C/007/033 Incoming

#4160

ok

AMERICA WEST
RESOURCES

3266 South 125 West
Price, Utah 84501
(435) 636-0820 phone
(435) 636-0817 fax
www.americacoal.com

September 12, 2012

Mr. Steve Christensen
Utah Department of Natural Resources
Division of Oil, Gas & Mining
1594 West North Temple – Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Re: Clean copies of Midterm Review Completion – Wildcat Loadout – Permit #C/007/0033- Task ID #4160

Dear Mr. Christensen:

America West Resources respectfully submits the requested clean copies of the Wildcat Loadout Midterm review on behalf of Intermountain Power Agency as its operator.

If you have any questions or comments, please feel free to call me at 435-636-0820.

Sincerely,

Kit Pappas
Manager of Engineering & Environmental Services

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File in:
❑ Confidential
❑ Shelf
❑ Expandable Electronic
Date Folder 09/13/12 C/ 0070033
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W/Encl

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: INTERMOUNTAIN POWER AGENCY
Mine: WILDCAT LOADOUT
Permit Number: C\007\0033
Title: TASK ID #4142 MIDTERM PERMIT REVIEW

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 1
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 1
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 2
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 2
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 3
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 3
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 4
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 4
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 5
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 5
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 6
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 6
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 7
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 7
☐ Add	☐ Replace	☒ Remove	EXISTING CHAPTER 8
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY CHAPTER 8
☒ Add	☐ Replace	☐ Remove	CLEAN COPY ADDENDUM TO APPENDIX N
☐ Add	☐ Replace	☒ Remove	EXISTING APPENDIX P
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY APPENDIX P
☐ Add	☐ Replace	☒ Remove	EXISTING APPENDIX R
☐ Add	☒ Replace	☐ Remove	WITH CLEAN COPY APPENDIX R
☒ Add	☐ Replace	☐ Remove	CLEAN COPY ADDENDUM TO APPENDIX R
☒ Add	☐ Replace	☐ Remove	DETAILED ESTIMATED COST SHEETS FOR RECLAMATION OF PR-5 SURFACING
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	

Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	Received by Oil, Gas & Mining RECEIVED SEP 13 2012 DIV. OF OIL, GAS & MINING

INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 1, LEGAL

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 1, LEGAL

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 Intermountain Power Agency, 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

Intermountain Power Agency, affiliates or persons controlled by or under common control with Intermountain Power Agency never had a mining permit suspended or revoked.

b) Forfeiture of Bond

Intermountain Power Agency, affiliates or persons controlled by or under common control with Intermountain Power Agency have not forfeited a mining bond or similar security in lieu of bond.

c) History of Violations

Intermountain Power Agency and affiliated companies have not received any violations received within the last three years prior to the date of this application. See attached amended and restated Appendix B Part B.

R645-301-111. INTRODUCTION

Introduction and Overview of Project Permit Application

A. Introduction

This permit application is being submitted by Intermountain Power Agency, 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. Intermountain Power Agency is a political subdivision of the State of Utah. Intermountain Power Agency has a 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.

Intermountain Power Agency was granted the right-of-way in August 2011 by the Bureau of Land Management of the United States Department of the Interior.

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The Intermountain Power Agency has leased the coal loadout facility to America West Resources, Inc., who is currently operating the facility. The Intermountain Power Agency controls all lands within the proposed coal loadout facility area. Intermountain Power Agency, 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, Inc. by the Bureau of Land Management, U.S. Department of the Interior. The permit was assigned to Intermountain Power Agency. 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 permit area contains approximately 100.19 acres, of which 12.5 acres are under lease to the Utah Railway by the Bureau of Land Management. The facility is located within a 270 acre BLM right-of-way. 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 Intermountain Power Agency. 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 Intermountain Power Agency'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 Hidden Splendor Mine and other local mines that may desire coal transloading services. 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, Intermountain Power Agency has acquired all the necessary approvals, licenses, rights-of-way, and permits at both state and federal levels to conduct coal storage and loading

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operations on the plan area. The facility is designed to handle loading and crushing activities up to 5.5 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 pre-mining 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 Intermountain Power Agency, 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

Intermountain Power Agency
10653 S. River Front Parkway, Suite 120
South Jordan, Utah 84095
(801) 938-1333

2. Legal and Equitable Owners of Record

The addresses of owners of record are as follows:

Bureau of Land Management
Utah State Office
P.O. Box 45155
440 West 200 South, Suite 500
Salt Lake City, Utah 84145-0155
(801) 539-4001

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

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Intermountain Power Agency
10653 S. River Front Parkway, Suite 120
South Jordan, Utah
(801) 938-1333

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 Intermountain Power Agency.

3. Purchasers 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

Intermountain Power Agency is a political subdivision of the State of Utah created under the Interlocal Cooperation Act, Title 11, Chapter 13, Utah Code Ann. Intermountain Power Agency has no shareholders or partners and has issued no stock or any partnership interests. This facility stores, processes and ships coal for various operations in the area. This mining permit application has been prepared by Intermountain Power Agency 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 Intermountain Power Agency Wildcat Loadout, ACT/007/033:

James A. Hewlett
Intermountain Power Agency
10653 S. River Front Parkway, Suite 120
South Jordan, Utah
(801) 938-1333

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

R645-301-112.300. OTHER THAN SINGLE PROPRIETORSHIPS

Intermountain Power Agency holds the exclusive coal operating interests in the permit area.

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R645-301-112.310. OFFICERS AND SHAREHOLDERS

Name	Address	Title	Date Position Assumed
Officers:			
Ted L. Olson	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Chairman	August 2010
R. Leon Bowler	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Vice Chairman	December 1984
Ed Collins	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Secretary	August 2010
Russell F. Fjeldsted	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Treasurer	March 2007

Name	Address	Title	Date Position Assumed
Directors:			
R. Leon Bowler	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	June 1977
Ted L. Olson	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	January 1990
Russell F. Fjeldsted	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	January 1992
Walter Meacham	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	January 1999
Robert O. Christiansen	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	June 2007
Ed Collins	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	June 2007
Fred Moss	10653 South River Front Parkway, #120 South Jordan, Utah 84095	Director	August 2010
General Manager			
James A. Hewlett	10653 South River Front Parkway, #120 South Jordan, Utah 84095	General Manager	December 2007

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

Refer to R645-301-112.310 for ownership and control information.

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

1. Intermountain Power Agency owned a 50% undivided interest in the real property interests of the West Ridge Mine, Utah Coal Program Permit No. C/007/041, West Ridge Resources, Inc., Permittee, MSHA ID No. 42-02233. Effective as of September 29, 2010, Intermountain Power Agency conveyed all of its interest in the West Ridge Mine to Andalex Resources, Inc.

2. Intermountain Power Agency owned a 50% undivided interest in the real property interests of the Crandall Canyon Mine, Utah Coal Program Permit No. C/015/032, Genwal Resources, Inc., Permittee, MSHA ID No. 42-01715. Effective as of September 29, 2010, Intermountain Power Agency conveyed all of its interest in the West Ridge Mine to Andalex Resources, Inc.

3. Intermountain Power Agency owned a 100% undivided interest in the real property interests, and was the Permittee, of the Horse Canyon Mine, Utah Coal Program Permit No. C/007/013. Effective April, 2010, Intermountain Power Agency conveyed all of its interest in the Horse Canyon Mine to Utah American Energy, Inc.

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
P.O. Box 45155
440 West 200 South, Suite 500
Salt Lake City, Utah 84145-0155
(801) 539-4001

R645-301-112.600. ADJACENT SURFACE AND MINERAL OWNERSHIP

Refer to Plate 16 for adjacent surface and mineral ownership.

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

The Wildcat Loadout and Refuse Pile have the following MSHA I.D. Numbers:

Loadout	MSHA I.D. 42-01864

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

N/A

R645-301-113. VIOLATION INFORMATION

History of Violations

R645-301-113.100. COMPLIANCE INFORMATION

Neither Intermountain Power Agency nor any subsidiary, affiliate or persons controlled by or under common control with Intermountain Power Agency has:

1. Had a federal or state permit to conduct coal mining and reclamation operations suspended or revoked in the five years preceding the date of submission of the Application; or

2. Has forfeited a performance bond or similar security deposited in lieu of bond

R645-301-113.110. SUSPENDED OR REVOKED PERMITS

Refer to R645-301-113.100 for ownership and control information.

R645-301-113.120. FORFEITED BONDS

Refer to R645-301-113.100 for ownership and control information.

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 Intermountain Power Agency 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
   1594 West North Temple, Suite 1210
   Box 145801
   Salt Lake City, Utah 84114-5801

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Reference I.D.: DOGM MRP C/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

3. Utah Division of Water Quality
   P.O. Box 144870
   Salt Lake City, Utah 84114-4870

   - UPDES Discharge Permit #UTG040007

Federal:

1. Bureau of Land Management
   Utah State Office
   P.O. Box 45155
   440 West 200 South, Suite 500
   Salt Lake City, Utah 84145-0155

   - Right-of-Way
     Permit Number U-48027
     Granted January 12, 1982
     Amended February 5, 2007
     Assigned August 1, 2011

2. U.S. Department of Labor
   Mine Safety and Health Administration (MSHA)
   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

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

See above

R645-301-113.240. ADMINISTRATIVE OR JUDICIAL PROCEDURES

None

R645-301-113.250. CURRENT STATUS OF PROCEEDINGS

None

R645-301-113.300. LIST OF ALL VIOLATIONS NOTICES

None (See attached amended and restated Appendix B Part B)

R645-301-113.310. IDENTIFICATION OF VIOLATIONS

None

R645-301-113.320. DESCRIPTION OF VIOLATIONS

None

R645-301-113.330. LOCATION OF VIOLATIONS PROCEEDINGS

None

R645-301-113.340. STATUS OF VIOLATIONS PROCEEDINGS

None

R645-301-113.350. ACTIONS TAKEN TO ABATE VIOLATIONS

None

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

The legal right to enter and conduct coal loading activities in the permit area (collectively, the "Entry Rights") based on the language contained therein include those items listed below (a copy of which is included in Appendix B).

1. Bureau of Land Management ("BLM") Right of Way No. U-48027 dated January 1982 between Tower Resources, Inc. and BLM, as amended by that certain Amendment dated February 5, 2007. This right of way contains 270 acres described as the NE¼SW¼NE¼, S½SW¼NE¼, E½SW¼, SE¼ of Section 33, Township 13 South, Range 9 East, SLBM.

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2. BLM Right of Way No. U-52810 dated May 1984. The right of way contains 10.37 acres within Sections 28 and 33, Township 13 South, Range 9 East, SLBM.

3. Lease dated December 1, 1981 between Utah Railway Company and Tower Resources, Inc., as amended by that certain Lease Amendment dated February 8, 1983. The Lease covers thirteen acres within Section 33, Township 13 South, Range 9 East, SLBM.

4. Beaver Creek Coal Company Letter Agreement. An unrecorded Agreement from Beaver Creek Coal Company to Andalex Resources, Inc., dated July 28, 1988, granting Andalex the right to use a small portion of land for the Wildcat Loadout operations. The area granted is located to the east of Beaver Creek Coal Company's fence to the railroad right-of-way and south of the "new gate."

The permit area is located on 100.19 acres on the following described lands:

Township 13 South, Range 9 East, SLBM

Section 33: NW1/4SE1/4, N1/2SW1/4SE1/4, E1/2E1/2NE1/4SW1/4, E1/2NE1/4SE1/4SW1/4, NE1/4SE1/4SE1/4SW1/4, NW1/4SW1/4SW1/4SE1/4, E1/2SE1/4SW1/4NE1/4 and Portions of N1/2NW1/4NE1/4SE1/4, NE1/4SW1/4NE1/4, SW1/4SW1/4NE1/4, NW1/4SE1/4SW1/4NE1/4, W1/2NE1/4SW1/4, W1/2E1/2NE1/4SW1/4, W1/2E1/2SE1/4SW1/4, containing 100.19 acres.

The Entry Rights are held by the Intermountain Power Agency pursuant to the terms and conditions of the following instruments:

1. May 10, 2011 Rights of Way, Leases, Real Property Agreements—Assignments Assignment and Assumption Agreement ("IPA Assignment") between Intermountain Power Agency and Andalex Resources, Inc., recorded with the Carbon County Recorder on May 13, 2011 at Entry No. 810646, Book 747, Page 93. A copy of the IPA Assignment is attached hereto as Appendix B-Part A-22; and

2. May 4, 2011 Quitclaim Deed ("IPA Quitclaim") between Andalex Resources, Inc., as Grantor, and Intermountain Power Agency, Grantee, recorded with the Carbon County Recorder on May 13, 2011 at Entry No. 810647, Book 747, Page 98. A copy of the IPA Quitclaim is attached hereto as Appendix B-Part A-23.

R645-301-114.100. DOCUMENTATION

Appendix B

R645-301-114.200. SEVERED SURFACE AND MINERAL ESTATES

Appendix B

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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 effects 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

The Consumers Road and the Trestle Road are public roads within 100 feet of the disturbed area boundary.

R645-301-116. PERMIT TERM

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

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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. Intermountain Power Agency will then apply for five year extensions over the life of this operation.

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. (See Appendix B).

R645-301-117.300. FACILITIES USED IN COMMON

N/A

R645-301-118. FILING FEE

N/A

R645-301-120. PERMIT APPLICATION FORMAT AND CONTENTS

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R645-301-100.	General
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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 prior versions of this application.

1. In House Consulting Services

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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 the prior versions of 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

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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, DOGM

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

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D. Bibliography

Barfield, B.J., Warner, R.C. and Haan, C.R. 1983. Applied Hydrology and Sedimentology for Disturbed Areas. Oklahoma 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.

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

Introduction and Overview of Project Permit Application

This permit application is being submitted by Intermountain Power Agency, 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. Intermountain Power Agency is a political subdivision of the State of Utah. Intermountain Power Agency 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. The right-of-way was subsequently amended on February 5, 2007 and assigned to Intermountain Power Agency on August 1, 2011. Intermountain Power Agency, the designated operator, controls all lands within the proposed coal loadout facility area. Intermountain Power Agency, 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 and assigned to Intermountain Power Agency on August 1, 2011. 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 Plate 1). The property contains approximately 270 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. The permit area occupies 100.19 acres within the BLM right-of-way.

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 Intermountain Power Agency. 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 Intermountain Power Agency'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

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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 Hidden Splendor Mine and other local mines that may desire coal transloading services. 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, Intermountain Power Agency 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 5.5 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 Intermountain Power Agency, 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 Intermountain Power Agency. A wash plant and loadout were operated by other independent companies or individuals in areas presently consumed by Intermountain Power Agency's surface facilities. Intermountain Power Agency's encroachment onto these previously disturbed areas transferred the responsibility for reclamation to Intermountain Power Agency. The specific locations of disturbed areas prior to Intermountain Power Agency's mining activities is irrelevant.

R645-301-142.200. AFTER AUGUST 3, 1977

All of Intermountain Power Agency'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

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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.

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INTERMOUNTAIN POWER AGENCY (IPA)

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 2, SOILS

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 2

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R645-301-200. SOILS

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

I. Soil Survey and Vegetation Inventory (please see Appendix D, *Appendix D Supplement,* 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 in 1984, and stored and protected for use in final reclamation. Please see Plate 13*C* 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. IPA has committed to identifying and testing for suitable substitute material either off the permit area or possibly within

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the permit area if a suitable growth medium can be identified.

R645-301-212. STOCKPILING AND REDISTRIBUTION

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Removal and Storage of Topsoil and Subsoils

(Also the following sections: R645-301-230, 231.100, 231.400, 232, 234, 251 and 252)

The area from which topsoil was removed is approximately 20 acres (the surface area which was not previously impacted by loading operations prior to IPA and 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 separate sites on the site. The topsoil storage areas are shown on Plate 1. No topsoil was gathered from ASCA portions of the permit area including the topsoil stockpile on the west side north of Pond F. All topsoil piles are to be considered ASCA exemptions (see Plate 2A). 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 the 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, IPA 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

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reclamation. This analysis is included in Appendix D. IPA 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. IPA suggests that the topsoil be tested 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 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. The new pile has been renamed Topsoil Pile "B". 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.

There are presently 4 topsoil stockpiles on this site.

Topsoil Pile Summary, Existing		
Topsoil Pile A	11,877 ft.^{3}	(**See note below)
Topsoil Pile B	285,810 ft.	
Topsoil Pile E	122,176 ft.^{3}	
Topsoil Pile F	44,363 ft.^{3}	
Total	464,499 ft.^{3} (17,204 CY)	

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(Existing Topsoil Pile "B"). These piles represent a total volume of 285,770 ft^3. The new topsoil pile is a long, narrow pile situated adjacent

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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. IPA 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

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twelve inches and placed on the new topsoil storage pile on the west side.

** It should also be noted that, under the plan to address the Division Order DO-04 (wind-blown fines), the company commits to salvaging 6" of topsoil from the clean-up area shown on Plate 1A. It is estimated that about 3000 cubic yards of material will be salvaged at that time. The material will be stored as an extension to existing Topsoil Pile A which is located nearby. For a complete description of the topsoil salvaging and stockpiling plan associated with Division Order DO-04, refer to Appendix P.

Backfilling, Grading, and Soil Replacement and Stabilization (Also R645-301-232.400)

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 IPA will provide permanent protection of this diversion once reclamation is complete. Please refer to Appendix R, 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

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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, IPA 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 75.67 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 464,499 cubic feet (17,204 cubic yards)of material. IPA 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 N. 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 have been 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

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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 ASCA's, where topsoil was not stripped, the Utah Railway tracks, the Permanent Impoundment, and Diversion UD-1.

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, IPA 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

James Nyenhuis, working for Mt. Nebo Scientific, completed a survey of the general area proposed for the coal fines cleanup (see Appendix D Supplement).

R645-301-222.100. SOIL MAP

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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

(Also the following: R645-301-231.200, 231.300, 232.720 and 233)

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 designated A, B, C & D, 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 constituents or reclamability; however, the revegetation test plots will prove or disprove this theory. It is IPA's goal

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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, IPA requires that an additional 31,954 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 and 1993. The results of the survey are found in Appendix N. Andalex has performed one more quantitative test on these plots in the summer of 2006. 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, including no fertilizer.

In the unlikely event it is determined that the fill material is not suitable for topsoil substitute, IPA will commit to further discussing solutions with the Division, or 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, in 1994, Andalex created four new test plots on the surface of the new topsoil storage piles located on the west side of the tracks adjacent to existing topsoil pile E.

These test plots will be approximately 40 feet square and will not be situated on any of the slopes of the topsoil pile. All four test plots will have a roughened surface (roughened meaning troughs and hills

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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 anchored with biodegradable netting.

Test Plot 4 - Test Plot 4 will not be irrigated. In

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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.

It should be noted these test plots were last monitored in 1997, and at that time, showed that they can be revegetated. No further monitoring of these test plots is proposed.

Note: the 1994 test plots were evaluated in 1997, The results of these evaluations are located in 2003\Incoming\0001f.pdf.

Additionally, these topsoil test plots were eliminated in 2000, when the surface of the new topsoil pile B was reseeded and the seed mix used was not recorded.

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

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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.

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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

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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

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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, IPA 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

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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, IPA'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

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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 G and E and establishing new drainages to Ponds A, C, and D. Recontouring will

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take one month.

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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

Note: Refer to Plate 14 for cross-section locations.

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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	

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Note: Refer to Plate 14 for cross-section locations.

At the request of the Division, no extraordinary compaction will be applied to the last few lifts during the recontouring/grading, to provide a relatively loose rooting zone of four feet. This loose application of fill will eliminate the need for ripping prior to topsoil placement. 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. 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 area will be roughened by gouging, and the area will be hydroseeded and hydromulched. The entire revegetation procedure is described in this chapter.

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 IPA 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, and D and the removal of the field fence surrounding the permit area. Once the

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areas have been graded, they will be prepared with loose filling of the upper lifts, (as described in Phase I above), prior to topsoil redistribution. At this point, if it is not already the fall season, IPA 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 description of reclamation is provided in R645-301-542.400. Bond information and detailed costs are provided in Appendix B.

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. IPA 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

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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, soluble potassium, magnesium, calcium, sodium, total nitrogen, available phosphorous, available water capacity, and percent rock fragments. The results can be found in Appendix N. 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 31,954 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 Mt. Nebo Scientific in conjunction with the vegetation inventory and UDOGM comments.

Planting and Seeding Methods

All reclaimed areas will be stabilized by gouging prior to reseeding. The gouging will be done with a backhoe or trackhoe, and will consist of gouges at least 18" deep by 24" - 36" wide, spaced 6' - 10' apart. All areas will then be hydroseeded and

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hydromulched.

Mulching Techniques

Vegetative cover will be promptly re-established following cessation of mining activities to stabilize erosion. Re-seeding will occur during the first normal period for favorable growth following regrading. Mulch will be applied to all reseeded areas. 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. All disturbed areas will be reseeded. These areas are shown on Plate 1B and constitute 75.67 acres. (Not including the Utah Railway tracks).

