

R645-301-860.330. SELF BONDING CONDITIONS

N/A

R645-301-860.331. LIABILITY

N/A

R645-301-860.332. TERMS

N/A

R645-301-860.333. CANCELLATION

N/A

R645-301-860.340. REQUIREMENTS

N/A

R645-301-860.350. CONDITIONS

N/A

R645-301-860.360. INDEMNITY AGREEMENT

N/A

R645-301-860.361. EXECUTION

N/A

R645-301-860.362. AUTHORIZATION

N/A

R645-301-860.363. BINDER

N/A

R645-301-860.364. DEFAULT

N/A

R645-301-860.365. FORFEITURE

N/A

R645-301-860.370. UPDATE INFORMATION

N/A

R645-301-860.380. NOTIFICATION REQUIREMENTS

N/A

R645-301-870. REPLACEMENT OF BONDS

N/A

R645-301-870.100. EQUIVALENT COVERAGE

N/A

R645-301-870.200. CONDITIONS

N/A

R645-301-880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

N/A -- UNTIL FINAL RECLAMATION

R645-301-880.100. BOND RELEASE APPLICATION

N/A

R645-301-880.110. TIMING

N/A

R645-301-880.120. PUBLICATION

N/A

R645-301-880.130. NOTARIZED STATEMENT

To be included in Bond Release Application.

R645-301-880.200. INSPECTION BY THE DIVISION

N/A

R645-301-880.210. EVALUATION AND PROCEEDINGS

N/A

R645-301-880.220. NOTIFICATION OF BOND RELEASE

N/A

R645-301-880.300. PHASED BOND RELEASE

N/A

R645-301-880.310. PHASE I

N/A

R645-301-880.310. PHASE I

N/A

R645-301-880.320. PHASE II

N/A

R645-301-880.330. PHASE III

N/A

R645-301-880.400. DISAPPROVAL

N/A

R645-301-880.500. NOTIFICATION PRIOR TO BOND RELEASE

N/A

R645-301-880.600. WRITTEN OBJECTIONS

N/A

R645-301-880.700. PUBLIC HEARING

N/A

R645-301-880.800. INFORMAL CONFERENCE

N/A

R645-301-880.900. FORFEITURE OF BONDS

N/A

R645-301-880.910. CONDITIONS

N/A

R645-301-880.911. NOTIFICATION

N/A

R645-301-880.912. AVOIDANCE

N/A

R645-301-880.912.1 COMPLIANCE SCHEDULE

N/A

R645-301-880.912.2 RECLAMATION IN LIEU OF BOND FORFEITURE

N/A

R645-301-880.920. FORFEITURE

N/A

R645-301-880.921. COLLECTION

N/A

R645-301-880.922. USE OF FUNDS

N/A

R645-301-880.930. EXTENDED LIABILITY

N/A

R645-301-880.931. REMAINING LIABILITY

N/A

R645-301-880.932. UNUSED FUNDS

N/A

R645-301-890. **TERMS AND CONDITIONS FOR LIABILITY INSURANCE**

N/A

R645-301-890.100. **POLICY REQUIREMENTS**

N/A

R645-301-890.200. **LIABILITY PERIOD**

N/A

R645-301-890.300. **NOTIFICATION**

N/A

R645-301-890.400. **SELF-INSURANCE**

N/A

VERIFICATION STATEMENT

STATE OF UTAH)
SS:
COUNTY OF CARBON)

I, Michael W. Glasson, having been duly sworn, depose and attest that all of the representations contained in the foregoing application and true, accurate and complete to the best of my knowledge; that I am authorized to complete and file this application on behalf of the Applicant and this application has been executed as required by law.

Signed: _____

Taken, subscribed and sworn to me before the undersigned authority in my said county, this _____ day of December, 1998.

Notary Public: _____

My Commission Expires: _____