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Wildcat Loadout Final Seed Mixture			
Scientific Name	**Common Name**	**PLS/A**	**Seeds Per**
Amelanchier utahensis	Utah serviceberry	7.00	4.15
Artemisia tridentata	Big sagebrush	0.06	3.44
Ceratoides lanata	Winterfat	5.00	6.31
Chrysothamnus nauseosus	Rubber rabbitbrush	0.30	2.75
Purshia tridentata	Bitterbrush	12.00	4.13
Archillea millefolium	Yarrow	0.05	3.18
Hedysatum boreale	Northern sweetvetch	8.00	6.17
Linum lewisii	Lewis flax	1.00	6.38
Penstemon palmeri	Palmer penstemon	0.50	7.00
Viguiera multiflora	Showy goldeneye	0.20	4.84
Bouteloua gracilis	Blue grama	0.60	9.79
Elymus spicatus	Bluebunch wheatgrass	2.50	8.03
Elymus trachycaulus	Slender wheatgrass	2.50	9.18
Hilaria jamesii	Galleta	2.50	9.13
Stipa comata	Needle-and-thread	3.00	7.92
Stipa hymenoides	Indian ricegrass	2.00	8.63
TOTALS		47.21	101.06

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Interim Mix for broadcast seeding at Wildcat Loadout

Scientific Name	Common Name	PLS/ft
1) FORBS (Use 2 species from the list below to arrive at 7 PLS/ft2)		
Achillea millefolium var. occidentalis	Western yarrow	
Sphaeralcea ambigua	Desert globemallow	
Castilleja applegatei ssp. martinii	Early Indian paintbrush	
Baileya multiradiata	Desert marigold	
Oenothera speciosa	Showy evening primrose	
Penstemon eatonii	Firecracker penstemon	
Sub TOTAL for forbs		7.0
2) Cold Season GRASSES (Use Triticale and any other two cold season species to arrive at 18 PLS/ft2)		
Triticum aestivum x Secale cereale	Triticale (sterile rye)	3.0
Achnatherum hymenoides	Indian ricegrass	5.0
Bromus anomalus	Nodding brome	5.0
Elymus lanceolatus spp. lanceolatus	Thickspike wheatgrass	5.0
Elymus lanceolatus spp. lanceolatus	Slender wheatgrass	5.0
Pascopyrum smithii	Western wheatgrass	5.0

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Sub TOTAL Cold Season Grasses		18.0			
3) Warm Season GRASSES (Use any three warm season species to arrive at 15 PLS/ft2)					
Aristida pupurea	Purple threeawn	5.0			
Bouteloua gracilis	Blue grama	5.0			
Eragrostis trichodes	Sand lovegrass	5.0			
Pleuraphis jamesii	Galleta grass	5.0			
Sporobolus airoides	Alkali sacaton	5.0			
Sporobolus cryptandrus	Sand drop seed	5.0			
SubTOTALWarm Season Grasses		15.0			
TOTAL Forbs and Grasses		40.0			

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.

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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 IPA 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.

IPA 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.

IPA commits, that prior to final reclamation, the final seed mix will be re-evaluated for correlation with successful species establishment on the spoil and topsoil test plots and topsoil stockpiles.

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 *75.67* acre disturbed area, as shown on Plate 1B

R645-301-242.100. CRITERIA FOR REDISTRIBUTION

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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

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Roughening/gouging will be the primary method 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

IPA 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

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See R645-301-212.

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INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 3, BIOLOGY

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 3

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CHAPTER 3, BIOLOGY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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 **(Also R645-301-311, 320 and 321)**

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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 confirmed this.

Plant Communities **(Also R645-301-323.400)**

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 escarpment 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.

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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

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Area to be Disturbed

The surface area disturbed is 75.67 as shown on Plate 1B. The disturbed area does not include the ASCA's or the Utah Railway tracks. 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 **(Also R645-301-342)**

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

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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.

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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

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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

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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 **(Also R645-301-333)**

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 **(Also R645-301-322.210, 333.200 and 358)**

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

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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.

IPA 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.

IPA 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.

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

Snake dens will be reported to the DWR.

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

IPA will commit to reporting any unapproved range or

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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 IPA is sure that the division would not want each small coal fire reported.

No avifauna will be disturbed within IPA's minesite and in particular, raptors and their nests. IPA'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. IPA 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. IPA 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.

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Should IPA observe reoccurring problems with respect to wildlife fatalities which potentially could be corrected, IPA 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. IPA is following all guidelines set forth in the Fish and Wildlife Plan except the use of swareflex reflectors.

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 1B outlines the area impacted by the Wildcat Loadout. The remaining acreage consumed by the Wildcat Loadout Facility was previously disturbed). Andalex has

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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~~ *74.46* acres. IPA 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 IPA's disturbed area. The deer actually congregate within IPA's disturbed area. None of IPA's activities affect the deer herd as far as migration or movement. Deer have been observed even walking beneath unit trains. Therefore, IPA's facility offers no obstructions to deer movement. Taking all this into consideration, and as a result of an agreement between Andalex and

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the Utah Division of Wildlife Resources, Andalex had agreed to enhance an additional approximately 15 acres in the near future. Andalex performed this work in the fall of 1989 in accordance with the UDWR alternative 1.

Water consumption at this site averages approximately 2.48 acre feet per year. Of this amount, approximately 2.16 acre feet is used for dust control and 0.32 acre feet is used for culinary purposes.

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 Appendix E.

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

Not available - Site was disturbed pre-law by another operation.

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R645-301-322. FISH AND WILDLIFE INFORMATION

Appendix F; 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 B - Item 22 (Powerline Approval)

R645-301-323. MAPS AND AERIAL PHOTOGRAPHS

N/A

R645-301-323.100. REFERENCE AREAS

See Plate 1.

R645-301-323.200. MONITORING STATIONS

N/A

R645-301-323.300. ENHANCEMENT FACILITIES

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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 *1, 1A, 2, 3 and 13*.

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 *2A*.

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

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Protection measures are described in Appendix F. Revegetation and erosion control are described in Section R645-301-340 and R645-301-512.240, respectively

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.

With regard to the Colorado River Endangered Fish Recovery Program, surface consumption is limited to water sprayed on the haul roads for dust suppression, and water used for showers and toilets. This water is all hauled in under contract with D&D Trucking, who purchase the water from the Price River Water Improvement District. Daily records kept at the loadout show that for the year 2007 D&D delivered 677 loads, each with 4000 gallons for a total of 2,708,000 gallons. The other potential source of consumption is evaporation from the sediment ponds. Unlike slurry ponds or treatment ponds, the sediment ponds are normally dry and the evaporation amount is minimal.

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

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Appendix F

R645-301-340. RECLAMATION PLAN

The complete reclamation plan is described under R645-301-240.

R645-301-341. REVEGETATION

Revegetation

Revegetation will be accomplished by IPA or under IPA'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.

R645-301-341.100 SCHEDULE AND TIMETABLE

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 IPA or under IPA'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.

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IPA's 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.

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IPA's **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.

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R645-301-341.200. DESCRIPTION

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 performed 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.

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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.

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

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.

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Wildcat Loadout Final Seed Mixture			
Scientific Name	**Common Name**	**PLS/Ac**	**Seeds Per/ft^2**
Amelanchier utahensis	Utah serviceberry	7.00	4.15
Artemisia tridentata	Big sagebrush	0.06	3.44
Ceratoides Ianata	Winterfat	5.00	6.31
Chrysothamnus nauseosus	Rubber rabbitbrush	0.30	2.75
Purshia tridentata	Bitterbrush	12.00	4.13
Archillea millefolium	Yarrow	0.05	3.18
Hedysatum boreale	Northern sweetvetch	8.00	6.17
Linum lewisii	Lewis flax	1.00	6.38
Penstemon palmeri	Palmer penstemon	0.50	7.00
Viguiera multiflora	Showy goldeneye	0.20	4.84
Bouteloua gracilis	Blue grama	0.60	9.79
Elymus spicatus	Bluebunch wheatgrass	2.50	8.03
Elymus trachycaulus	Slender wheatgrass	2.50	9.18
Hilaria jamesii	Galleta	2.50	9.13
Stipa comata	Needle-and-thread grass	3.00	7.92
Stipa hymenoides	Indian ricegrass	2.00	8.63
TOTALS		47.21	101.06

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Interim Mix for broadcast seeding at Wildcat Loadout

Scientific Name	Common Name	PLS/ft
1) FORBS (Use 2 species from the list below to arrive at 7 PLS/ft2)		
Achillea millefolium var. occidentalis	Western yarrow	
Sphaeralcea ambigua	Desert globemallow	
Castilleja applegatei ssp. martinii	Early Indian paintbrush	
Baileya multiradiata	Desert marigold	
Oenothera speciosa	Showy evening primrose	
Penstemon eatonii	Firecracker penstemon	
Sub TOTAL for forbs		7.0
2) Cold Season GRASSES (Use Triticale and any other two cold season species to arrive at 18 PLS/ft2)		
Triticum aestivum x Secale cereale	Triticale (sterile rye)	3.0
Achnatherum hymenoides	Indian ricegrass	5.0
Bromus anomalus	Nodding brome	5.0
Elymus lanceolatus spp. lanceolatus	Thickspike wheatgrass	5.0
Elymus lanceolatus spp. lanceolatus	Slender wheatgrass	5.0
Pascopyrum smithii	Western wheatgrass	5.0

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Sub TOTAL Cold Season Grasses		18.0			
3) Warm Season GRASSES (Use any three warm season species to arrive at 15 PLS/ft2)					
Aristida pupurea	Purple threeawn	5.0			
Bouteloua gracilis	Blue grama	5.0			
Eragrostis trichodes	Sand lovegrass	5.0			
Pleuraphis jamesii	Galleta grass	5.0			
Sporobolus airoides	Alkali sacaton	5.0			
Sporobolus cryptandrus	Sand drop seed	5.0			
SubTOTALWarm Season Grasses		15.0			
TOTAL Forbs and Grasses		40.0			

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

All reclaimed areas will be stabilized by gouging prior to reseeding. The gouging will be done with a backhoe or trackhoe, and will consist of gouges at least 18" deep by 14" - 36" wide, spaced approximately 6' - 10' apart. The gouging precludes the use of a drill-seeder; therefore, all areas will then be hydroseeded and hydromulched.

R645-301-341.230. MULCHING TECHNIQUES

Vegetative cover will be promptly re-established following cessation of mining activities to

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stabilize erosion. Re-seeding will occur during the first normal period for favorable growth following regrading. Mulch will be applied to all reseeded areas. 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 1B and constitute 75.67 acres.

R645-301-341.240. IRRIGATION AND PEST CONTROL MEASURES

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 issued as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

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

Also see R645-301-240

R645-301-341.250. METHODS USED TO DETERMINE REVEGETATION 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

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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 IPA 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.

IPA 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.

IPA commits to consult with the Division prior to final reclamation to determine the status of the site in terms of coal fines accumulation and vegetation success.

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. IPA will endeavor to use the best

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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. IPA 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 R645-301-310.

R645-301-342.210. NUTRITIONAL VALUE

Appendix E

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

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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

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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 (Also R645

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.

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

Production measurements will be made in accordance with

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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. (See R645-301-240)

R645-301-353.130. EXTENT OF COVER

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

R645-301-353.140. STABILIZING SOIL FROM SURFACE EROSION

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The vegetative cover will be capable of stabilizing the soil surface from erosion. (See R645-301-240)

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.
(See R645-301-240)

R645-301-353.220. SEASONAL CHARACTERISTICS OF GROWTH

The reestablished plant species will have the same seasonal characteristics of growth as the original vegetation.
(See R645-301-240)

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

The reestablished plant species will be capable of self-regeneration and plant succession.
(See R645-301-240)

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.
(See R645-301-240)

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

The reestablished plant species will meet the

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requirements of applicable Utah and federal seed, poisonous and noxious plant; and introduced species laws or regulations. The seed tag will be provided to the Division, as requested.

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 R645-301-341.230.

R645-301-356 REVEGETATION: STANDARDS FOR SUCCESS

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

See R645-301-353.110

R645-301-356.110. STANDARDS FOR SUCCESS: GUIDELINES

See R645-301-240 and R645-301-353.110

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R645-301-356.120. SAMPLING TECHNIQUES

See R645-301-353.110.

R645-301-356.200. CONDITIONS FOR SUCCESS

See R645-301-353.110.

R645-301-356.210. GRAZING OR PASTURE LAND

See R645-301-331 and R645-301-353.110.

R645-301-356.220. CROPLAND

N/A

R645-301-356.230. FISH AND WILDLIFE

See R645-301-353.110 and R645-301-331.

R645-301-356.231. STOCKING AND PLANTING

See R645-301-331

R645-301-356.232. TREES AND SHRUBS

See 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 and R645-301-310.

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R645-301-356.400. REMOVAL OF SILTATION STRUCTURES

See R645-301-240 and R645-301-310.

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 R645-301-341.250

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 R645-301-341.250.

R645-301-357.300. HUSBANDRY PRACTICES - GENERAL INFORMATION

R645-301-357.301. SELECTIVE HUSBANDRY PRACTICES

N/A - There are no selective husbandry practices requested at this time. Such selective practices cannot be determined until the property is reclaimed and reclamation success is evaluated.

R645-301-357.302. DEMONSTRATION OF PRACTICES

N/A

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R645-301-357.303. BONDED AREA

N/A

R645-301-357.304. EXTENDED RESPONSIBILITY FOR RESEEDED AREAS

Per Division

R645-301-357.310. REESTABLISHING TREES AND SHRUBS

See R645-301-240.

R645-301-357.311. RATE OF REPLANTING

See R645-301-241.210.

R645-301-357.312. ESTABLISHMENT BY SEED

See R645-301-341.210.

R645-301-357.320. WEED CONTROL AND ASSOCIATED REVEGETATION

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 issued as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

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

Also see R645-301-240

R645-301-357.321. CHEMICAL WEED CONTROL

See R645-301-240 and R645-301-357.320.

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 R645-301-357.320

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

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

See R645-301-240

R645-301-357.342. SUCCESS STANDARDS FOLLOWING A DISASTER

See R645-301-331

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 R645-301-212

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

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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 FOR LARGE MAMMALS

See R645-301-310

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

See R645-301-310

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INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 4, LAND USE

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 4

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CHAPTER 4, LAND USE & AIR QUALITY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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.

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

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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 *the Confidential Binder.*

Archaeological clearance was granted based on this survey.

R645-301-411.141. CULTURAL AND HISTORIC RESOURCES MAPS

See *the Confidential Binder*

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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 *the Confidential Binder*

R645-301-411.142.1 PREVENTION OF ADVERSE IMPACTS

See *the Confidential Binder*

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

See *the Confidential Binder*

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 *the Confidential Binder*

R645-301-411.143.1 COLLECTION OF ADDITIONAL INFORMATION

See *the Confidential Binder*

R645-301-411.143.2 CONDUCTING FIELD INVESTIGATIONS

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See *the Confidential Binder.*

R645-301-411.143.3 OTHER APPROPRIATE ANALYSES

See *the Confidential Binder.*

R645-301-411.144. APPROPRIATE MITIGATION AND TREATMENT MEASURES

See *the Confidential Binder.*

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

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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.

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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.

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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

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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

(Also R645-301-421, 422 and 423)

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. See

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Appendix B.

The existing Air Quality Approval Order (DAQE-005-00) provides for a maximum coal stockpile area of 20 acres. Although the present stockpile area is well below this figure, there is a potential for the required stockpiles to increase up to, and even beyond, the present approved area; therefore, Andalex Resources, Inc. has submitted a request for modification of its Approval Order to provide for additional stockpile area, as well as increased tonnage and diesel usage. The length of the haul road has not been changed at this time, since no changes in haul roads have taken place since the approval. Haul road lengths will change with the future expansion plans, and will be addressed with a revised Air Quality Plan at that time.

Emission Estimates

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

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.

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

See R645-301-420.

R645-301-423.200. FUGITIVE DUST CONTROL PLAN

The Wildcat Loadout and surrounding area were impacted by a previous pre-law operator. This operation left a fair amount of the existing permit area, as well as an unknown amount of the adjacent, undisturbed area, impacted by accumulations of coal fines. After Andalex Resources, Inc. took over the site, the operation was permitted under SMCRA and obtained an Air Quality Approval Order. The problem of coal fine accumulation on, and around, this area has been addressed by Andalex since the beginning of the Wildcat Loadout operation, and has included remedial measures such as scraping coal off previously impacted areas to salvage topsoil, and vacuuming coal fines from undisturbed, impacted areas to protect soils and vegetation. In addition, Andalex Resources, Inc. and now IPA has implemented a considerable number of dust control measures at the Wildcat Loadout to reduce fugitive dust and wind-blown coal fines. The following are some of the measures incorporated into the design and operation of the facility to reduce dust emissions:

(1) All roads are paved or gravel surfaced;
(2) Road speed limits are posted at 5 mph;
(3) Roads are chemically treated and watered on a regular basis;
(4) Truck dump hoppers are located below ground and equipped with sprays;
(5) Coal is recovered from stockpiles via underpile reclaim systems;
(6) All surface conveyors are covered;
(7) Conveyor transfer points are enclosed;
(8) Radial stackers load at the highest point of the pile to minimize drop distances;
(9) Railcars are loaded from an enclosed bin and extendable chute;
(10) Refuse pile is regularly compacted and

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watered as needed;

(11) Coal moisture is maintained at a minimum of 6% overall;

(12) Moisture content of minus 40 mesh coal is at least 4.0% by weight;

(13) All disturbed areas are drained to sedimentation ponds;

(14) Runoff from ASCA areas is controlled by containment, vegetation, silt fences and/or straw bales;

(15) The location of stockpiles (more to the west) helps confine the wind-blown coal fines within the permit area.

The designs of the various controls listed above have been provided in the following sections of this permit:

(1) Impoundments/Hydrology - R645-301-512.240
(2) Roads - R645-301-512.250
(3) Operations - R645-301-520
(4) Coal Handling - R645-301-521.

While the above controls and practices are designed to minimize fugitive dust and wind-blown coal fines, it is impossible to completely eliminate them. As a result, some soils and vegetation will be impacted by dust accumulations in the future. To minimize these impacts, IPA proposes vacuuming of coal fine accumulations on undisturbed areas within the permit area either prior to salvage of the topsoil or prior to reclamation/reseeding. Vacuuming is considered by IPA as the best and least destructive option for removal of coal fine accumulations. A complete plan for cleanup of wind-blown fines is described in Appendix P.

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.

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

N/A

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INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 5, ENGINEERING

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 5

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CHAPTER 5, ENGINEERING

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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 are shown on Plate 1.

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 **(Also R645-301-511, 521.140, 521.150, 521.160, 521.170, 521.180 and R645-301-722)**

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.

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Surface water monitoring stations are included on Plate 2A.

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 2A and Plate 15 and Figure VII-2 respectively.

There is a gas well drill site located near the southeast part of the facility, adjacent to the public road, which is partially within the permit area. The drillhole has been capped and the site has been reclaimed. This work was done by Conoco-Phillips under their own right-of-way issued by BLM.

Slopes are represented by topographic maps (Plate 1) 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. 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.

The permit area shown on Plates 1, 1A and 16 contains 100.19 acres, *and is included within the 270 acre BLM right-of-way (U-48027) boundary. It is important to note that this is a non-exclusive areal right-of-way, and that there are numerous other equally valid rights-of-way which occupy much of this same area. For example, overlapping rights-of-ways exist for the Utah Railway tracks, the Consumers Road, the Carbon County Consumers Road, the by-pass road, the Trestle public road, Rocky Mountain Power 46 KV powerline, Phillip Petroleum's gas well and pipeline corridor, and Hidden Splendor shop facility. BLM determined the final 270 acre configuration in part to*

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"square up" the boundary for administrative purposes. Being a non-exclusive right-of-way means there is no conflict among grantees, and no inherent liability from one grantee to the next, as long as each grantee's activities are within the terms of their respective right-of-way.)

The disturbed area shown on Plates 1B is 74.46 acres, which includes 26.11 acres on the west side of the railroad tracks and 48.35 acres on the east side of the tracks. This acreage represents all actual disturbed areas within the site, and does not include the ASCA's or the Utah Railway track.

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 on Plates 1, *2, 13, and 3A-3H.*

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 2A.

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.

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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).

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PLATES

PLATE #	PLATE TITLE
Plate 1	Existing Surface Facility Map
Plate 1A	Proposed Surface Facility Map, Response to DO-04
Plate 1B	Disturbed Areas
Plate 2	Deleted
Plate 2A	Drainage Map, Response to Division Order
Plate 3A	Sediment Pond A
Plate 3B	Deleted
Plate 3C	Sediment Pond C
Plate 3D	Sediment Pond D
Plate 3E	Sediment Pond E
Plate 3F	Sediment Pond F
Plate 3G	Sediment Pond G
Plate 3H	Permanent Impoundment
Plate 4	Deleted
Plate 5	Deleted
Plate 6	Deleted
Plate 7	Deleted
Plate 8	Final Reclamation Hydrology, Phase 1
Plate 9	Final Reclamation Contours & Revegetation, Phase 2
Plate 10	Cross Sections
Plate 11	Soils Map
Plate 12	Geology Map
Plate 13	Topsoil Piles
Plate 14	Cross Section Reference Map
Plate 15	Watershed Map
Plate 16	Surface and Subsurface Ownership Map
Plate 17	Typical Road Cross-sections
Plate 18	Deleted
Plate 19	Deleted
Plate 20	Deleted

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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 (Also R645-301-722)

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Refer to Appendix R

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R645-301-512.150. GEOLOGIC CROSS SECTIONS AND MAPS

See Volume II, Plate 12. 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 **(Also R645-301-513.800, 536, and relevant portions of Sections R645-301-735, 736, 737, 745, 746, 747, and 754)**

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

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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. IPA's 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-32, D-33, and D-34, which is sized to carry runoff from the pile from a 100 year - 6 hour event as required. 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 IPA'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. IPA 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

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situation, will be reclaimed separately and covered with native material. IPA makes this commitment for all of the refuse material which is used as fill.

It should be emphasized that upon final reclamation 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.

It is estimated that there are presently approximately 54,500 cubic yards of coal waste material on site. Of this, approximately 10,000 cubic yards of material were used in fills, and the remaining 44.500 cubic yards are in the refuse pile.

R645-301-512.240. IMPOUNDMENTS

Complete sizing and design details for all impoundments are included in Appendix R, "Wildcat Loadout Sedimentation and Drainage Control Plan". All impoundments are shown on Plates 2. Impoundment plans and details are shown on Plates 3A through 3H.

Water Monitoring Plans (Also R645-301-722.300, 723, 724, 731.200)

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

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station numbers will be designated WCW-A through WCW-F for Ponds A through F respectively (see Plates 2A 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.

It should be noted that IPA and its designated laboratory will follow the "Standard Methods for the Examination of Water and Wastewater" for all of the above water samples.

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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)

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- Phosphate (PO_4^{-3})
- Selenium (Se)
* - Sodium (Na)
* - Sulfate (SO_4^{-2})
- Sulfide (S^{-})
- Zinc (Zn)
* - Oil and Grease
* - Cation-Anion Balance

-Baseline *Operational

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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 impound-ments (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 deter-	Quarterly for lakes, reservoirs, and impound-ments (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 deter-	Two per annum for perennial streams (high & low flow); two per annum during snowmelt and rainfall for intermittent streams.

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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.	

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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.

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R645-301-512.250. PRIMARY ROADS (Also R645-301-527 and R645-301-534)

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.

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 17.

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-

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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 17.

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

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 17.

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

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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 17.

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 17.

Actual coal haul roads are those designated Primary Roads 1 through 5; however, since all roads are classified as primary, and since each was constructed according to a standard design as shown on Plates 17, 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

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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

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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

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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.

R645-301-514.200. 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.

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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

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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, IPA 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, IPA 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.

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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. IPA will notify the Division in the event of any slides or other damage.

R645-301-520. OPERATION PLAN (Also R645-301-526)

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

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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, IPA will have the capability of 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

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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. A small temporary change room trailer is located next to the office.

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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

Electrical

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")

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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 is located within BLM right-of-way U-48027 and is shown on Plates 1 and 1A.

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

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coal storage previously. The total existing surface area disturbed is 75.67 acres excluding the ASCA Areas and Utah Railway Tracks. Facilities are indicated on Plate 1.

The disturbed area boundary has been modified to include additional area to the east of the main stockpile (radial stacker) in order to accommodate the cleanup of wind-blown fines as required by Division Order DO-04. Additional details regarding this cleanup plan can be found in Appendix P.

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

IPA 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, IPA 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

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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 maintained and

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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). IPA will maintainall facilities 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. IPA realizes that maintenance of the facilities is a key to optimum operation. Constant upkeep of all

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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

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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 IPA's 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

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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 (Also R645-301-510 and Volume II)

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 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.

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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.

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PLATES

PLATE #	PLATE TITLE
Plate 1	Existing Surface Facility Map
Plate 1A	Proposed Surface Facility Map, Response to DO-04
Plate 1B	Disturbed Areas
Plate 2	Deleted
Plate 2A	Drainage Map, Response to Division Order
Plate 3A	Sediment Pond A
Plate 3B	Deleted
Plate 3C	Sediment Pond C
Plate 3D	Sediment Pond D
Plate 3E	Sediment Pond E
Plate 3F	Sediment Pond F
Plate 3G	Sediment Pond G
Plate 3H	Permanent Impoundment
Plate 4	Deleted
Plate 5	Deleted
Plate 6	Deleted
Plate 7	Deleted
Plate 8	Final Reclamation Hydrology, Phase 1
Plate 9	Final Reclamation Contours & Revegetation, Phase 2
Plate 10	Cross Sections
Plate 11	Soils Map
Plate 12	Geology Map
Plate 13	Topsoil Piles
Plate 14	Cross Section Reference Map
Plate 15	Watershed Map
Plate 16	Surface and Subsurface Ownership Map
Plate 17	Typical Road Cross-sections
Plate 18	Deleted
Plate 19	Deleted
Plate 20	Deleted

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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.

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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.

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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

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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

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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.

R645-301-525. SUBSIDENCE

N/A - There is no mining at this location.

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.

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645-301-526.113. 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

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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 R645-301-423.200 for details, and R645-301-512.240, R645-301-512.250, R645-301-520, and R-645-301-521 for designs.

R645-301-526.300. WATER POLLUTION CONTROL FACILITIES

See R645-301-520.

R645-301-526.400. AIR POLLUTION CONTROL FACILITIES

Appendix B - 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.

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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. IPA 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 IPA'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

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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

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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 **(Also R645-301-711.100 and R645-301-731.300)**

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

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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.

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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

R645-301-529.400. 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

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R645-301-512.250. Refuse disposal is detailed in Section R645-301-512.230 and Appendix O.

R645-301-532. SEDIMENT CONTROL

See Appendix R

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 ~~60.94~~ 74.46 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 except for the last few lifts, to assure stability.

R645-301-533. IMPOUNDMENTS

See Appendix R

R645-301-533.100. STABILITY

See Appendix R

R645-301-533.110. MSHA IMPOUNDMENTS

N/A

R645-301-533.200. FOUNDATION DESIGN

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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 CONSTRUCTION REQUIREMENTS

N/A

R645-301-533.613. OPERATION AND MAINTENANCE

N/A

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R645-301-533.614. PLANS FOR REMOVAL

N/A

R645-301-533.620. ENGINEERING DESIGN

See R645-301-512.240 *and Appendix R*

R645-301-533.700. NON-MSHA IMPOUNDMENTS DESIGN REQUIREMENTS

See R645-301-512.240 *and Appendix R*

R645-301-533.710. DESIGN PLAN FOR NON-MSHA IMPOUNDMENTS

See Appendix R

R645-301-533.711. CERTIFICATION

See Plates 3A through 3H, and see Appendix R

R645-301-533.712. DESIGN AND CONSTRUCTION REQUIREMENTS

See Appendix R

R645-301-533.713. OPERATION AND MAINTENANCE

See Appendix R

R645-301-533.714. PLANS FOR REMOVAL

See Appendix R

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

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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

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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

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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

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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

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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.

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R645-301-536.900. REFUSE PILES

See R645-301-512.230 and Appendix O.

R645-301-537. REGRADED SLOPES

N/A

R645-301-540. RECLAMATION PLAN

R645-301-541. GENERAL (Also R645-301-533)

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, IPA 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

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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, IPA'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

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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 Tables II-1 and II-1A re Mass Balance Summary). This part of Phase I will include the removal of ponds G and E and establishing new drainages to Ponds A, C, and D. Recontouring will take one month.

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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

Note: Refer to Plate 14 for cross-section locations.

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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	

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Note: Refer to Plate 14 for cross-section locations.

At the request of the Division, no extraordinary compaction will be applied to the last few lifts during the recontouring/grading, to provide a relatively loose rooting zone of four feet. This loose application of fill will eliminate the need for ripping prior to topsoil placement. 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. 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 area will be roughened by gouging, and the area will be hydroseeded and hydromulched. The entire revegetation procedure is described in this chapter.

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

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surrounding the permit area. Once the areas have been graded, they will be prepared with loose filling of the upper lifts, (as described in Phase I above), prior to topsoil redistribution. At this point, if it is not already the fall season, IPA 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

Bond information and detailed costs are provided in Appendix B.

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

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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 and 10.

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 *Appendix R*.

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

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will be flattened and covered with suitable fill material.

IPA 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

IPA has procured a reclamation bond (Irrevocable Letter of Credit) in the amount of $651,000, as established by the Division. (See Appendix B) This bond is based on detailed calculations provided by the Division. A copy of the calculations are also included in Appendix B.

Wildcat Loadout Facility

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
   2. Substation
   3. Truck Dump (west side)
   4. Crushing Plant (west side)*
   5. Radial Stacker (west side)*
   6. Reclaim Tunnel (west side)
   7. Loadout Conveyor (west side)*
   8. Control Building (west side)
   9. Truck Dump & Reclaim
   10. Conveyor T
   11. Crusher and Screening Plant
   12. Lump Coal Belt
   13. Stoker Radial Stacker
   14. Conveyor Y
   15. Main Radial Stacker
   16. Loadout Reclaim Tunnel, port supports,
   17. Conveyor R

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18. Loadout Tower
19. Miscellaneous (Guard Rails, Office, Water and Mag. Tanks, Motor Control Centers)
20. Powerline
21. 40" x 40" Shop

Total

* 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

C. Recontouring and Regrading: (including covering of coal refuse storage pile)
1. Culvert Removal
2. *Removal of sediment ponds*
3. Move 77,000 yds.^{3}

D. Compaction and Scarification:

E. Topsoil Redistribution:

F. Revegetation:

G. Monitoring Costs:
Years 1, 2, 3, 5, 9, and 10
Water
Revegetation
Erosion

Phase II:

A. Recontouring, Grading, Compaction, Topsoil Redistribution, Revegetation
1. Ponds A, C, D, G and F

B. Monitoring Costs:
Years 9 and 10
Revegetation

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Erosion

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

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, R645-301-541, *and Appendix R*

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

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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, R645-301-542.400 and Appendix B.

R645-301-550. RECLAMATION DESIGN CRITERIA AND PLANS

See R645-301-240.

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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, R645-301-542.320 *and Appendix R*

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

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Upon completion of IPA's 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. IPA is not proposing an alternate post-mining land use. IPA 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

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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

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R645-301-553.500.PREVIOUSLY MINED AREAS

N/A

R645-301-553.510. RE-MINING AREAS CONTAINING HIGHWALLS

N/A

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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

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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

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N/A

R645-301-560. PERFORMANCE STANDARDS

See R645-301-510 and R645-301-541.

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WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 6, GEOLOGY

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 6

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CHAPTER 6, GEOLOGY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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

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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.

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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

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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

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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

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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.

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R645-301-624.300. TEST BORINGS AND DRILL CORES

Appendix C

R645-301-624.310. LOGS

Appendix C

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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

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See R645-301-551.

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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

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INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 7, HYDROLOGY

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CHAPTER 7

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CHAPTER 7, HYDOLOGY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

R645-301-700. HYDROLOGY

R645-301-710. INTRODUCTION

It should be noted that the entire sedimentation and control plan, including impoundments, diversions and *reclamation hydrology* are discussed in *Appendix R, Sedimentation and Drainage Control Plan.*

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.

[1]Price and Arnow, 1974

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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 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.,

[2]Fisher, 1960

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approximately 3/4 miles southwest of the loadout facility, as shown on Plate 15. 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 IPA 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.

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[3]Spieker, 1931

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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 aq uifer;

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

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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.

IPA will, however, perform a leachate test on the coal and reject materials stored on site as requested by the Division. IPA will gather a special sample of the coal processing waste material for a special one time characterization. IPA 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, IPA 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.

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The above described leachate analysis was conducted in 1994 and results were submitted to the Division in the Annual Report for that year. Additional sampling of the refuse material was also conducted in 2004 and analyzed for acid and toxic properties. The results of these tests are included in Appendix D.

Surface Water Hydrology

This section will provide a review of the surface water hydrology relevant to the 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 IPA 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

[4]Waddell and Others, 1981

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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 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

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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 Plate 15.

Surface Water Quality

Surface water quality is described in Appendix J, Appendix M and in R645-301-512.240.

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

IPA 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. *All hydrologic design details are discussed in Appendix R.*

IPA 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

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Sections R645-301-512.240 and R645-301-541 *and Appendix R.*

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 R645-301-723 and Plates 2A and 15.

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R645-301-722.400. WATER WELLS

N/A

R645-301-722.500. EXISTING LAND SURFACE CONFIGURATION

Plate 1 and 2A

R645-301-723. SAMPLING AND ANALYSIS

See R645-301-512.240

R645-301-724. BASELINE INFORMATION

See R645-301-512.240

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 R645-301-541

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

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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 36.9°F in January to 90° in July. 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 24° in winter and 32° in summer. Average annual precipitation is 9.31 inches at Price. The 100-year 6-hour precipitation event is 1.9 inches. (Table VII-2). Snowfall is generally light, averaging 21.1 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.

Western Regional Climate Center, Reno, Nevada.

Climatological Factors

Precipitation

The precipitation in the area, which is largely controlled by elevation, varies from 0.50 inches per month to 1.22 inches per month, with an annual average of 9.31 inches.

The principal rainfall is in late summer/early fall 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 22 inches annually.

The Monthly Climate Summary for the Period of Record (9/1/1968 - 6/30/2004) is shown below on Table VII-1.

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TABLE VII-1

PRICE WAREHOUSES, UTAH (427026)

Period of Monthly Climate Summary

Period of Record: 9/1/1968 to 6/30/2004

	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.9	42.8	52.5	63.2	72.5	83.8	90.0	88.4	79.5	64.8	49.5	40.1	63.7
Average Min. Temperature (F)	13.4	19.7	27.6	34.6	42.9	52.1	58.3	57.0	48.1	37.5	25.7	16.7	36.1
Average Total Precipitation (in.)	0.76	0.73	0.73	0.50	0.66	0.57	0.89	1.04	1.10	1.22	0.59	0.51	9.31
Average Total Snowfall (in.)	8.0	4.1	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	2.2	5.3	21.1
Average Snow Depth (in.)	3	2	0	0	0	0	0	0	0	0	0	1	1

Percent of possible observations for period of record.

Max. Temp.: 77.6% Min. Temp.: 77.7% Precipitation: 94.5% Snowfall: 93.1%
Snow Depth: 88.3%

Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

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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.

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Temperature

The average annual maximum temperature for the period 1968 - 2004 was 63.7 degrees. The annual mean temperature was 49.9 degrees and the annual minimum temperature was 36.1 degrees. See Table VII-1.

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 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.

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 Temperature values are given on Table VII-1.

Wind

The prevailing wind direction for the Price-Carbon County area for the period 1992-2002 is from the North for all months of the year.(Table VII-3) The average wind speed for this same period is shown to be 6.2 mph, with the lowest average speed of 4.7 mph in December, and the highest average speed of 7.7 mph in April, (Table VII-4).

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TABLE VII-3

UTAH
Prevailing Wind Directions

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
BRYCE CANYON AP, UT (KBCE).	W	W	W	W	W	W	W	W	W	W	W	W	W
CANYONLANDS AP-MOAB, UT	NW	W	W	W	W	SW	SE	E	W	W	W	NW	W
CEDAR CITY AP, UT (KCDC).	SSW	SW	SSW	SSW	SSW	SSW	SW	SSW	SSW	SW	N	SSW	SSW
LOGAN AIRPORT, UT (KLGU).	N	N	N	N	N	N	N	S	N	N	N	N	N
MILFORD AIRPORT, UT (KMLF).	S	SSW	S	SSW	S	SSW	SSW	S	S	S	S	S	S
OGDEN AIRPORT, UT (KOGD).	SSE	S	SSE	S	S	S	S	S	S	S	S	S	S
OGDEN-HILL AFB, UT (KHIF).	E	E	E	E	E	E	E	E	E	E	E	E	E
PRICE-CARBON COUNTY AP, UT	N	N	N	N	N	N	N	N	N	N	N	N	N
PROVO MUNI AP, UT (KPVU).	NW	NW	NW	NW	NW	NW	SE	SE	SE	SE	SSE	SSE	NW
SALT LAKE CITY AP, UT (KSLC)	S	S	SSE	SSE	SSE	S	SSE	SSE	SSE	SE	SE	S	SSE
ST. GEORGE MUNI AP, UT(KSGU)	E	ENE	ENE	W	W	W	W	ENE	ENE	ENE	E	E	ENE
VERNAL AIRPORT, UT (KVEL).	W	W	WNW	W	W	W	W	W	W	W	WNW	W	W
WENDOVER AP, UT (KENV).	NW	NW	E	NW	E	E	E	E	E	E	E	E	E

Prevailing wind direction is based on the hourly data from 1992-2002 and is defined as the

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direction with the highest percent of frequency. Many of these locations have very close secondary maximum which can lead to noticeable differences month to month.
Http://www/wrcc/dri/edu/htmlfiles/westwinddir.html

TABLE VII-4

UTAH
Prevailing Wind Speed (mph)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
BRYCE CANYON AP, UT (KBCE).	8.4	8.9	9.1	10.6	10.0	10.1	8.5	8.5	8.7	8.4	8.2	6.9	8.8
CANYONLANDS AP-MOAB, UT	4.0	5.3	6.9	9.1	9.2	8.5	7.4	6.9	6.3	5.2	4.0	3.5	6.2
CEDAR CITY AP, UT (KCDC).	7.2	7.6	8.4	9.1	9.4	9.3	8.5	8.2	7.5	6.7	6.5	6.6	7.9
LOGAN AIRPORT, UT (KLGU).	3.2	3.8	4.9	6.1	5.8	5.7	5.9	5.2	4.3	4.1	3.4	3.0	4.5
MILFORD AIRPORT, UT (KMLF).	10.5	10.4	10.8	11.6	11.6	12.3	11.9	11.0	9.9	10.0	9.5	9.9	10.7
OGDEN AIRPORT, UT (KOGD).	5.3	6.2	7.3	8.0	7.6	7.7	7.2	7.4	6.7	6.4	5.9	5.8	6.8
OGDEN-HILL AFB, UT (KHIF).	8.7	9.5	9.8	9.7	9.1	9.5	9.8	9.7	9.3	9.0	8.9	9.1	9.3
PRICE-CARBON COUNTY AP, UT	5.0	5.1	7.1	7.7	7.5	7.4	6.5	6.1	6.2	6.1	5.4	4.7	6.2
PROVO MUNI AP, UT (KPVU).	4.8	5.7	7.2	7.9	7.2	7.6	6.7	6.7	6.3	5.8	5.4	5.2	6.4
SALT LAKE CITY AP, UT (KSLC)	7.0	7.5	8.7	9.3	9.1	9.5	9.6	9.9	8.9	8.0	7.7	7.5	8.6
ST. GEORGE MUNI AP, UT(KSGU)	3.5	4.5	5.7	7.5	8.3	8.5	7.9	7.3	6.0	4.4	3.4	3.1	5.8
VERNAL AIRPORT, UT (KVEL).	3.2	4.0	5.9	7.3	7.5	7.0	5.8	5.6	5.3	4.9	4.0	3.0	5.3

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WENDOVER AP, UT (KENV).	1.8	5.5	7.2	8.9	8.8	8.7	8.1	7.4	6.4	5.9	5.0	4.7	6.8

The above monthly average wind speeds are based on hourly observations from all reporting airports in the Western United states and based on data from 1992-2002. Some stations have at least 2 years of hourly data used for the averages. Averages for first order stations may differ from data seen in the LCD's due to a different period of record used and a possible change in the height of the wind instruments. The standard anemometer height for all current stations is 10 meters.
Http://www/wrcc/dri/edu/htmlfiles/westwinddir.html

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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

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R645-301-725.300. RESTRICTIONS ON PERMIT

N/A

R645-301-726. MODELING

N/A

R645-301-727. ALTERNATIVE WATER SOURCE INFORMATION

The permit area and adjacent areas contain no renewable ground water or surface water resources; therefore water right protection or mitigation measures are not anticipated to be required at this operation. Also, this is a surface operation, with no underground mining or subsidence potential. All water used on site is hauled in.

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

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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

See 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

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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

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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

There is no ground water monitoring at this site. See R645-301-711.100.

R645-301-731.211. GROUND WATER MONITORING PLAN

There is no ground water monitoring at this site. See R645-301-711.100.

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

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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

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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 R645-301-711.100, R645-301-528.300 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

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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

R645-301-731.511.3 **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**

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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 Appendix R.

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**

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N/A

R645-301-731.610. BUFFER ZONE LOCATIONS

N/A

R645-301-731.611. VIOLATION 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 Appendix R, Culvert Design

R645-301-731.620. BUFFER ZONE SIGNS AND MARKERS

N/A

R645-301-731.700. CROSS SECTIONS AND MAPS

Plate 2A.

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

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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 Appendix R.

R645-301-731.800. WATER RIGHTS AND REPLACEMENT

Appendix G

R645-301-732. SEDIMENT CONTROL MEASURES

See Appendix R.

R645-301-732.100. SILTATION STRUCTURES

See Appendix R.

R645-301-732.200. SEDIMENTATION PONDS

See Appendix R.

R645-301-732.210. COMPLIANCE REQUIREMENTS

See Appendix R.

R645-301-732.220. MSHA REQUIREMENTS

N/A

R645-301-732.300. DIVERSIONS

See Appendix R.

R645-301-732.400. ROAD DRAINAGE

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See Appendix R, Plate 2A, also R645-301-512.250.

R645-301-732.410. ALTERATION OR RELOCATION OF A NATURAL DRAINAGEWAY

See Appendix R.

R645-301-732.420. INLET PROTECTIONS

See Appendix R.

R645-301-733. IMPOUNDMENTS

See Appendix R.

R645-301-733.100. GENERAL PLANS

See Appendix R.

R645-301-733.110. CERTIFICATION

See Appendix R and Appendix H, *also Plates 3A thru 3H*

R645-301-733.120. MAPS AND CROSS SECTIONS

See Plates 3A thru 3H., also R645-301-510.

R645-301-733.130. NARRATIVE

See Appendix R.

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

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See Appendix R.

R645-301-733.200. PERMANENT AND TEMPORARY IMPOUNDMENTS

See Appendix R

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

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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 R645-301-512.230.

R645-301-736. COAL MINE WASTE

See R645-301-512.230.

R645-301-737. NON-COAL MINE WASTE

See R645-301-512.230.

R645-301-738. TEMPORARY CASING AND SEALING OF WELLS

N/A

R645-301-740. DESIGN CRITERIA AND PLANS

See Appendix R.

R645-301-741. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742. SEDIMENT CONTROL MEASURES

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See Appendix R.

R645-301-742.100. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742.110. DESIGN

See Appendix R.

R645-301-742.111. PREVENTION

See Appendix R.

R645-301-742.112. EFFLUENT LIMITATIONS

Appendix K

R645-301-742.113. EROSION PROTECTION

See Appendix R.

R645-301-742.120. MEASURES AND METHODS

See Appendix R.

R645-301-742.121. RETAINING SEDIMENT WITHIN DISTURBED AREAS

See Appendix R.

R645-301-742.122. DIVERTING RUNOFF AWAY FROM DISTURBED AREAS

See Appendix R.

R645-301-742.123. DIVERTING RUNOFF USING PROTECTED CHANNELS

See Appendix R.

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R645-301-724.124. PHYSICAL TREATMENT TO REDUCE FLOW OR TRAP SEDIMENT

See Appendix R.

R645-301-742.125. CHEMICAL TREATMENT

N/A

R645-301-742.126. IN-MINE TREATMENT

N/A

R645-301-742.200. SILTATION STRUCTURES

See Appendix R.

R645-301-742.210. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742.211. DESIGN

See Appendix R.

R645-301-742.212. REQUIREMENTS

See Appendix R.

R645-301-742.213. SILTATION STRUCTURES WHICH IMPOUND WATER

See Appendix R.

R645-301-742.214. POINT SOURCE DISCHARGES

See R645-301-512.240 and Appendix K.

R645-301-742.220. SEDIMENTATION PONDS

See Appendix R.

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R645-301-742.221. **USE**

See Appendix R.

R645-301-742.221.1 **INDIVIDUALLY OR IN SERIES**

See Appendix R.

R645-301-742.221.2 **LOCATION**

See Appendix R., Plate 2A

R645-301-742.221.3 **DESIGN, CONSTRUCTION AND MAINTENANCE**

See Appendix R.

R645-301-742.221.31 **SEDIMENT STORAGE VOLUME**

See Appendix R.

R645-301-742.221.32 **DETENTION TIME**

See Appendix R.

R645-301-742.221.33 **DESIGN EVENT**

See Appendix R.

R645-301-742.221.34 **DEWATERING DEVICE**

See Appendix R.

R645-301-742.221.35 **SHORT CIRCUITING**

See Appendix R.

R645-301-742.221.36 **SEDIMENT REMOVAL**

See Appendix R.

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R645-301-742.221.37 EXCESSIVE SETTLEMENT

See Appendix R.

R645-301-742.221.38 EMBANKMENT MATERIAL

See Appendix R.

R645-301-742.221.39 COMPACTION

See Appendix R.

R645-301-742.222. MSHA SEDIMENTATION PONDS

N/A

R645-301-742.223. OTHER SEDIMENTATION PONDS

See Appendix R.

R645-301-745.223.1 OPEN CHANNEL SPILLWAY

See Appendix R.

R645-301-742.223.2 LINING

See Appendix R.

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

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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 Appendix R.

R645-301-742.310. **GENERAL REQUIREMENTS**

See Appendix R.

R645-301-742.311. **REQUIREMENTS**

See Appendix R.

R645-301-742.312. **DESIGN**

See Appendix R.

R645-301-742.312.1 **STABILITY**

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See Appendix R.

R645-301-742.312.2 FLOOD PROTECTION

See Appendix R.

R645-301-742.312.3 SUSPENDED SOLIDS

See Appendix R.

R645-301-742.312.4 COMPLY WITH OTHER REGULATIONS

See Appendix R.

R645-301-742.313. TEMPORARY AND PERMANENT DIVERSIONS

See Appendix R.

R645-301-742.314. ADDITIONAL DESIGN CRITERIA

See Appendix R.

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

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R645-301-742.324. CERTIFICATION

N/A

R645-301-742.330. DIVERSION OF MISCELLANEOUS FLOWS

See Appendix R.

R645-301-742.331. REQUIREMENTS

See Appendix R.

R645-301-742.332. DESIGN

See Appendix R.

R645-301-742.333. DESIGN EVENT

See Appendix R.

R645-301-742.400. ROAD DRAINAGE

See Appendix R.

R645-301-742.410. ALL ROADS

See Appendix R.

R645-301-742.411. PROTECTION AND SAFETY

See Appendix R.

R645-301-742.412. INTERMITTENT OR PERENNIAL STREAM RESTRICTION

N/A

R645-301-742.413. DOWNSTREAM SEDIMENTATION AND FLOODING

See Appendix R.

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R645-301-742.420. PRIMARY ROADS

See Appendix R.,

R645-301-742.421. EROSION PROTECTION

See Appendix R.

R645-301-742.422. STREAM FORDS

N/A

R645-301-742.423. DRAINAGE CONTROL

See Appendix R.

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R645-301-742.423.1 **PRIMARY ROAD DESIGN CRITERIA**

See R645-301-512.250.

R645-301-742.423.2 **DRAINAGE PIPES AND CULVERTS**

See Appendix R.

R645-301-742.423.3 **DRAINAGE DITCHES**

See Appendix R.

R645-301-742.423.4 **NATURAL STREAM CHANNELS**

See Appendix R.

R645-301-742.423.5 **REQUIREMENTS**

See Appendix R.

R645-301-743. **IMPOUNDMENTS**

See Appendix R.

R645-301-743.100. **GENERAL REQUIREMENTS**

See Appendix R.

R645-301-743.110. **MSHA IMPOUNDMENTS**

N/A

R645-301-743.120. **CERTIFICATION AND FREEBOARD REQUIREMENTS**

See Appendix R.

R645-301-743.130. **SPILLWAYS**

See Appendix R.

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R645-301-743.131. **APPROVAL OF SINGLE OPEN CHANNEL SPILLWAY**

See Appendix R

R645-301-743.131.1. **NON-ERODIBLE CONSTRUCTION**

See Appendix R

R645-301-743.131.2. **EARTH- OR GRASS-LINED WITH NON-EROSIVE FLOWS**

N/A

R645-301-743.131.3. **REQUIRED DESIGN EVENT**

See Appendix R

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 Appendix R

R645-301-743.132. **ALTERNATE SEDIMENT POND CRITERIA**

N/A

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R645-301-743.140. INSPECTIONS

See Appendix R.

R645-301-743.200. SPILLWAY DESIGN EVENT FOR PERMANENT IMPOUNDMENTS

See Appendix R.

R645-301-743.300. SPILLWAY DESIGN EVENT FOR TEMPORARY IMPOUNDMENTS

See Appendix R.

R645-301-744. DISCHARGE STRUCTURES

See Appendix R.

R645-301-744.100. EROSION CONTROL

See Appendix R.

R645-301-744.200. DESIGN

See Appendix R.

R645-301-745. DISPOSAL OF EXCESS SPOIL

See R645-301-512.230.

R645-301-745.100. GENERAL REQUIREMENTS

See R645-301-512.230.

R645-301-745.110. DISPOSAL AREA

See R645-301-512.230.

R645-301-745.111. EFFECTS ON SURFACE AND GROUND WATER

See R645-301-512.230.

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R645-301-745.112. IMPOUNDMENTS ON FILL

N/A

R645-301-745.113. COVER

See R645-301-512.230.

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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

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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 R645-301-512.230.

R645-301-746.100. GENERAL REQUIREMENTS

See R645-301-512.230.

R645-301-746.110. PLACEMENT

See R645-301-512.230.

R645-301-746.120. EFFECTS ON SURFACE AND GROUND WATER

See R645-301-512.230.

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

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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 R645-301-512.230.

R645-301-746.311. REQUIREMENTS

See R645-301-512.230.

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

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R645-301-746.340. WATER STORAGE

N/A

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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 R645-301-512.230.

R645-301-747.100. REQUIREMENTS

See R645-301-512.230.

R645-301-747.200. PLACEMENT AND STORAGE

See R645-301-512.230.

R645-301-747.300. FINAL DISPOSAL

See R645-301-512.230.

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

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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 Appendix R.

R645-301-752.200. ROAD DRAINAGE

See R645-301-512.250.

R645-301-752.210. CONTROL OF EROSION AND POLLUTION

See Appendix R.

R645-301-752.220. CONTROL OF SUSPENDED SOLIDS

See Appendix R.

R645-301-752.230. COMPLIANCE WITH EFFLUENT STANDARDS

See Appendix R.

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R645-301-752.240. MINIMIZE DIMINUTION OF DEGRADATION OF WATER QUALITY

See Appendix R.

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R645-301-752.250. ALTERATION OF STREAM FLOW OR CHANNELS

See Appendix R.

R645-301-753. IMPOUNDMENTS AND DISCHARGE STRUCTURES

See Appendix R.

R645-301-754. DISPOSAL OF EXCESS SPOIL, COAL MINE WASTE AND NON-COAL MINE WASTE

See R645-301-512.230.

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

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See Appendix R.

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R645-301-763.100. RESTRICTIONS

See Appendix R.

R645-301-763.200. REQUIREMENTS

See Appendix R.

R645-301-764. STRUCTURE REMOVAL

See R645-301-240.

R645-301-765. PERMANENT CASING AND SEALING OF WELLS

N/A

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INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 8, BONDING

*Please note – on May 11, 2011, Intermountain Power Agency ("IPA") acquired the Wildcat Loadout from Andalex Resources, Inc. ("Andalex"). References to Andalex will therefore occur herein. However, permit actions from May 11, 2011 forward will be the responsibility of IPA, regardless whether Andalex is referenced as the responsible party for such actions.

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CHAPTER 8

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CHAPTER 8, BONDING

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

R645-301-800. BONDING AND INSURANCE

IPA currently holds a bond, calculated and approved by the Division, in the amount of $1,144,000. This bond, and all supporting calculations, is included in this MRP in Appendix B, Part D.

It should be noted that only major headings and information specific to the IPA Wildcat Bond and Insurance are included in this chapter. If a major heading is noted "N/A" or "By Division" all subsequent headings in that series are also assumed "N/A" or "By Division".

R645-301-810. BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES

BY DIVISION

R645-301-820. REQUIREMENT TO FILE A BOND

IPA currently holds a bond, approved by UDOGM in the amount of $1,144,000 and it is included in this MRP in Appendix B, Part D.

R645-301-830. DETERMINATION OF BOND AMOUNT

The bond amount has been determined through joint effort by IPA and the Division. The present amount of bond is $1,144,000.00. Complete calculations are included in Appendix B, Part D. Bonded areas (disturbed areas) are shown on Plates 1 and 1B and further described in R645-301-542

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R645-301-840. GENERAL TERMS AND CONDITIONS OF THE BOND

All pertinent bond information and details are included in Appendix B, Part D.

R645-301-850. BONDING REQUIREMENTS FOR UNDERGROUND MINING OPERATIONS

Appendix B, Part D

R645-301-860. FORMS OF BONDS

Appendix B

R645-301-860.200 COLLATERAL BONDS

Appendix B

R645-301-860.220 LETTERS OF CREDIT

Appendix B

(Note: All other sections of R645-301-860 except those noted are N/A).

R645-301-870. REPLACEMENT OF BONDS

N/A

R645-301-880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

N/A -- UNTIL FINAL RECLAMATION

R645-301-890. TERMS AND CONDITIONS FOR LIABILITY INSURANCE

Required Liability Insurance Policy and information is included.

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in Appendix B, Part C

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ADDENDUM TO APPENDIX N

As was noted in Lynn Kunzler's memo, dated November 17, 1989 in the Correspondence folder, the seed mix reported in Appendix N, Table 9, was not seeded, but was modified, **with approval**: the mix did not include any shrub seed and did not include Stipa comata, but it did include Elymeus cinereus (Basin wildrye) and Agropyron trachycaulum (slender wheatgrass).

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APPENDIX P

RESPONSE TO DIVISION ORDER DO-04

WIND-BLOWN FINES ACCUMULATIONS

CONTENTS:

1) NARRATIVE
2) FIGURE 1, COAL FINES ACCUMULATION MAP
3) FIGURE 2, CLEANUP PROJECT AREA
4) FIGURE 3, INTERIM SEED MIX
5) FIGURE 4, SEDIMENT POND G DESIGN DETAIL
5) EXHIBIT 5, SOILS REPORT, JAMES NYENHUIS

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APPENDIX P

RESPONSE TO DIVISION ORDER DO-04

WIND-BLOWN FINES ACCUMULATIONS

In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. The primary source of these coal-fines is from proximity to the main coal storage pile, and from truck traffic on the perimeter road between the coal storage area and existing Sediment Pond B. The accumulation area is directly down-wind and down-gradient from these sources, and over the past 30 years of operations has experienced an obvious accumulation of coal fines. Although the coal-fines accumulation is generally contained within the existing permit area, there is concern for the underlying topsoil in the area, and additional concern that some of the accumulation is down-drainage from Pond B, and therefore is not being properly contained and treated from a hydrologic standpoint. To address the concerns raised by this Order, Permittee proposes the following plan of action:

1) Remove the deeper coal fines in the area of greatest accumulations around and below Pond B (denoted as "Mechanical Cleanup Area" on Plate 1A) by utilizing heavy equipment,

2) Salvage topsoil from the Pond B - Potential Pond G drainage area to prevent future soil contamination at such time as is necessary, additionally this area was disced and seeded in October 2010, and,

3) At such time as becomes necessary due to the inability to contain fines from potentially larger coal stockpiles, eliminate Pond B, and replace it by constructing a new Pond G located approximately 450' southeast of (i.e., down-drainage and down-wind from) Pond B.

4) Remove the shallow coal fines in the adjacent area, north of Pond B (denoted as "Vacuum Cleanup Area" on Plate 1A), by

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utilizing truck-mounted vacuum equipment,

5) Access road PR-5 will be graveled prior to coal trucks accessing the main stockpile loading area from the East side of the property, (i.e., by Primary Road PR-5).

6) Conduct future monitoring to assess the wind-blown fines situation at such time as becomes necessary.

7) Review of reclamation costs and bonding annually.

These items are discussed in greater detail in the following narrative:

1) Remove deeper coal fines: The area of greatest coal fines accumulations is generally shown on Plate 1A and is labeled "Mechanical Cleanup Area". Also, Figure 1 attached to this appendix shows the nature of the aerial extent of the accumulations. This exhibit was prepared by Environmental Industrial Services (E.I.S.) based upon on-site measurements. Prior to beginning any construction or clean-up activities in this area, "disturbed area" perimeter markers will be installed around the proposed construction site. The general area of interest is shown on Figure 2 of this appendix.

Prior to beginning any construction or clean-up activities in this area, "disturbed area" perimeter markers will be installed. Temporary sediment control measures will then be installed below the construction site. This will consist of installing a row of excelsior logs (filter logs) laid along the contour northwest side of the Trestle Road. The purpose of these filter logs is to prevent any sediment or coal fines from getting off the permit area while the area is being cleaned up, topsoil is being salvaged, and Pond G is being constructed.

Accumulated coal fines will be scraped up using an assortment of mechanical equipment such as a vacuum truck, grader, back-hoe and/or front end loader, down to the native soil. The equipment to be used will be selected so that the coal fines can be gathered up in a manner that minimizes the disturbance to the underlying topsoil. The coal-fines will then be hauled off to the main coal pile to be blended back into the coal sales

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product, or will be hauled to the mine refuse pile located on the west side of the loadout facility. The choice of where to dispose of the coal fines will be made by the loadout operators and will be made based on the quality of the collected material.

2) **Salvage and stockpile topsoil:** In July, 2003, a soils survey of the immediate area was conducted by James Nyenhuis. This report was incorporated into the MRP in May, 2006, appearing as a supplement to Appendix D. This report gives a complete description of the soils in this area, and is included in this appendix for ease of reference, as Exhibit 5.

After the coal fines have been cleaned up and removed from the site topsoil will be salvaged from the "mechanical cleanup area", as shown on Plate 1A. Care will be taken to avoid damage to the existing larger vegetation in this area (juniper-pinyon trees, barrel cactus clusters, etc.) during topsoil salvage. A minimum of 6" of topsoil will be salvaged and stockpiled nearby as an extension of existing Topsoil Pile A. Topsoil will be salvaged in this area to allow for the construction of new Sediment Pond G, and to provide a measure of protection of the topsoil resource in the future in the likely event that this area sees additional deposits of wind and/or water-borne coal fines. The mechanical cleanup area involves approximately 3.84 acres. At a 6" salvage depth it is estimated that approximately 3097 cubic yards of topsoil will be gathered up. This will be stored as an extension of Topsoil Pile A. Pile A presently has an estimated volume of 440 cu. yds. Therefore, the expanded pile should have a total storage volume of about 3500 cu. yds. The new pile will be kept at the pre-existing height of about 6', and is estimated to be about 250' long x 70' wide when completed. There will be no topsoil removed in the area directly underneath the extended topsoil pile.

After the topsoil is salvaged from the "mechanical cleaning area" the area will then be roughened. The purpose of this roughening is to help minimize erosion, and also to help capture any additional wind-blown fines and prevent them from migrating down-gradient. This area was disced and seeded in October 2010.

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3) **<u>If and when it becomes necessary to replace Pond B with Pond G due to the inablilty to contain windblown coal fines due to potentially larger coal stockpiles:</u>** After the coal fines have been cleaned up and the topsoil salvaged from the mechanical cleanup area a new sediment pond will be constructed . This new pond is to be called Pond G. Pond G will be located within the existing permit area immediately northwest of the Trestle Road, and down-drainage from the existing Pond B, as shown on Plates 1A and 2A. Pond G will essentially be a replacement for Pond B but will also treat the expanded cleanup area, based on a 10 year-24 hour precipitation event. The design details for Pond G are included in Appendix R (Sedimentation and Drainage Control Plan) and also on Plate 3G. This plate is also presented as Figure 4 of this appendix for ease of reference.

The embankment for Pond G will be constructed using native material, compacted in 18" lifts. It will have a 20'wide crest with a 3H-1V outslope and a 2H-1V in slope. The Pond will include a 24" CMP primary spillway equipped with an inverted oil skimmer, and a 24" CMP emergency spillway. After construction, the crest and outslopes of the pond embankment will be re-seeded for interim reclamation. A row of excelsior filter logs will be installed around the perimeter (toe) of the outslope of the dam for interim sediment control.

<u>4) Re-seeding:</u>

After construction, the topsoil pile will be roughened and re-seeded with an approved interim reclamation seed mix as specified in Chapter 2 and Chapter 3. A copy of this seed mix is also included with this appendix as Figure 3 for ease of reference. The company will endeavor to utilize locally acquired seeds if possible. A retention berm and ditch will be constructed around the perimeter of the pile to prevent soil loss, and a row of excelsior filter logs will be installed around the perimeter to provide siltation control. The pile will also be equipped with an identification sign.

Establishment of vegetation on the topsoil piles at this site has

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previously required two seedings. Therefore, stabilization of the new expanded topsoil pile A will include the application of wood fiber hydromulch after or with seeding. Wood fiber mulch and tackifier application is an accepted practice that will protect the topsoil pile from slopes and will protect the soil from erosion during seed establishment.

The areas associated with and including the sediment pond G and the coal fines removal as shown on Plates 1A and 1B will be broadcast seeded using the interim seed mix described in Figure 3. Seeding will occur in the fall or as recommended by a DOGM biologist. The area immediately around the extended topsoil pile will not have topsoil removed, nor any coal fines removed, but this area will be disturbed simply by the movement of heavy equipment involved in constructing the topsoil pile. Therefore, after the pile is constructed, this area will be roughened and re-seeded in the approved manner similar to the topsoil pile and the coal fines removal area (a.k.a., "mechanical cleanup area").

According to the approved reclamation plan gouging is described as 18" deep x 2'-3' wide, spaced 6'-10' apart (Section R645-301-240). On such gentle slope, the gouges will serve less to control erosion and more to provide for water collection. The problems with creating gouges in this manner are that the gouges will be deeper than the replaced topsoil and the topsoil that is removed from the gouge becomes a mound adjacent to the gouge, with steep slopes that will not retain seed, and the gouge may expose compacted fill soil. Gouging will be used during operations to promote vegetation growth in the drop zone and to collect coal fines. This method will be alternated with ripping of the surface to a depth of 12" and both measures can be qualitatively evaluated for success at final reclamation. Andalex commits to using the most effective roughening technique (either ripping or gouging) at final reclamation.

5) Remove shallow coal fines: Immediately to the north of the area of heaviest accumulations is another area targeted for cleanup. The coal fines accumulations are less in this area and it is felt that this area can adequately be cleaned up by utilizing a truck mounted vacuum system. This area is shown on Plate 1A (and also Figure 2) and is denoted as the "Vacuum

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Cleanup Area". It occupies approximately 1.59 acres. The area depicted is the general area proposed for cleaning, although the company will seek concurrence from the Division regarding the final area.

There are a number of juniper-pinyon tress growing in this area, and the use of vacuum equipment will allow this area to be cleaned without adversely affecting these trees. To the extent practicable, the vacuum truck will utilize the existing adjacent roadway and use a long extension hose for the cleanup so as to minimize the on-ground disturbance. Because the accumulations are less in this area there are no plans to remove or salvage any topsoil after the coal fines have been cleaned up. Coal cleanup material vacuumed up from this area will be taken to the main coal storage area for re-sale, or will be taken to the coal refuse pile, depending on quality.

Input from Division representatives will be requested to make certain that the area targeted for vacuum cleanup is concurred with. Prior to doing any cleaning in this area, "disturbed area" perimeter markers will be installed around the proposed cleanup area. Although the area will not technically be considered "disturbed" for the purpose of sedimentation and drainage control or final reclamation, it will nevertheless be somewhat disturbed by the vacuum operation.

6) Gravel a portion of access road PR-5 at such time as the construction of Pond G becomes necessary: Access road PR-5 runs between the main coal storage pile area and the coal-fines accumulation area, as shown on Plate 1A and Figure 2. PR-5 was originally constructed as a low volume road to provide thru-access around the base of the coal storage pad. As such it was constructed on the native Mancos Shale material existing in the area, and was never graveled. Subsequently, new sales contracts required that semi-trucks utilize this road to gain access to the coal storage pad where they could then be loaded with a front-end loader. This heavier truck traffic on this road has contributed to the wind-blown fines situation. Therefore, the company proposes to gravel a 570' segment of this road, including the ramp up onto the coal storage pile, at such time as it becomes necessary to utilize this road for additional coal storage, which is utilized by the larger trucks needing access the coal pad.

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The segment of road to be graveled is shown on Plate 1A. Once the graveled road is in operation, it will be watered as needed in the future to control fugitive dust emissions.

7) Conduct future monitoring of wind-blown fines: After the cleanup is completed and the construction is finished, the company will continue with an operational monitoring plan for the area. This will consist quarterly inspection of the area to assess the amounts of future coal-fines accumulation, augmented by digital photography. Monitoring results are included in the annual report. The general approach of monitoring (depth assessment and location on a map) will be stated in the annual report.

8) Bonding: At present (July, 2010) the Wildcat reclamation bond is posted in the amount of $1,144,000. This bond was re-adjusted in December 2007. Under the DO-04 cleanup plan there will be no additional demolition cost during final reclamation. The earthwork regrading costs will cancel out because Pond B is being replaced by Pond G. There will be slightly higher topsoiling costs and re-vegetation costs due to the additional disturbed acreage associated the cleanup plan. The existing disturbed area is 66.91 acres; the estimated disturbed area after implementation of the plan will be 73.26 acres, or an increase of 6.35 acres. Using the presently approved reclamation costs, the additional costs are computed as follows:

1) Topsoil: $15,013/66.91 ac = $224/acre
$224/acre x 6.35 acres = $1422

2) Reveg: $359,746/66.91 ac = $5377/acre
$5377/acre x 6.35 acres = $34,141

Total reclamation cost increase = $1422 + $34,141 = $35,563

Percent increase ($1,144,000 + $34,141)/$1,144,000 = 1.028

Therefore, implementation of the cleanup plan is estimated to increase the reclamation costs by less than 3% of the posted bond.

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9) Construction Schedule: Construction will not begin until it is determined to be necessary.

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APPENDIX R

WILDCAT LOADOUT
SEDIMENTATION AND DRAINAGE CONTROL PLAN

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PREPARED BY: **DAN W. GUY, P.E.**
BLACKHAWK ENGINEERING, INC.
JULY 2010

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SEDIMENTATION AND DRAINAGE CONTROL PLAN
WILDCAT LOADOUT
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Appendix 1 - Computer Backup Data

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WILDCAT LOADOUT
SEDIMENTATION AND DRAINAGE CONTROL PLAN

1. Introduction

The Sedimentation and Drainage Control Plan for the Wildcat Loadout has been designed according to the State of Utah R645 - Coal Mining Rules, (revised August 1, 2001). This plan represents the proposed drainage control plan. All design criteria and construction has been certified by a Utah Registered Professional Engineer.

The entire drainage and control plan has been re-evaluated and updated for 2 main reasons:

(1) To evaluate the adequacy and provide up-to-date calculations for existing drainage controls, and;

(2) To provide an overall plan to accommodate the proposed modifications to the site.

The proposed changes to the site plan include the following:

(1) A 1.59 acre area east of the Primary Coal Storage Area will be cleaned by vacuuming coal fines from the surface. No topsoil will be removed from this area;

(2) A 3.84 acre area southeast of the Primary Coal Storage Area will be cleaned mechanically by removing coal fines and topsoil from the surface;

(3) Existing Sediment Pond "B" will be eliminated and replaced with a new, larger Sediment Pond "G" located in the SE corner of the property at such time as it becomes necessary due to the inability to contain fines from potentially larger coal stockpiles: Refer to "RESPONSE TO DIVISION ORDER DO-04" in Appendix P

(4) Topsoil removed from the mechanically cleaned area and new Sediment Pond "G" will be placed on the existing Topsoil Pile "A" located in ASCA-4 east of Sediment Pond "A";

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(5) **One small ASCA (ASCA-8) will be added for the outslope of new Sediment Pond "G".**

All existing and proposed structures are shown on updated Plates 1A and 2A.

The general surface water control plan for this site consists of the following:

(1) **Wherever possible, undisturbed drainage is diverted around the site into natural channels;**

(2) **The entire disturbed area (except the 8 small ASCA's) and portions of the undisturbed area not diverted, are drained to one of the 6 sediment ponds, permanent impoundment or depression area, via properly sized ditches and culverts;**

(3) **There are 8 small Alternate Sediment Control Areas (A.S.C.A.). These areas are described in detail under Section 2.11.**

(4) **All sediment ponds are sized to contain the runoff from a 10 year - 24 hour precipitation event, plus a minimum of 3 years sediment storage as described in Section 3 of this Appendix. The Permanent Impoundment and Depression Area are sized to contain the runoff from a 100 year - 6 hour precipitation event.**

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DESIGN OF DRAINAGE CONTROL STRUCTURES

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Design Parameters

2.1 Precipitation

The precipitation-frequency values for the area were taken from "NOAA, Precipitation-Frequency Atlas of the Western U.S., Atlas 2, Volume VI.

Frequency - Duration	Precipitation
2 year - 6 hour	0.85"
10 year - 6 hour	1.23"
10 year - 24 hour	1.85"
25 year - 6 hour	1.48"
25 year - 24 hour	2.15"
100 year - 6 hour	1.91"

Disturbed ditch and culvert designs for runoff control are based on the 10 year - 24 hour event of 1.85" and the 25 year - 6 hour event of 1.48", where required. Undisturbed culvert designs are based on the 10 year - 24 hour event of 1.85".

The sedimentation ponds are designed to contain the runoff from a 10 year - 24 hour event of 1.85" as required by the Division. Reclamation designs are based on the 100 year - 6 hour event of 1.91", where applicable for permanent structures.

ASCA areas are sized to contain or treat runoff from a 10 year - 24 hour precipitation event.

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2.2 Flow

Peak flows, flow depths, areas and velocities were calculated using the computer program "Office of Surface Mining Watershed Model", Storm Version 6.20 by Gary E. McIntosh. (Trapezoidal Channel Flow). All flow is based on the SCS - TR55 Method for Type II storms.

Time of concentration of storm events was calculated for each drainage area using the following formula:

$$t_L = \frac{L^{0.8}\,(S+1)^{0.7}}{1900\,Y^{0.5}}$$

where:

t_c	=	Time of Concentration (hrs.)
t_L	=	Lag Time (hrs.) = 0.6 t_c
L	=	Hydraulic Length of Watershed (ft.)
Y	=	Average Land Slope (%)
S	=	$\frac{1000}{CN} - 10$

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2.3 Velocity

Flow velocities for each ditch structure were calculated using the Storm computer program with Manning's Formula:

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

where:

V	=	Velocity (fps)
R	=	Hydraulic Radius (ft.)
S	=	Slope (ft. per ft.)
n	=	Manning's n; Table 3.1, p.159,

"Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner & Haan, 1983.

Note: The following Manning's n were used in the calculations:

Structure	Manning's n
Culverts (cmp)	0.020
Rip-rapped or Natural Drainage Channels	0.035 - 0.040
Unlined Disturbed Area Ditches	0.035 - 0.040
Bedrock Channels with Rubble	0.030
Concrete Lined Channels	0.015

2.4 Drainage Areas

All drainage areas are disignated with a DA-number (i.e. DA-2) as shown on Plate 2 and 15. All drainage areas were planimetered directly from As-Constructed Plate 2 (Drainage Map) and Plate 15 (Watershed Map).

2.5 Slopes, Lengths

All slopes and hydraulic lengths were measured directly from the topography on Plates 2 and 15.

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2.6 Runoff

Runoff was calculated using the SCS Formula for Type II Storm:

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

where:

Q	=	Runoff in inches
P	=	Precipitation in inches
S	=	$\frac{1000}{CN} - 10$
CN	=	Runoff Curve Number

2.7 Runoff Curve Numbers

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.

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2.8 Culvert Sizing

All culverts were sized using the "Haestad Methods, Flowmaster I, Version 3.43" Computer Program.

Minimum culvert sizing is based on the following Manning's Equation:

$$D = \left(\frac{2.16\ Q\ n}{\sqrt{s}}\right)^{0.35}$$

where:	D	=	Required Diameter (ft.)
	Q	=	QP = Peak Discharge (cfs)
	n	=	Roughness Factor (0.020 for cmp)
	S	=	Slope (ft. per ft.)

Using the above formula, minimum required culvert sizes were calculated for each applicable area. Culverts were then selected above the required minimum, and these sizes were checked for adequacy against the Culvert Nomograph included as Figure 1 of this report.

2.9 Culverts

Culverts have been sized according to the calculations previously described, and are shown on Plate 2, Drainage Control Map.

All culverts are designated with C-number (i.e. C-2) as shown on Plate 2. All culverts are sized to carry the runoff from a 10 year - 24 hour storm, which is well in excess of the 10 year - 6 hour storm required by the regulations. The only exceptions to the above culvert sizing is for culverts used as sediment pond overflows - these culverts are sized to carry the 25 year - 6 hour flows as required for sediment pond designs.

Culverts will be inspected regularly, and cleaned as necessary to provide for passage of design flows. Inlets and outlets shall also be maintained so as to prevent plugging or undue restriction of water flow.

All disturbed area culverts are temporary, and will be removed upon final

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reclamation.

2.10 Ditches

Ditches are shown on the Minesite Drainage Plan, Plate 2, and are designated with a D-number (i.e., D-2).

All ditches are designed to carry the expected runoff from a 10 year - 24 hour event with a minimum freeboard of 0.5' (See Figures 3 and 4). The 0.5' freeboard represents a minimum of 20% of the flow depth in all disturbed area ditches.

Ditches which exhibit expected flow velocities greater than 5 fps, based on the 10 year - 24 hour runoff, will be lined with rip-rap, belting or ½ round culvert for erosion protection. Typical cross-sections, flow depths and areas for all lined and unlined ditches are shown on Figures 3 and 4 of this report.

Ditch slopes have been determined from Plate 2

All ditches will be inspected regularly, and maintained to the minimum dimensions for the required 10 year - 24 hour runoff to provide adequate capacity for the design flow. All ditches are temporary and will be removed as described under the reclamation hydrology section. (Section 4)

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2.11 Alternate Sediment Control Areas (ASCA)

There will be 8 Alternate Sediment Control Areas (ASCA) remaining on this site. The ASCA designations are ASCA-1, ASCA-2, ASCA-3, ASCA-4, ASCA-5, ASCA-6, ASCA-7 and ASCA-8. Only areas not able to be drained to sediment ponds are included as ASCA's. All ASCA's are existing, except ASCA-8, which will be added for the outslope of new Sediment Pond "G".

The following are descriptions of each of the ASCA's and methods of treatment:

ASCA-1 - This is the area west of the railroad right-of-way and scale house access road. The area is approximately 0.76 acres and is treated for sediment control by vegetation.

ASCA-2 - This is an existing ASCA area on the outslope east of Sediment Pond E. The area is approximately 0.15 acres and is treated by vegetation.

ASCA-3 - This is an area north of new Sediment Pond"G", and includes the area proposed for vacuum cleaning. The area is approximately 2.32 acres and is treated for sediment by straw bales and vegetation.

ASCA-4 - This is the area surrounding Sediment Pond "A" and including Topsoil Storage Pile A. This is an area of approximately 2.73 acres and is treated by straw bales and vegetation.

ASCA-5 - This is the area south and west of Topsoil Storage Piles E and B, including those piles. The area is approximately 1.71 acres, and is treated by a combination of berms, straw bales and vegetation.

ASCA-6 - This is an area southeast of the train loading facility along the Disturbed Area boundary. It is approximately 1.08 acres and is treated by vegetation.

ASCA-7 - This is Topsoil Storage Pile F. It is approximately 0.30 acres and is treated by a berm and vegetation.

ASCA-8 - This will be a new ASCA located on the outslope of new Sediment Pond G. It will have an area of approximately 0.27 acres, and will be treated by vegetation.

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and a berm.

2.12 Erosion Control

Wherever rip-rap is designated to be used, i.e. Culvert Outlets or Unlined Ditches, the following procedure shall be used:

(1) Rip-rap will consist of hard, non-slaking angular, material;

(2) Rip-rap shall meet the following size criteria:

Rip-Rap Sizing	Percent (+ or - 10%)
0.1 D_{50} - 0.5 D_{50}	20
0.5 D_{50} - 1.0 D_{50}	30
1.0 D_{50} - 2.0 D_{50}	50

(3) Rip-rap shall be placed over a filter bedding consisting of -3/4" gravel and placed to a depth of at least the D_{50} of the rip-rap;

(4) Rip-rap depth shall be at least 1.5 times the D_{50} of the material;

(5) Belting, ½ round culvert, concrete lining or grouting of rip-rap may be used in lieu of the above procedures.

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TABLE 1
DRAINAGE AREA DATA

Area	Acres	Hydraulic Length	High Elev.	Low Elev.	Change Elev.	Slope %	Runoff CN
DA-1	1.58	250	6198	6184	14	5.60	90
DA-2	1.01	100	6184	6180	4	4.00	90
DA-3	0.80	130	6178	6172	6	4.61	90
DA-4	1.26	230	6176	6170	6	2.61	90
DA-5	1.31	420	6176	6159	17	4.05	90
DA-6	3.09	550	6176	6142	34	6.18	90
DA-7	1.33	400	6164	6142	22	5.50	90
DA-8	3.58	520	6174	6140	34	6.54	90
DA-9	3.45	460	6174	6140	34	7.39	90
DA-9a	0.61	350	6156	6142	14	4.00	90
DA-11	4.50	600	6196	6178	18	3.00	90
DA-12	0.42	480	6172	6172	2	0.50	90
DA-13	0.65	300	6174	6160	14	4.67	90
DA-14	0.76	600	6160	6156	4	0.67	90
DA-15	0.34	280	6168	6158	8	2.86	90
DA-16	3.05	640	6160	6138	22	3.44	90
DA-17	3.67	680	6160	6138	22	3.23	90
DA-18	5.04	480	6160	6134	26	5.42	90
DA-19	1.72	370	6188	6178	10	2.70	90
DA-20	2.48	250	6178	6158	20	8.00	90
DA-21	1.99	330	6162	6158	4	1.21	90
DA-22	3.79	400	6172	6152	20	5.00	90
DA-23	1.74	300	6162	6142	20	6.67	90
DA-24	5.24	770	6158	6128	30	3.90	90

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Area	Acres	Hydraulic Length	High Elev.	Low Elev.	Change Elev.	Slope %	Runoff CN
DA-29	1.47	350	6214	6196	18	5.14	90
DA-30	1.35	400	6216	6196	20	5.00	90
DA-31	1.79	1100	6200	6176	24	2.18	90
DA-32	2.23	1100	6200	6176	24	2.18	90
DA-33	6.43	600	6190	6180	10	1.67	90
DA-34	85.40	2900	6460	6200	260	8.97	65
DA-35	3.05	200	6286	6200	86	43.00	65
DA-36	2.18	820	6286	6180	106	12.93	65
DA-37	202.76	5600	6420	6130	290	5.18	65
DA-38	15.30	1150	6330	6188	142	12.35	65
ASCA-1	0.76	500	6188	6172	16	3.20	90
ASCA-2	0.15	230	6150	6140	10	4.35	90
ASCA-3	2.32	400	6142	6132	10	2.50	90
ASCA-4	2.73	425	6156	6138	18	4.23	90
ASCA-5	1.71	425	6202	6180	22	5.18	90
ASCA-6	1.08	350	6176	6146	30	8.57	90
ASCA-7	0.30	75	6164	6152	12	16.00	90
ASCA-8	0.27	75	6128	6118	10	13.33	90

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TABLE 2
RUNOFF SUMMARY

Drainage Area	10 yr - 6 hr 1.23"	10 yr - 24 hr 1.85"		25 yr- 6 hr 1.48"	100 yr - 6 hr 1.91"	Drains To:
	Peak Flow (cfs)	Peak Flow (cfs)	Runoff (ac.ft)	Peak Flow (cfs)	Peak Flow (cfs)	
DA-1	0.59	1.27	0.13	0.82	1.24	Pond E
DA-2	0.30	0.65	0.08	0.42	0.63	Pond E
DA-3	0.25	0.55	0.06	0.35	0.53	Pond E
DA-4	0.51	1.11	0.10	0.71	1.08	Pond E
DA-5	0.57	1.24	0.11	0.80	1.21	Pond E
DA-6	1.35	2.95	0.25	1.89	2.86	Pond E
DA-7	0.56	1.22	0.11	0.78	1.19	Pond E
DA-8	1.55	3.38	0.29	2.17	3.29	Pond D
DA-9	1.45	3.16	0.28	2.03	3.07	Pond D
DA-9a	0.26	0.56	0.05	0.36	0.55	Pond D
DA-11	1.94	4.31	0.36	2.73	4.17	Pond C
DA-12	0.15	0.36	0.03	0.22	0.34	Pond C
DA-13	0.26	0.57	0.05	0.36	0.55	Pond C
DA-14	0.27	0.65	0.06	0.39	0.62	Pond C
DA-15	0.14	0.31	0.03	0.20	0.30	Pond C
DA-16	1.32	2.92	0.25	1.85	2.83	Pond C
DA-17	1.55	3.45	0.30	2.18	3.33	Pond C
DA-18	2.19	4.77	0.41	3.06	4.63	Pond C
DA-19	0.75	1.64	0.14	1.05	1.60	Pond A
DA-20	0.88	1.91	0.20	1.23	1.85	Pond A
DA-21	0.89	1.95	0.16	1.24	1.89	Pond A
DA-22	1.61	3.51	0.31	2.25	3.41	Pond A
DA-23	0.66	1.43	0.14	0.92	1.40	Pond G
DA-24	2.19	4.89	0.42	3.09	4.73	Pond G
DA-29	0.61	1.32	0.12	0.85	1.28	Permanent Imp.
DA-30	0.57	1.25	0.11	0.8	1.21	Pond F

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Drainage Area	10 yr - 6 hr 1.23"	10 yr - 24 hr 1.85"		25 yr- 6 hr 1.48"	100 yr - 6 hr 1.91"	Drains To:
	Peak Flow (cfs)	Peak Flow (cfs)	Runoff (ac.ft)	Peak Flow (cfs)	Peak Flow (cfs)	
DA-31	0.64	1.52	0.14	0.93	1.45	Pond F
DA-32	0.80	1.90	0.18	1.16	1.81	Pond F
DA-33	2.56	5.81	0.52	3.64	5.59	Depression Area
DA-34	0.39	1.81	0.69	1.27	3.13	Permanent Imp.
DA-35	0.01	0.06	0.02	0.03	0.07	UD-8
DA-36	0.01	0.07	0.02	0.03	0.09	UD-2
DA-37	0.71	3.42	1.64	2.66	6.89	ND-1
DA-38	0.08	0.43	0.12	0.24	0.61	UD-1
ASCA-1	0.34	0.74	0.06	0.47	0.72	ND-1
ASCA-2	0.06	0.12	0.01	0.08	0.12	ND-1
ASCA-3	1.02	2.23	0.19	1.43	2.17	ND-1
ASCA-4	1.19	2.58	0.22	1.66	2.51	ND-2
ASCA-5	0.73	1.60	0.14	1.02	1.55	ND-2
ASCA-6	0.42	0.90	0.09	0.58	0.87	ND-2
ASCA-7	0.07	0.14	0.02	0.09	0.14	ND-1
ASCA-8	0.06	0.13	0.02	0.09	0.13	ND-2

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TABLE 3
DRAINAGE STRUCTURES

Structure	Drainage From:	Remarks:
C-1	DA-36	Flows to UD-2
C-2	C-1	Flows to UD-2
C-3	C-2	Flows to UD-2
UD-2	C-3	Flows to Natural Drainage ND-1
C-4	UD-2	Flows to Natural Drainage ND-1
C-5	DA-37 + UD-2	Flows to Natural Drainage ND-1
C-6	DA-1	Drains to Pond E
D-1	C-6 + DA-2	Drains to Pond E
C-7	D-1	Drains to Pond E
C-8	C-7	Drains to Pond E
D-2	C-8	Drains to Pond E
C-9	D-2	Drains to Pond E
C-10	DA-3	Drains to Pond E
C-11	DA-4	Drains to Pond E
D-3	C-10, C-11	Drains to Pond E
D-4	C-9 + D-3	Drains to Pond E
C-12	D-4 + DA-6	Drains to Pond E
D-5	DA-5	Drains to Pond E
C-13	D-5	Drains to Pond E
D-6	C-12 + C13	Inlet to Pond E
D-7	DA-7	Inlet to Pond E
C-14	Pond E	Principle Outlet from Pond E
C-15	DA-34, DA-35	Permanent Impoundment Principle Spillway
C-16	DA-34, DA-35	Permanent Impoundment Emergency Spillway
D-8	DA-8	Drains to Pond D
D-9	DA-9	Drains to Pond D
C-17	DA-9a	Drains to Pond D
C-17a	Pond D	Principle Outlet from Pond D

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Structure	Drainage From:	Remarks:
C-17b	Pond D	Emergency Outlet from Pond D
C-18	DA-11	Flows to Pond C
D-11	C-18	Flows to Pond C
D-12	DA-12	Flows to Pond C
C-19	D-12	Flows to Pond C
D-13	C-19 + DA-13	Flows to Pond C
C-20	D-11 + D-13	Flows to Pond C
C-21	D-14	Flows to Pond C
D-14	DA-14	Flows to Pond C
C-22	D-14	Flows to Pond C
C-23	C-20 + C-22	Flows to Pond C
D-15	DA-15	Flows to Pond C
C-24	C-23 + D-15	Inlet to Pond C
C-25	DA-16	Flows to Pond C
D-16	C-25	Flows to Pond C
C-26	DA-17	Flows to Pond C
D-17	C-26	Flows to Pond C
C-27	D-16 + D-17	Flows to Pond C
C-28	DA-18	Flows to Pond C
D-18	C-28	Flows to Pond C
D-19	C-27 + D-18	Inlet to Pond C
C-29	Pond C	Principle Spillway Pond C
C-30	Pond C	Emergency Spillway Pond C
C-31	DA-19	Flows to Pond A
D-20	½ DA-20	Flows to Pond A
C-32	C-31 + D-20	Flows to Pond A
D-21	C-32	Flows to Pond A
D-22	½ DA-20	Flows to Pond A
C-33	D-22	Flows to Pond A
D-23	D-21 + C-33	Flows to Pond A
C-34	D-23 + DA-21	Flows to Pond A

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Structure	Drainage From:	Remarks:
D-24	1/4 DA-22	Flows to Pond A
C-35	D-24	Flows to Pond A
C-35a	Pond A	Principle Spillway from Pond A
D-25	C-36, DA-24	Inlet to New Pond G
C-36	DA-23	Flows to New Pond G
D-31	DA-29	Flows to Permanent Impoundment
D-32	DA-30	Flows to Pond F
D-33	DA-31	Flows to Pond F
D-34	D-32 + D-33	Inlet to Pond F
D-35	DA-32	Inlet to Pond F
C-38	Pond F	Principle Spillway from Pond F
C-39	Pond G	Principle Spillway from Pond G
C-40	Pond G	Emergency Overflow Pond G
UD-1	DA-38	Natural Drainage ND-2
UD-8	DA-35	Flows to Permanent Impoundment
Permanent Impoundment	DA-34 + UD-8	Flows to Depression Area
Depression Area	DA-33 + Permanent Impoundment	No Outlet

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TABLE 4
DRAINAGE STRUCTURE FLOW SUMMARY

Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
D-1	0.89	1.92	1.24	1.87	Pond E
D-2	0.89	1.92	1.24	1.87	Pond E
D-3	0.76	1.66	1.06	1.61	Pond E
D-4	1.65	3.58	2.30	3.48	Pond E
D-5	0.57	1.24	0.80	1.21	Pond E
D-6	3.57	7.77	4.99	7.55	Inlet to Pond E
D-7	0.56	1.22	0.78	1.19	Inlet to Pond E
D-8	1.55	3.38	2.17	3.29	Pond D
D-9	1.45	3.16	2.03	3.07	Pond D
D-11	1.94	4.31	2.73	4.17	Pond C
D-12	0.15	0.36	0.22	0.34	Pond C
D-13	0.41	0.93	0.58	0.89	Pond C
D-14	0.27	0.65	0.39	0.62	Pond C
D-15	0.14	0.31	0.20	0.30	Pond C
D-16	1.32	2.92	1.85	2.83	Pond C
D-17	1.55	3.45	2.18	3.33	Pond C
D-18	2.19	4.77	3.06	4.63	Pond C
D-19	5.06	11.14	7.09	10.79	Inlet to Pond C
D-20	0.44	0.96	0.62	0.93	Pond A
D-21	1.19	2.60	1.85	2.78	Pond A
D-22	0.44	0.96	0.62	0.93	Pond A
D-23	1.63	3.56	2.47	3.71	Pond A
D-24	0.40	0.88	0.56	0.85	Pond A
D-25	2.85	6.32	4.01	6.13	Inlet to Pond G
D-31	0.61	1.37	0.85	1.28	To Permanent Impoundment
D-32	0.57	1.25	0.80	1.21	To Pond F
D-33	0.64	1.52	0.93	1.45	To Pond F
D-34	1.21	2.77	1.73	2.66	Inlet to Pond F

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Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
D-35	0.80	1.90	1.16	1.81	Inlet to Pond F
C-1	0.01	0.07	0.03	0.09	ND-1
C-2	0.01	0.07	0.03	0.09	ND-1
C-3	0.01	0.07	0.03	0.09	ND-1
C-4	0.01	0.07	0.03	0.09	ND-1
C-5	0.72	3.49	2.69	6.98	ND-1
C-6	0.59	1.27	0.82	1.24	Pond E
C-7	0.89	1.92	1.24	1.87	Pond E
C-8	0.89	1.92	1.24	1.87	Pond E
C-9	0.89	1.92	1.24	1.87	Pond E
C-10	0.25	0.55	0.35	0.53	Pond E
C-11	0.51	1.11	0.71	1.08	Pond E
C-12	3.00	6.53	4.19	6.34	Pond E
C-13	0.57	1.24	0.80	1.21	Pond E
C-14	4.13	8.99	5.77	8.74	Principle Spillway Outlet Pond E
C-15	1.01	3.19	2.15	4.48	Depression Area
C-16	1.01	3.19	2.15	4.48	Depression Area
C-17	0.26	0.56	0.36	0.55	Pond D
C-17a	3.26	7.10	4.56	6.91	Principle Spillway Pond D
C-17b	3.26	7.10	4.56	6.91	Emergency Spillway Pond D
C-18	1.94	4.31	2.73	4.17	Pond C
C-19	0.15	0.36	0.22	0.34	Pond C
C-20	2.35	5.24	3.31	5.06	Pond C
C-21	0.27	0.65	0.39	0.62	Pond C
C-22	0.27	0.65	0.39	0.62	Pond C
C-23	2.62	5.89	3.70	5.68	Pond C
C-24	2.76	6.20	4.00	5.98	Inlet to Pond C
C-25	1.32	2.92	1.85	2.83	Pond C
C-26	1.55	3.45	2.18	3.33	Pond C
C-27	2.87	6.37	4.03	6.16	Pond C

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Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
C-28	2.19	4.77	3.06	4.63	Pond C
C-29	7.82	17.34	11.09	16.77	Principle Spillway Outlet
C-30	7.82	17.34	11.09	16.77	Emergency Spillway Outlet
C-31	0.75	1.64	1.05	1.60	Pond A
C-32	1.19	2.60	1.67	2.53	Pond A
C-33	0.44	0.96	0.62	0.93	Pond A
C-34	2.52	5.51	3.71	5.60	Pond A
C-35	0.40	0.88	0.56	0.85	Pond A
C-35a	4.13	9.01	5.77	8.75	Principle Spillway Outlet Pond A
C-36	0.66	1.43	0.92	1.40	Pond G
C-38	2.01	4.67	2.89	4.47	Principle Spillway Outlet Pond F
UD-1	0.08	0.43	0.24	0.61	Natural Drainage ND-2
UD-2	0.01	0.07	0.03	0.09	ND-1
UD-8	0.01	0.06	0.03	0.07	Permanent Impoundment
Permanent Impoundment	0.40	1.87	1.30	3.20	Depression Area
Depression Area	2.96	7.68	4.94	8.79	Depression Area
ASCA-1	0.34	0.74	0.47	0.72	ND-1
ASCA-2	0.06	0.12	0.08	0.12	ND-1
ASCA-3	1.02	2.23	1.43	2.17	Straw Bales/ND-1
ASCA-4	1.19	2.58	1.66	2.51	Berm/ND-2
ASCA-5	0.73	1.60	1.02	1.55	Berm/Straw Bales/ND-2
ASCA-6	0.42	0.90	0.58	0.87	Vegetation/ND-2
ASCA-7	0.07	0.14	0.09	0.14	Berm/ND-1
ASCA-8	0.06	0.13	0.09	0.13	Berm/ND-2
ND-1	0.71	3.42	2.66	6.89	-

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TABLE 5
DITCH DATA

Area ID	Hydraulic Length	High Elevation	Low Elevation	Change Elevation	Slope %	Manning's No.
D-1	50	6180	6178	2	4.0	0.035
D-2	150	6166	6164	2	1.3	0.035
D-3	595	6170	6162	8	1.3	0.035
D-4	90	6162	6160	2	2.2	0.035
D-5	170	6164	6158	6	3.5	0.035
D-6	150	6156	6144	12	8.0	0.035
D-7	150	6154	6144	10	6.7	0.035
D-8	540	6160	6142	18	3.3	0.035
D-9	580	6168	6142	26	4.5	0.035
D-11	620	6162	6156	6	1.0	0.035
D-12	460	6176	6172	4	0.9	0.035
D-13	150	6162	6158	4	2.7	0.035
D-14	410	6162	6158	4	1.0	0.035
D-15	190	6162	6156	6	3.2	0.035
D-16	170	6141	6138	3	1.8	0.035
D-17	90	6140	6138	2	2.2	0.035
D-18	130	6140	6136	4	3.1	0.035
D-19	95	6136	6128	8	8.4	0.035
D-20	470	6176	6166	10	2.1	0.035
D-21	120	6162	6160	2	1.7	0.035
D-22	220	6163	6160	3	1.4	0.035
D-23	260	6160	6157	3	1.2	0.035
D-24	130	6178	6176	2	1.5	0.035
D-25	425	6142	6128	14	3.3	0.035

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Area ID	Hydraulic Length	High Elevation	Low Elevation	Change Elevation	Slope %	Manning's No.
D-31	300	6211	6206	5	1.7	0.035
D-32	470	6211	6196	15	3.2	0.035
D-33	580	6102	6196	6	1.0	0.035
D-34	580	6196	6170	26	4.5	0.035
D-35	350	6181	6170	11	3.1	0.030
UD-1	1960	6234	6188	46	2.3	0.035
UD-2	325	6178	6174	4	1.2	0.035
UD-8	625	6200	6192	8	1.3	0.035

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TABLE 6
DITCH DESIGN SUMMARY

Ditch Structure	D-1	D-2	D-3	D-4	D-5
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	0.89	0.89	0.76	1.65	0.57
Velocity (fps)	2.72	1.79	1.72	2.54	2.32
Required Area (ft^2)	0.33	0.50	0.44	0.65	0.25
Flow Depth (ft.)	0.40	0.50	0.47	0.57	0.35
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	1.92	1.92	1.66	3.58	1.24
Velocity (fps)	3.30	2.17	2.09	3.08	2.81
Required Area (ft^2)	0.58	0.89	0.80	1.16	0.44
Flow Depth (ft.)	0.54	0.67	0.63	0.76	0.47
Construction					
Minimum Area (ft^2)	2.16	2.74	2.55	3.18	1.88
Minimum Depth (ft.)	1.04	1.17	1.13	1.26	0.97
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

*** Based on 10 year - 24 hour flow.**

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TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-6	D-7	D-8	D-9
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23
Peak Flow (cfs)	3.57	0.56	1.55	1.45
Velocity (fps)	5.00	2.94	2.91	3.22
Required Area (ft^2)	0.71	0.19	0.53	0.45
Flow Depth (ft.)	0.60	0.31	0.52	0.47
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85
Peak Flow (cfs)	7.77	1.22	3.38	3.16
Velocity (fps)	6.07	3.57	3.54	3.91
Required Area (ft^2)	1.28	0.34	0.96	0.81
Flow Depth (ft.)	0.80	0.41	0.69	0.64
Construction				
Minimum Area (ft^2)	3.38	1.66	2.83	2.60
Minimum Depth (ft.)	1.30	0.91	1.19	1.14
*Erosion Protection	Y	N	N	N
Type	½ Round Culvert	-	-	-

*** Based on 10 year - 24 hour flow.**

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TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-11	D-12	D-13	D-14	D-15
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	1.94	0.15	0.41	0.27	0.14
Velocity (fps)	1.97	1.00	1.94	1.20	1.58
Required Area (ft^2)	0.99	0.15	0.21	0.22	0.09
Flow Depth (ft.)	0.70	0.27	0.33	0.34	0.21
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	4.31	0.36	0.93	0.65	0.31
Velocity (fps)	2.40	1.24	2.38	1.50	1.50
1.92Required Area (ft^2)	1.79	0.29	0.39	0.43	0.16
Flow Depth (ft.)	0.95	0.38	0.44	0.47	0.28
Construction					
Minimum Area (ft^2)	4.20	1.55	1.77	1.88	1.22
Minimum Depth (ft.)	1.45	0.88	0.94	0.97	0.78
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

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TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-16	D-17	D-18	D-19	D-20
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	1.32	1.55	2.19	5.06	0.44
Velocity (fps)	2.23	2.50	3.10	5.55	1.79
Required Area (ft^2)	0.59	0.62	0.71	0.91	0.25
Flow Depth (ft.)	0.54	0.56	0.59	0.68	0.35
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	2.92	3.45	4.77	11.14	0.96
Velocity (fps)	2.72	3.05	3.76	6.76	2.18
Required Area (ft^2)	1.07	1.13	1.27	1.65	0.44
Flow Depth (ft.)	0.73	0.75	0.80	0.91	0.47
Construction					
Minimum Area (ft^2)	3.03	3.13	3.38	3.98	1.51
Minimum Depth (ft.)	1.23	1.25	1.30	1.41	0.87
*Erosion Protection	N	N	N	Y	N
Type	-	-	-	½ Round Culvert Belt	-

*** Based on 10 year - 24 hour flow.**

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TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-21	D-22	D-23	D-24	D-25
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	1.19	0.44	1.63	0.40	2.85
Velocity (fps)	2.12	1.54	2.02	1.54	3.39
Required Area (ft^2)	0.56	0.29	0.81	0.26	0.84
Flow Depth (ft.)	0.53	0.38	0.64	0.36	0.65
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	2.60	0.96	3.56	0.88	6.32
Velocity (fps)	2.58	1.87	2.45	1.88	4.14
Required Area (ft^2)	1.01	0.51	1.45	0.47	1.53
Flow Depth (ft.)	0.71	0.51	0.85	0.48	0.87
Construction					
Minimum Area (ft^2)	2.93	2.04	3.65	1.92	3.75
Minimum Depth (ft.)	1.21	1.01	1.35	0.98	1.37
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

*** Based on 10 year - 24 hour flow.**

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TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-31	D-32	D-33	D-34	D-35
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	0.61	0.57	0.64	1.21	0.80
Velocity (fps)	1.80	2.24	1.49	3.07	2.41
Required Area (ft^2)	0.34	0.25	0.43	0.39	0.33
Flow Depth (ft.)	0.41	0.36	0.46	0.44	0.41
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	1.32	1.25	1.52	2.77	1.90
Velocity (fps)	2.18	2.73	1.85	3.78	2.99
Required Area (ft^2)	0.61	0.46	0.82	0.73	0.64
Flow Depth (ft.)	0.55	0.48	0.64	0.61	0.56
Construction					
Minimum Area (ft^2)	2.21	1.92	2.60	2.46	2.69
Minimum Depth (ft.)	1.05	0.98	1.14	1.11	1.16
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

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TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	UD-1	UD-2	UD-8
10 yr - 6 hr event (in.)	1.23	1.23	1.23
Peak Flow (cfs)	0.08	0.01	0.01
Velocity (fps)	1.21	0.56	0.58
Required Area (ft^2)	0.07	0.02	0.02
Flow Depth (ft.)	0.18	0.09	0.09
10 yr - 24 hr event (in.)	1.85	1.85	1.85
Peak Flow (cfs)	0.43	0.07	0.06
Velocity (fps)	1.84	0.92	0.91
Required Area (ft^2)	0.23	0.08	0.07
Flow Depth (ft.)	0.34	0.20	0.18
Construction			
Minimum Area (ft^2)	1.41	0.98	0.92
Minimum Depth (ft.)	0.84	0.70	0.68
*Erosion Protection	N	N	N
Type	-	-	-

*** Based on 10 year - 24 hour flow.**

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TABLE 7
CULVERT DATA

Culvert ID	Length	Slope %	Manning's No.
C-1	30	3.0	0.020
C-2	40	5.0	0.020
C-3	70	2.9	0.020
C-4	50	8.0	0.020
C-5	120	3.3	0.020
C-6	40	7.5	0.020
C-7	70	2.9	0.020
C-8	60	3.3	0.020
C-9	80	2.5	0.020
C-10	20	3.0	0.020
C-11	20	3.0	0.020
C-12	40	3.3	0.020
C-13	80	3.8	0.020
C-14	40	10.0	0.020
C-15	40	3.0	0.020
C-16	40	3.0	0.020
C-17	20	5.0	0.020
C-17a	80	3.0	0.020
C-17b	80	3.0	0.020
C-18	90	3.0	0.020
C-19	40	15.0	0.020
C-20	40	3.3	0.020
C-21	100	1.0	0.020
C-22	90	2.0	0.020
C-23	50	4.0	0.020

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Culvert ID	Length	Slope %	Manning's No.
C-24	400	6.0	0.020
C-25	30	13.3	0.020
C-26	40	7.5	0.020
C-27	50	3.0	0.020
C-28	50	8.0	0.020
C-29	60	3.0	0.020
C-30	60	3.0	0.020
C-31	90	3.0	0.020
C-32	20	3.0	0.020
C-33	30	3.5	0.020
C-34	130	3.8	0.020
C-35	45	20.0	0.020
C-35a	40	3.0	0.020
C-36	30	3.0	0.020
C-38	40	3.3	0.020
C-39	60	3.0	0.020
C-40	60	3.0	0.020

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TABLE 8
CULVERT DESIGN SUMMARY

Culvert	10 yr - 6 hr Event 1.23"			10 yr - 24 hr Event 1.85"			Actual Construction Diameter (ft.)	Flow Capacity (cfs)	Erosion Protection at Outlet Required Y/N	Type of Erosion Protection
	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.				
C-1	0.01	1.14	0.11	0.07	1.86	0.22	1.0	4.01	N	-
C-2	0.01	1.38	0.10	0.07	2.25	0.20	1.0	5.18	N	-
C-3	0.01	1.13	0.11	0.07	1.83	0.22	2.0	25.04	N	-
C-4	0.01	1.65	0.09	0.07	2.68	0.18	2.0	41.59	N	-
C-5	0.72	3.45	0.52	3.49	5.11	0.93	3.0	78.76	Y	Natural
C-6	0.59	4.46	0.41	1.27	5.40	0.55	1.25	11.50	Y	6" D^{50} Rip-Rap
C-7	0.89	3.46	0.57	1.92	4.19	0.76	1.25	25.04	N	1.20
C-8	0.89	3.63	0.56	1.92	4.40	0.75	2.0	26.71	N	0.75
C-9	0.89	3.27	0.59	1.92	3.97	0.78	1.5	10.80	N	1.00
C-10	0.25	2.55	0.35	0.55	3.11	0.47	1.0	4.01	N	1.00
C-11	0.51	3.05	0.46	1.11	3.70	0.62	1.0	4.01	N	0.50
C-12	3.00	4.92	0.88	6.53	5.98	1.18	1.5	12.40	Y	½ Round Culvert
C-13	0.57	3.43	0.46	1.24	4.16	0.62	1.0	4.51	N	0.50
C-14	4.13	8.08	0.81	8.99	9.81	1.08	1.5	21.59	Y	9" D^{50} Rip-Rap
C-15	1.01	3.62	0.60	3.19	4.82	0.92	1.5	11.83	N	-
C-16	1.01	3.62	0.60	3.19	4.82	0.92	1.5	11.83	N	-

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Culvert	10 yr - 6 hr Event 1.23"			10 yr - 24 hr Event 1.85"			Actual Construction Diameter (ft.)	Flow Capacity (cfs)	Erosion Protection at Outlet Required Y/N	Type of Erosion Protection
	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.				
C-17	0.26	3.12	0.33	0.56	3.78	0.43	1.5	15.27	N	-
C-17a	3.26	4.85	0.93	7.10	5.89	1.24	1.5	11.83	Y	Belting
C-17b	3.26	4.85	0.93	7.10	5.89	1.24	1.5	11.83	Y	Belting
C-18	1.94	4.26	0.76	4.31	5.20	1.03	1.25	7.27	Y	6" D^{50} Rip-Rap
C-19	0.15	4.11	0.22	0.36	5.11	0.30	2.0	56.95	Y	6" D^{50} Rip-Rap
C-20	2.35	4.63	0.80	5.24	5.66	1.09	2.0	26.71	Y	Drop Inlet
C-21	0.27	1.72	0.45	0.65	2.15	0.62	1.0	2.32	N	-
C-22	0.27	2.23	0.39	0.65	2.78	0.55	1.0	3.28	N	-
C-23	2.62	5.11	0.81	5.89	6.26	1.09	2.0	29.41	Y	Drop Inlet
C-24	2.76	6.03	0.76	6.20	7.38	1.03	2.0	36.02	Y	Belting Pond Inlet
C-25	1.32	6.76	0.50	2.92	8.25	0.67	1.0	8.45	Y	6" D^{50} Rip-Rap
C-26	1.55	5.68	0.59	3.45	6.93	0.80	1.0	6.34	Y	6" D^{50} Rip-Rap
C-27	2.87	4.70	0.88	6.37	5.73	1.19	1.5	11.83	Y	½ Round Culvert
C-28	2.19	6.34	0.66	4.77	7.70	0.89	1.0	6.55	Y	6" D^{50} Rip-Rap
C-29	7.82	6.03	1.28	17.34	7.36	1.73	1.5	11.83	Y	9" D^{50} Rip-Rap
C-30	7.82	6.03	1.28	17.34	7.36	1.73	1.5	11.83	Y	9" D^{50} Rip-Rap
C-31	0.75	3.36	0.53	1.64	4.08	0.72	1.25	7.27	N	-
C-32	1.19	3.77	0.63	2.60	4.58	0.85	1.0	4.01	N	-

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Culvert	10 yr - 6 hr Event 1.23"			10 yr - 24 hr Event 1.85"			Actual Construction Diameter (ft.)	Flow Capacity (cfs)	Erosion Protection at Outlet Required Y/N	Type of Erosion Protection
	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.				
C-33	0.44	3.11	0.42	0.96	3.78	0.57	1.0	4.33	N	-
C-34	2.52	4.97	0.80	5.51	6.04	1.08	1.25	8.19	Y	Belting
C-35	0.40	5.85	0.30	0.88	7.12	0.40	1.0	10.36	Y	6" D^{50} Rip-Rap
C-35a	4.13	5.14	1.01	9.01	6.25	1.35	1.5	11.83	Y	6" D^{50} Rip-Rap
C-36	0.66	3.25	0.51	1.43	3.95	0.68	1.0	4.01	N	-
C-38	2.01	4.45	0.76	4.67	5.50	1.04	1.0	*4.21	Y	Belting
C-39	2.85	4.69	0.88	4.01	5.11	1.00	2.0	25.47	Y	6" D^{50} Rip-Rap
C-40	2.85	4.69	0.88	4.01	5.11	1.00	2.0	25.47	Y	6" D^{50} Rip-Rap

*** Adequate for 25/6 flow of 2.89 cfs.**

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FIGURES

Figure 1 **Culvert Nomograph**

Figure 2 **Rip-Rap Chart**

Figure 3 **Undisturbed and Disturbed Ditch, Typical Section**

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DESIGN OF SEDIMENT CONTROL STRUCTURES

Design of Sediment Control Structures

3.1 Design and Construction Specifications for Sedimentation Pond
3.2 Sediment Yield
3.3 Sediment Pond Volume

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3.4 Sediment Pond Summary

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3.1 Design and Construction Specifications for Sedimentation Pond

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

b) Sediment Ponds A, C, D, E and F and the Permanent Impoundment and Depression Area are all existing impoundments with no changes proposed. Existing Sediment Pond "B" will be eliminated and replaced with new Sediment Pond "G". All ponds are equipped with a cmp principle overflow and an emergency spillway or cmp overflow. All emergency overflows will be at least 1.0' above the primary overflows, and at least 2.0' below the top of the dam.

c) The area 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.

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

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

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

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g) **Decanting of the ponds, as required, will be accomplished by use of a portable pump with an inverted inlet, and a pumping capacity of 100 gpm or greater. Samples will be collected prior to decanting of the pond. If the quality of the water meets the requirements of the U.P.D.E.S. Permit, decanting will proceed. Discharge samples will be collected as per the approved U.P.D.E.S. Discharge Permit.**

h) **Slopes of the embankments shall not be steeper than 2h : 1v, inside or outside, with a total of the inslope and outslope not less than 5h : 1v, except where areas of the pond are incised.**

i) **Tops and external slopes of the impoundments will be planted with an approved seed mix to help prevent erosion and promote stability.**

j) **Top width of the embankments shall be not less than (H+35)/5, where H = Height of Dam in feet.**

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3.2 Sediment Yield

The Universal Soil Loss Equation (USLE) was used to estimate sediment yield from drainage areas. All soil loss from this area was assumed to be delivered to, and deposited in the respective sedimentation pond.

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

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

where 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" as shown in Section 2.1. 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 is conservatively estimated to be 0.5. "K" is estimated to be 0.035 for undisturbed 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, p. 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, the following "CP" values were used:

Site	CP Factor
Disturbed Areas	1.20
Undisturbed Areas	0.15

The sediment volume is based on a density of 100 pounds per cubic foot of sediment.

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Sediment Yield Calculations - USLE

Drainage	To:	R	K	Acres	Slope Length Feet	Slope (%)	LS	CP	A*	Yield**
DA-1	Pond E	18.88	0.5	1.58	250	5.60	0.95	1.20	10.76	0.008
DA-2	Pond E	18.88	0.5	1.01	100	4.00	0.40	1.20	4.53	0.002
DA-3	Pond E	18.88	0.5	0.80	130	4.61	0.52	1.20	5.98	0.002
DA-4	Pond E	18.88	0.5	1.26	230	2.61	0.32	1.20	3.62	0.002
DA-5	Pond E	18.88	0.5	1.31	420	4.05	0.75	1.20	8.50	0.005
DA-6	Pond E	18.88	0.5	3.09	550	6.18	1.70	1.20	19.26	0.027
DA-7	Pond E	18.88	0.5	1.33	400	5.50	1.15	1.20	13.03	0.008
DA-8	Pond D	18.88	0.5	3.58	520	6.54	1.60	1.20	18.12	0.030
DA-9	Pond D	18.88	0.5	3.45	460	7.39	1.80	1.20	20.39	0.032
DA-9a	Pond D	18.88	0.5	0.61	350	4.00	0.65	1.20	7.36	0.002
DA-11	Pond C	18.88	0.5	4.50	600	3.00	0.50	1.20	5.66	0.012
DA-12	Pond C	18.88	0.5	0.42	480	0.50	0.16	1.20	1.81	0.001
DA-13	Pond C	18.88	0.5	0.65	300	4.67	0.75	1.20	8.50	0.003
DA-14	Pond C	18.88	0.5	0.76	600	0.67	0.18	1.20	2.04	0.001
DA-15	Pond C	18.88	0.5	0.34	280	2.86	0.37	1.20	4.19	0.001
DA-16	Pond C	18.88	0.5	3.05	640	3.44	0.63	1.20	7.14	0.010
DA-17	Pond C	18.88	0.5	3.67	68	3.23	0.54	1.20	6.12	0.010
DA-18	Pond C	18.88	0.5	5.04	480	5.42	1.25	1.20	14.16	0.033
DA-19	Pond A	18.88	0.5	1.72	370	2.70	0.38	1.20	4.30	0.002
DA-20	Pond A	18.88	0.5	2.48	250	8.00	1.55	1.20	17.56	0.020
DA-21	Pond A	18.88	0.5	1.99	330	1.21	0.20	1.20	2.27	0.002
DA-22	Pond A	18.88	0.5	3.79	400	5.00	1.05	1.20	11.89	0.021
DA-23	Pond G	18.88	0.5	1.74	300	6.66	1.30	1.20	14.73	0.012
DA-24	Pond G	18.88	0.5	5.24	770	3.90	0.80	1.20	9.06	0.022
DA-30	Pond F	18.88	0.5	1.35	400	5.00	1.05	1.20	11.89	0.007
DA-31	Pond F	18.88	0.5	1.79	1100	2.18	0.44	1.20	4.98	0.004
DA-32	Pond F	18.88	0.5	2.23	1100	2.18	0.44	1.20	4.98	0.005

* A = tons/acre-year

** Yield = acre-ft/year

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	Pond C	Pond E	Pond F	Pond G	Pond A	Pond D
Total Sediment - 1 yr. (ac. ft.)	**0.071**	**0.054**	**0.016**	**0.034**	**0.045**	**0.064**
Total Sediment - 3 yr. (ac. ft.)	**0.213**	**0.162**	**0.048**	**0.102**	**0.135**	**0.192**

3.3 Sediment Pond Volume

The volumes shown in Tables 9 through 14 are from the volumes calculated from the precipitation , runoff and sediment yield for a 10 year - 24 hour precipitation event. The volumes were calculated based on the disturbed areas (and contributing undisturbed areas) runoff values, developed using the design parameters described in this section.

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TABLE 9
SEDIMENT POND "C" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 18.43 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	1.490 ac.ft.
5-	Sediment Storage Volume USLE - 0.213	=	0.213 ac.ft.
6-	Direct Precipitation into Pond 0.86 acres x 1.85" / 12 in./ft.	=	0.133 ac.ft.
7-	Total Required Pond Volume 1.490 + 0.213 + 0.133	=	1.836 ac.ft.
8-	Pond Actual Volume at Principal Spillway	=	4.732 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	10.99 cfs

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TABLE 10
SEDIMENT POND "E" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 10.38 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	0.840 ac.ft.
5-	Sediment Storage Volume USLE - 0.162	=	0.162 ac.ft.
6-	Direct Precipitation into Pond 0.17 acres x 1.85" / 12 in./ft.	=	0.026 ac.ft.
7-	Total Required Pond Volume 0.840 + 0.162 + 0.026	=	1.028 ac.ft.
8-	Pond Volume at Principal Spillway	=	1.092 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	5.77 cfs

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TABLE 11
SEDIMENT POND "F" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 5.37 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	0.430 ac.ft.
5-	Sediment Storage Volume USLE - 0.048	=	0.048 ac.ft.
6-	Direct Precipitation into Pond 0.18 acres x 1.85" / 12 in./ft.	=	0.028 ac.ft.
7-	Total Required Pond Volume 0.430 + 0.048 + 0.028	=	0.506 ac.ft.
8-	Pond Volume at Principal Spillway	=	0.869 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	2.89 cfs

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TABLE 12
SEDIMENT POND "G" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 6.98 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	0.560 ac.ft.
5-	Sediment Storage Volume USLE - 0.102	=	0.102 ac.ft.
6-	Direct Precipitation into Pond 0.35 acres x 1.85" / 12 in./ft.	=	0.054 ac.ft.
7-	Total Required Pond Volume 0.560 + 0.102 + 0.054	=	0.716 ac.ft.
*8-	Pond Volume at Principal Spillway	=	1.342 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	4.01 cfs

* Proposed.

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TABLE 13
SEDIMENT POND "A" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 9.98 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	0.810 ac.ft.
5-	Sediment Storage Volume USLE - 0.135	=	0.135 ac.ft.
6-	Direct Precipitation into Pond 0.66 acres x 1.85" / 12 in./ft.	=	0.102 ac.ft.
7-	Total Required Pond Volume 0.810 + 0.135 + 0.102	=	1.047 ac.ft.
8-	Pond Volume at Principal Spillway	=	2.972 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	5.77 cfs

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TABLE 14
SEDIMENT POND "D" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 7.64 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 9, 10 yr./24 hr.)	=	0.620 ac.ft.
5-	Sediment Storage Volume USLE - 0.192	=	0.192 ac.ft.
6-	Direct Precipitation into Pond 0.29 acres x 1.85" / 12 in./ft.	=	0.045 ac.ft.
7-	Total Required Pond Volume 0.620 + 0.192 + 0.045	=	0.857 ac.ft.
8-	Pond Volume at Principal Spillway	=	1.131 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	4.56 cfs

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TABLE 15
PERMANENT IMPOUNDMENT DESIGN

1-	Use 1.91" for 100 year - 6 hour event.		
2-	Disturbed Area Draining to Pond = 1.47 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 100 yr./6 hr.)	=	0.120 ac.ft.
5-	Undisturbed Watershed = 85.40 Acres		
6-	Weighted Runoff Curve Number - 65		
7-	Undisturbed Area Runoff (From Table 2, 100 yr/6 hr)	=	0.790 ac.ft.
8-	Direct Precipitation into Pond 0.76 acres x 1.91" / 12 in./ft.	=	0.121 ac.ft.
9-	Total Required Pond Volume 0.120 + 0.790 + 0.121	=	1.031 ac.ft.
10-	Pond Actual Volume	=	1.114 ac.ft.
11-	Peak Flow (100 year - 6 hour event)	=	4.41 cfs

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TABLE 16
DEPRESSION AREA DESIGN

1-	Use 1.91" for 100 year - 6 hour event.		
2-	Disturbed Area Draining to Pond = 6.43 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 100 yr./6 hr.)	=	0.550 ac.ft.
5-	Runoff from Permanent Impoundment	=	1.031 ac.ft.
6-	Direct Precipitation into Area 6.43 acres x 1.91" / 12 in./ft.	=	1.023 ac.ft.
7-	Total Required Volume 0.550 + 1.031 + 1.023	=	2.604 ac.ft.
8-	Actual Volume	=	4.990 ac.ft.

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TABLE 17
SEDIMENT POND "C"
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6127.0	2,870.5	0	0	Bottom of Pond
6130.0	18,075.7	0.721	0.721	
6131.5	-	0.700	1.421	Sediment Cleanout Level
6132.0	22,596.8	0.234	1.655	
6134.0	27,274.0	1.145	2.800	
6136.0	32,557.0	1.374	4.174	
6137.0	35,481.1	0.781	4.955	Principal Spillway
6138.0	38,405.1	0.848	5.803	Emergency Spillway
6140.0	45,286.6	1.921	7.724	Crest of Dam

TABLE 18
SEDIMENT POND "E"
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6139.0	3,522.3	0	0	Bottom of Pond
6140.0	6,112.8	0.111	0.111	
6140.5	6,514.7	0.073	0.184	Sediment Cleanout Level
6142.0	7,720.3	0.245	0.429	
6144.0	10,256.0	0.413	0.842	
6145.0	11,552.2	0.250	1.092	Principal Spillway
6146.0	12,848.3	0.280	1.372	Emergency Spillway
6148.0	15,515.4	0.651	2.023	Crest of Dam

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TABLE 19
SEDIMENT POND "F"
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6166.0	2,811.6	0	0	Bottom of Pond
6168.0	4,180.9	0.161	0.161	Sediment Cleanout Level
6170.0	5,682.4	0.226	0.387	
6172.0	7,404.1	0.300	0.687	
6173.0	8,414.3	0.182	0.869	Principal Spillway
6174.0	9,424.5	0.204	1.073	Emergency Spillway
6176.0	11,497.2	0.480	1.553	Crest of Dam

TABLE 20
SEDIMENT POND "G"
STAGE VOLUME DATA (PROPOSED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6120.0	9,451.9	0	0	Bottom of Pond
6121.2	10,495.9	0.275	0.275	60% Sediment Cleanout Level
6122.0	11,191.9	0.199	0.474	Maximum Sediment Level
6124.0	13,054.7	0.557	1.031	
6125.0	14,048.0	0.311	1.342	Principal Spillway
6126.0	15,041.0	0.334	1.676	Emergency Spillway
6128.0	17,151.8	0.739	2.415	Crest of Dam

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TABLE 21
SEDIMENT POND "A"
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6142.0	9,003.8	0	0	Bottom of Pond
6144.0	13,714.8	0.522	0.522	
6146.0	19,531.8	0.763	1.285	Sediment Cleanout Level
6148.0	25,889.5	1.043	2.328	
6149.0	30,216.6	0.644	2.972	Principal Spillway
6150.0	34,543.7	0.743	3.715	Emergency Spillway
6152.0	45,662.9	1.841	5.556	Crest of Dam

TABLE 22
SEDIMENT POND "D"
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6132.0	605.3	0	0	Bottom of Pond
6134.0	4,812.1	0.124	0.124	
6135.0	6,350.3	0.128	0.252	Sediment Cleanout Level
6136.0	7,888.5	0.164	0.416	
6138.0	11,213.8	0.438	0.854	
6139.0	12,942.0	0.277	1.131	Principal Spillway
6140.0	14,670.1	0.317	1.448	Emergency Spillway
6142.0	18,552.8	0.763	2.211	Crest of Dam

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TABLE 23
PERMANENT IMPOUNDMENT
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6192.0	571.8	0	0	Bottom of Upper Cell
6194.0	5,714.4	0.144	0.144	
6195.8	8,472.6	0.293	0.437	Principal Spillway
6196.3	9,238.7	0.102	0.539	Emergency Spillway
6183.5	9,148.3	0.000	0.437	Bottom of Lower Cell
6185.8	16,486.7	0.677	1.114	Overflow - Lower Cell

TABLE 24
DEPRESSION AREA
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6172.0	16,674.8	0	0	Bottom
6174.0	33,854.8	1.160	1.160	
6176.0	132,985.0	3.830	4.990	Maximum Water Level
6178.0	152,100.6	6.544	11.534	Track Level

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TABLE 25
IMPOUNDMENT
DISCHARGE DATA

IMPOUNDMENT POND	SPILLWAY	TYPE SIZE	25/6 FLOW (cfs)	FLOW DEPTH (ft)	REMARKS
C	Principal	18" cmp	11.30	1.17 (78% full)	Existing
C	Emergency	18" cmp	11.30	1.17 (78% full)	Existing
E	Principal	18" cmp	5.77	0.74 (49% full)	Existing
E	Emergency	Open Channel	5.77	0.47	Existing
F	Principal	12" cmp	2.89	0.63 (63% full)	Existing
F	Emergency	Open Channel	2.89	0.31	Existing
G	Principal	24" cmp	4.01	0.54 (27% full)	Proposed
G	Emergency	24" cmp	4.01	0.54 (27% full)	Proposed
A	Principal	18" cmp	5.47	0.74 (49% full)	Existing
A	Emergency	Open Channel	5.47	0.47	Existing
D	Principal	24" cmp	4.56	0.65 (43% full)	Existing
D	Emergency	24" cmp	4.56	0.65 (43% full)	Existing
PI	Principal	18" cmp	*4.48	0.64 (43% full)	Existing
PI	Emergency	18" cmp	*4.48	0.64 (43% full)	Existing

Notes:

1) **Culverts are calculated on 3 % slope.**
2) **Open-Channel spillways are 5' wide x 1' deep with 2:1 side slopes. (See Table 26)**
3) **Depression Area has no overflow.**

*** 100 year/6 hr. Flow.**

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TABLE 26
SEDIMENT PONDS A, E AND F
OPEN-CHANNEL SPILLWAY
STAGE DISCHARGE DATA

STAGE (ft.)	DISCHARGE (cfs)
0.00	0.00
0.20	1.49
0.31	**2.99
0.47	*5.91
0.60	8.90
0.80	14.58
1.00	21.61

Notes: * 25 year - 6 hour Peak Flow from Ponds A and E = 5.77 cfs.
Flow will pass through spillway at a depth of 0.47'.

** 25 year - 6 hour Peak Flow from Pond F = 2.89 cfs.
Flow will pass through spillway at a depth of 0.31'.

Calculations based on Broad Crested Weir Formula

$$Q = 3.087\ bH^{1.5};\ \text{Where } b = \text{Average Width} = \frac{5 + (5 + 4d)}{2}$$

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3.4 Sediment Pond Summary

a) The Sediment ponds have been designed to contain the disturbed area (and contributing undisturbed area) runoff from a 10 year - 24 hour precipitation event, along with 3 years of sediment storage capacity. The Permanent Impoundment and Depression Area are sized to contain the runoff from a 100 year - 6 hour precipitation event. Runoff to the ponds will be directed by various ditches and culverts as described in the plan.

b) There will be a total of 6 sediment ponds and 2 additional impoundments on this site. Existing Sediment Pond B will be eliminated and replaced with new pond G. Existing sediment ponds A, C, D, E and F, as well as the Permanent Impoundment and Depression Area will not be changed.

c) The ponds will meet a theoretical detention time of 24 hours. All sediment ponds are fitted with a combination of principal and emergency overflows sized to carry the runoff from a 25 year - 6 hour precipitation event. The Permanent Impoundment overflows are sized to carry runoff from a 100 year-6 hour event. Any discharge from the ponds will be in accordance with the approved UPDES Permit.

d) The pond inlets are protected from erosion. The principal spillways, and emergency spillways will also be protected from erosion by the use of culverts, rip-rap and/or belting.

e) The Permanent Impoundment and Depression Area are to be left in place.

f) The ponds have/will be constructed according to the design criteria listed under "Construction Specifications for Sedimentation Ponds".

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DESIGN OF DRAINAGE CONTROL STRUCTURES
FOR
RECLAMATION HYDROLOGY

Reclamation Hydrology

4.1 General
4.2 Reclaimed Area Drainage Control
4.3 Restored Channels
4.4 Sediment Ponds

Table 27 Final Reclamation - Drainage Areas Contributing to Channels
Table 28 Final Reclamation - Drainage Structure Flow Summary
Table 29 Final Reclamation - Restored Channel Design Parameters
Table 30 Final Reclamation - Restored Channel Flow Calculations

Figure 4 Restored Channel, Typical Sections

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Reclamation Hydrology

4.1 General

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.

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 requirement of DOGM and the landowner, BLM.

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

Undisturbed Diversion UD-2 will remain in place, since it was installed prior to the operation, and has been shown to be adequate to carry a 100 year, 6 hour precipitation event.

As described in the following section, all sediment ponds will be removed during final reclamation, and recontoured as shown on Plate 9.

As sediment ponds are removed, any contaminated material will be hauled off to an approved disposal site. The 2-celled Permanent Impoundment will be left in place for wildlife enhancement, and the Depression Area will also remain as a final containment for runoff which was never planned to drain under the pre-existing Utah Railway.

Reclaimed channels are noted with an RC-Numer (i.e. RC-2). Channels are shown on Plate 9, "Final Reclamation Contours, Phase 2".

A typical channel cross-section for each reclaimed channel is shown on Figure 4. Calculated flows for the applicable storm event were then routed through the channels to determine if reclaimed channel sizes were adequate for the design flows. (See Table 30). In all cases, the channels were adequately sized to safely carry the contributing area runoff.

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4.2 Reclaimed Area Drainage Control

During final reclamation, all previously installed drainage controls, including the sediment ponds, will be removed. The reclaimed area will be roughened by discontinuous tilling and/or "gouging" the area with a trackhoe bucket. The roughening will create furrows or depressions at approximately 18" deep throughout the reclaimed area. In addition, straw or wood mulch will be used in final seeding of the area. Roughening will continue to the reclaimed channel banks, and the entire reclaimed area, including channels, will be reseeded according to the approved plan.

Prior to removal of the sediment ponds, a series of 3 silt fences will be installed across the main drainage channel below the pond area, as shown on Plate 9. These silt fences will remain as final treatment for runoff from the reclaimed site until Phase II Bond Release requirements are met. These are, however, only secondary sediment controls. The primary sediment control from the reclaimed site will be extensive roughening/gouging, use of mulch and revegetation.

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4.3 Restored Channels

The restored channels will have a bottom width of approximately 2' - 4' with 2h : 1v side slopes, as shown on Table 29.

The restored channel sizes were checked for adequacy to carry runoff from a 100 year - 6 hour storm event. As shown on Table 30, all channels are adequately sized to carry the projected runoff with at least 0.5' of freeboard. See Figure 4 for a typical section of the reclaimed channels and summary of flow depths and velocities.

4.4 Sediment Ponds

As discussed in Section 4.1, the sediment ponds will be removed during final reclamation. Prior to removal of the pond, a series of 3 silt fences will be placed across the main canyon channel below the pond. Sediment control for the reclamation will be accomplished by extensive roughening/gouging and revegetation of the reclaimed area and installation of sediment traps in the restored channels. The silt fences will act as secondary, final sediment controls. These fences will be maintained until Phase II Bond Release. See Plate 9 "Final Reclamation Contours, Phase 2" for location and reclamation details.

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TABLE 27
FINAL RECLAMATION
DRAINAGE AREAS CONTRIBUTING TO CHANNELS

RECLAIMED CHANNEL	DRAINAGE AREAS
RD-1	DA-30, DA-31, DA-32, DA-38
RD-2	DA-19, DA-20, DA-21, DA-22, DA-23, DA-24, ½DA-16, ½DA-17
RD-3	1/4 DA-16
RD-4	DA-11, ½DA-12, DA-14, DA-9, ½DA-17, 1/4 DA-16, DA-18
RD-5	1/3 DA-35, DA-36, DA-1, DA-2, DA-3, DA-4, DA-5, DA-6, DA-7, DA-8, ½ DA-12, DA-13, DA-15

Refer to Plate 2A for drainage areas and Plate 9 for reclamation channels.

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TABLE 28
FINAL RECLAMATION
DRAINAGE STRUCTURE FLOW SUMMARY

Channel	100/6 cfs
RC-1	5.08
RC-2	17.97
RC-3	0.71
RC-4	15.04
RC-5	13.16

Flows from Table 2.

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TABLE 29
FINAL RECLAMATION
RESTORED CHANNEL DESIGN PARAMETERS

Channel	Bottom Width (ft.)	Side Slope H:V	Slope %	Reclaimed Depth (ft.)	Manning's No.
RC-1	3	2:1	3.33	1.5	0.035
RC-2	4	2:1	4.17	1.5	0.035
RC-3	2	2:1	6.15	1.5	0.035
RC-4	4	2:1	4.14	1.5	0.035
RC-5	4	2:1	4.67	1.5	0.035

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TABLE 30
FINAL RECLAMATION
RESTORED CHANNEL FLOW CALCULATIONS

Channel	RC-1	RC-2	RC-3	RC-4	RC-5
100 yr - 6 hr event (in.)	1.91	1.91	1.91	1.91	1.91
Peak Flow (cfs)	5.08	17.97	0.71	15.04	13.16
Velocity (fps)	3.53	5.38	2.46	5.09	5.08
Req'd Area ($ft.^2$)	1.44	3.33	0.29	2.96	2.59
Flow Depth (ft.)	0.38	0.63	0.13	0.57	0.51

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APPENDIX 1

COMPUTER BACKUP

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ADDENDUM TO APPENDIX R
SEDIMENT POND B

PROFESSIONAL ENGINEER
No. 22-158267-2203
J. THOMAS PALUSO
2/9/12
STATE OF UTAH

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Design Parameters

Precipitation

The sedimentation pond was designed to contain the runoff of a 10 year – 24 hour event of 1.85" as required by the Division. The precipitation frequency valve was obtained from Section 2.1 of Appendix R – Wildcat Loadout Sedimentation and Drainage Control Plan.

Flow

Peak flows and runoff volumes were calculated using the computer program "SEDCAD 4 for Windows by Civil Software Design". All flows are based on the NRCS Method for Type II storms.

Drainage Area

The drainage area was determined by using a Placom Digital Planimeter KP-80N directly from Wildcat Loadout Existing Surface Map Plate 1.

Table 1

Acres	Hydraulic Length	High Elevation	Low Elevation	Change Elevation	Slope %	Runoff CN
3.04	178	6154	6140	14	7.87	92

Slope Lengths

All slopes and hydraulic lengths were measured directly from the topography on Plate 1.

Runoff

Runoff was calculated using the NRCS Method for Type II storms. Runoff for a 10 year – 24 hour storm event with precipitation frequency of 1.85" was peak flow of 1.39 cfs and runoff volume of 0.28 ac.-ft.

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Runoff Curve Number

SEDCAD does not have a curve number of 90; therefore a more conservative curve number of 92 was substituted. The curve number is for 85% impervious material under a Group B soil type as used in Appendix R.

Direct Precipitation into Pond

The following formula is used to calculate the amount of precipitation falling directly into the pond:

V = 0.18 acres x 1.85" ÷ 12 in/ft. = 0.002 ac.-ft.

Sediment Yield Capacity

The Universal Soil Loss Equation (USLE) was used to estimate sediment yield from the drainage area. All soil loss from the area was assumed to be delivered to and deposited in the sedimentation pond.

Erosion rate (A) in ton/acre/year is determined using USLE as follows"

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

Where the variable R, K, LS and CP are defined as follows:

Variable "R" is the rainfall factor which can be estimated $R=27(P_{2,6})^{2.2}$; where $P_{2,6}$ is the 2 year – 6 hour precipitation valve. P for Gordon Creek area is 0.85" as shown in Section 2.1 of Appendix R. Therefore, the estimated value of "R" for this area is 18.88.

Variable "K" is the soil erodibility factor. The conservative estimate for "K" is 0.5.

Variable "LS" is the length slope factor. This figure was determined by applying the slope length and percentage for the drainage area to the chart Figure 5.5, page 334, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1985. The estimated value for "LS" for this area is 1.15.

Variable "CP" is control practice factor, which is divided into a cover and practice factor. The "CP" value used to calculate erosion rate is 1.20.

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The sediment volume is based on a density of 100 lbs./cu.ft. from Appendix R.

A = (R) (K) (LS) (CP)
(18.88) (0.5) (1.15) (1.20)
13.03 ton/acre/year

A = 13.03 ton/acre/year (3.04 acres)
39.61 ton/year

A = 39.61 ton/year x 2000 lb./ton ÷ 100 lb./cu. ft.
792.05 cu. ft. ÷ 43,560 cu. ft./ac.-ft.
0.02 ac.-ft./year

The storage volume for sediment for three years would be 0.06 ac.-ft.

Sediment Pond Volume

The sediment pond volume was determined using 10 year – 24 hour storm event. The disturbed area draining to the pond is 3.04 acres and using a curve number of 92, the disturbed runoff is 0.28 ac.-ft. The sediment capacity required for the pond is 0.29 ac.-ft. The precipitation falling directly into the pond is 0.002 ac.-ft.

Required pond capacity is as follows:

T = 0.28 ac.-ft. + 0.29 ac.-ft. + 0.002 ac.-ft.
0.572 ac.-ft.

The actual pond capacity at the principal spillway, elevation 6138 feet, is 0. 573 ac.-ft.

Spillway Description

Sediment Pond B has a 12" CMP principal spillway. The emergency spillway is a rock lined, approximately ten (10') wide, broad crested weir. Refer to the attached drawing for the location of these two structures.

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SEDCAD CALCULATIONS

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WILDCAT LOADOUT SEDIMENT POND "B"

Tom Paluso

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General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	1.850 inches

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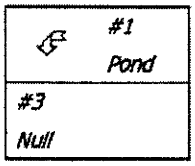
Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#3	0.017	0.311	
Null	#3	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	7.87	14.00	178.00	2.80	0.017
#1	**Muskingum K:**					**0.017**

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Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	In	3.040	3.040	3.39	0.28
	Out			1.39	0.28
#3		0.000	3.040	1.39	0.28

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Structure Detail:

Structure #1 (Pond)

Pond Inputs:

Initial Pool Elev:	6,138.00 ft
Initial Pool:	0.57 ac-ft

Broad-crested Weir

Weir Width (ft)	Spillway Elev (ft)
10.00	6,139.00

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
12.00	20.00	66.00	0.0240	6,138.00	0.90	1.00

Pond Results:

Peak Elevation:	6,138.74 ft
Dewater Time:	0.61 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,130.00	0.010	0.000	0.000	
6,130.50	0.017	0.007	0.000	
6,131.00	0.026	0.017	0.000	
6,131.50	0.037	0.033	0.000	
6,132.00	0.050	0.055	0.000	
6,132.50	0.055	0.081	0.000	
6,133.00	0.060	0.110	0.000	
6,133.50	0.065	0.141	0.000	
6,134.00	0.070	0.174	0.000	
6,134.50	0.077	0.211	0.000	
6,135.00	0.084	0.251	0.000	

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Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
6,135.50	0.092	0.295	0.000		
6,136.00	0.100	0.343	0.000		
6,136.50	0.107	0.395	0.000		
6,137.00	0.115	0.451	0.000		
6,137.50	0.122	0.510	0.000		
6,138.00	0.130	0.573	0.000		Spillway #2
6,138.50	0.142	0.641	0.751	13.85	
6,138.74	0.148	0.676	1.387	0.80	Peak Stage
6,139.00	0.154	0.715	2.094		Spillway #1
6,139.50	0.167	0.795	14.358		
6,140.00	0.180	0.881	35.284		

Detailed Discharge Table

Elevation (ft)	Broad-crested Weir (cfs)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
6,130.00	0.000	0.000	0.000
6,130.50	0.000	0.000	0.000
6,131.00	0.000	0.000	0.000
6,131.50	0.000	0.000	0.000
6,132.00	0.000	0.000	0.000
6,132.50	0.000	0.000	0.000
6,133.00	0.000	0.000	0.000
6,133.50	0.000	0.000	0.000
6,134.00	0.000	0.000	0.000
6,134.50	0.000	0.000	0.000
6,135.00	0.000	0.000	0.000
6,135.50	0.000	0.000	0.000
6,136.00	0.000	0.000	0.000
6,136.50	0.000	0.000	0.000
6,137.00	0.000	0.000	0.000
6,137.50	0.000	0.000	0.000
6,138.00	0.000	0.000	0.000
6,138.50	0.000	(4)>0.751	0.751
6,139.00	0.000	(4)>2.094	2.094
6,139.50	10.914	(8)>3.443	14.358
6,140.00	30.870	(8)>4.414	35.284

Structure #3 (Null)

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Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	3.040	0.017	0.017	0.311	92.000	F	3.39	0.279
	Σ	**3.040**						**3.39**	**0.279**
#3	Σ	**3.040**						**1.39**	**0.279**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	7.87	14.00	178.00	2.800	0.017
#1	**1**	**Time of Concentration:**					**0.017**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	7.87	14.00	178.00	2.800	0.017
#1	**1**	**Muskingum K:**					**0.017**

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SEDIMENT POND B STAGE-VOLUME CURVE

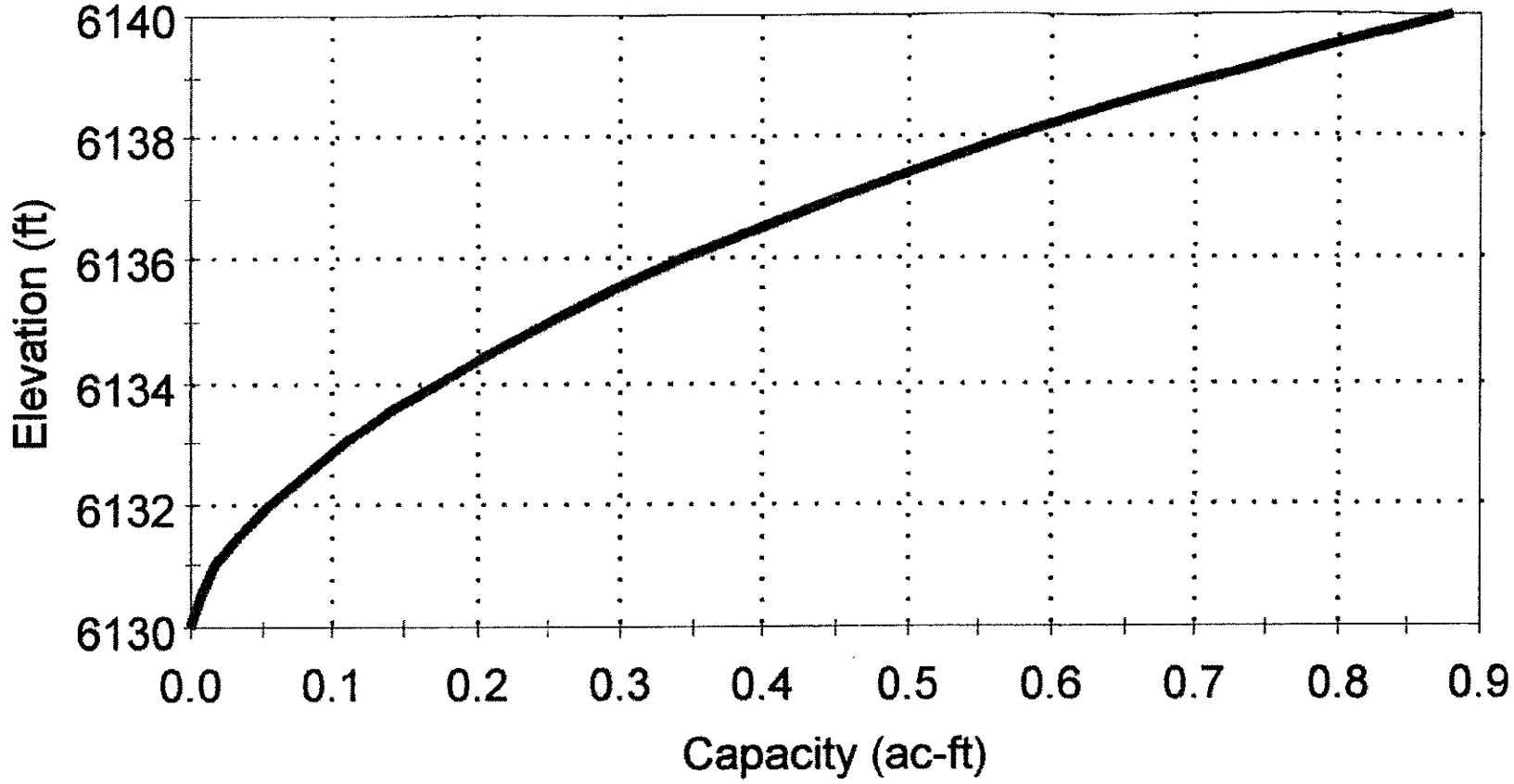

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PLATE 3B
SEDIMENT POND B

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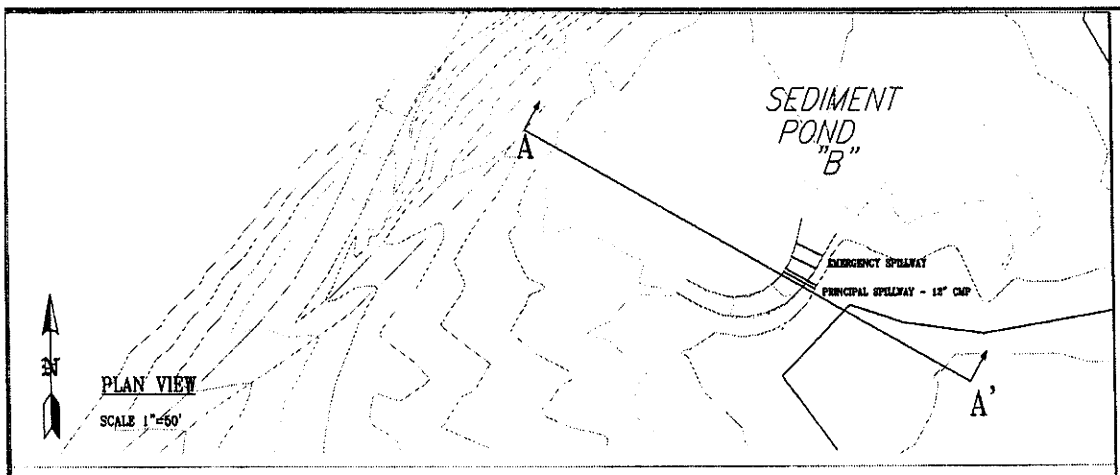
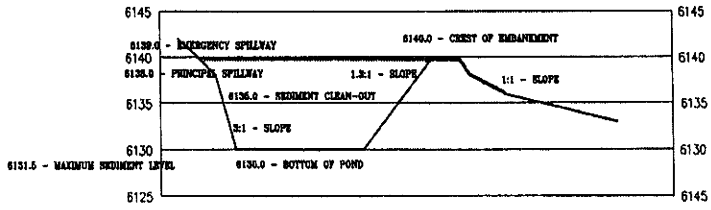


PLAN VIEW

SCALE 1"=50'



SECTION A-A'

VERTICAL EXAGGERATER

HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=10'

STAGE VOLUME

SEDIMENT POND "B"

ITEM	ELEVATION	VOLUME (Ac. Ft.)
CREST OF EMBANKMENT	6140.0	0.881
EMERGENCY SPILLWAY	6139.0	0.715
PRINCIPAL SPILLWAY	6138.0	0.537
SEDIMENT CLEANOUT LEVEL	6135.0	0.29
POND BOTTOM	6130.0	0

VOLUME:

REQUIRED: 0.572 Ac. Ft.
DESIGNED: 0.573 Ac. Ft.

INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT
SEDIMENT POND "B"

REVISION NUMBER	SCALE: AS SHOWN
DATE: FEBRUARY 2012	PLATE 3B

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Demolition Costs

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Remove PR-5 Road Surface					570	19	1.5		10830	602 CY					SF				
	Remove Gravel / Road Base	Pavement Removal Rate 4"-6"	02-41-13.17-5050	$8.60	SY	570	19	1.5			1203					SY				10349
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			10349
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs	FEL 3 CY	31 23 16 42 1601	1.06	CY						602					CY	1.2	722		765
	Transport Costs	12 CY (16 TON)Dump Truck 1/2 mi.rd.trip	31 23 23 20 1014	2.9	CY												722	CY		2094
	Disposal Costs	On Site Disposal Pond A backfill		0							722					CY	722	CY		0
	Subtotal																			2814
	Equipment Rental	Motor Grader / CAT 140G	NELCO 2010	108	HR									1 DAY	8	HR		60	15CPD	864
		FEL 3 CY	01 54 33 20 4710	472.4	DA									4 DAYS	32	HR		472.4		1890
		12 CY (16 TON)Dump Truck 1/2 mi.rd.trip	01 54 33 20 5300	718.44	DA									4 DAYS	32	HR		718.44		2874
	Subtotal																			5628
	LABOR																			
	EQHV Grader / Cat 140 G	2011 RS MEANS		69.45	HR										8	HR				556
	EQMD FEL 3 CY	2011 RS MEANS		67.75	HR										32	HR				2168
	16 TON TRUCK / TRHV	2011 RS MEANS		52.25	HR										32	HR				1672
	Subtotal																			4396
	Subtotal																			
	Total																			23187

1) Assume 8 hours per workday
2) Assume 15 Truck loads hauled per day at 32 minutes per trip (4 cycles per load)

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