SAVAGE

SAVAGE COAL TERMINAL

PROCESSING AND LOADOUT FACILITY MINING AND RECLAMATION PLAN

VOLUME 1

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Volume 1 & 2.

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Savage Services Corporation
Savage Coal Terminal
C/007/022

Chapter 1

General Contents

R645-301-100

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R645-301. Coal Mine Permitting: Permit Application Requirements.

R645-301-100. General Contents.

112. Identification of Interests.

112.100. The applicant is a Utah Corporation.

112.210. The permit applicant name, address, telephone number and employer I. D. Number is:

Savage Services Corporation
6340 South 3000 East, Suite 600
Salt Lake City, Utah 84121
(801) 944-6600
Employer I.D. #87-0237425

112.220. The applicant's resident agent is:

H. Benson Lewis
6340 South 3000 East, Suite 600
Salt Lake City, Utah 84121
(801) 944-6600

112.230. The abandoned mine land reclamation fee will be paid by Savage Services Corporation.

Savage Services Corporation
6340 South 3000 East, Suite 600
Salt Lake City, Utah 84121
(801) 944-6600
Employer I.D. #87-0237425

112.300. All stock is owned by:

Savage Companies
6340 South 3000 East, Suite 600
Salt Lake City, Utah 84121
(A Utah Corporation)
Employer I.D. #87-0387049

112.310. Officers and Directors of the Applicant.

The names and addresses of every officer, partner, director, or other person performing a function similar to a director of the applicant:

SAVAGE SERVICES CORPORATION

Corporation: Savage Services Corporation
Type of Entity: Utah Corporation
Date of Formation: June 22, 1959

Shareholder: Savage Companies

Officers and Directors for Savage Services Corporation:

Directors:		Date:
Allen B. Alexander	Chairman	05/15/78
Neal Savage	Vice Chairman	06/22/59
John K. Savage	Director	01/01/70
H. Benson Lewis	Director	08/01/85

Officers:		Date:
Allen B. Alexander	President and CEO	05/15/78
H. Benson Lewis	Exec. VP and Vice Chairman	08/01/85
David G. Wolach	Exec. VP	04/29/87
Todd L. Savage	Exec. VP	09/23/76
Kelly J. Flint	Sr. VP, Secretary; Gen. Counsel	01/01/03; 06/01/08
Curtis C. Dowd	Sr. Vice President, CFO	08/30/04
Gary L. Plant	Sr. Vice President	02/20/04
C. Fred Busch	Sr. Vice President	01/16/85
Howard F. Goodman	Sr. Vice President	05/01/84
John K. Savage	Sr. Vice President	01/01/70
Donald W. Alexander	Sr. Vice President	02/01/83
Kim F. Christensen	Sr. Vice President	04/30/86
Charles O. Monroe	Sr. Vice President	06/23/94
Kenneth W. Cooper	Sr. Vice President	10/28/85
Kenneth D. Ellzey	Sr. Vice President	09/01/88
Eric B. Adamson	Sr. Vice President	05/10/76
Nathan N. Savage	Sr. Vice President	06/02/86
Jeff M. Chesler	Sr. Vice President	01/02/91
Terrence Savage	Sr. Vice President	06/02/80
M. Troy Savage	Sr. Vice President	06/05/85
Jack M. Cohn	Sr. Vice President	07/17/89
Ellis Edwards	Sr. Vice President	11/24/75

Raymond Alt	Sr. Vice President	07/31/73
Boyd E. Draper	Sr. Vice President	01/18/82
Troy Reid	Vice President	06/15/91
Mark Wehmanen	Vice President	01/15/96
Tad A. Kock	Vice President	09/16/86
David L. Harris	Vice President	08/04/99
Jose L. Fernandez	Vice President	09/19/94
Jerry Evenson	Vice President	01/16/98
C. Scott Smith	Vice President	08/01/97
Debbie Rhodes	Vice President	09/08/83
Brad Crist	Vice President	03/11/02
Gerald Farrell	Vice President	10/01/06
Carin Crowe	Vice President	08/26/02
Rob Davidson	Vice President	06/07/88
Sharon Broadwater	Vice President	10/30/06
Jason Ray	Vice President	05/01/05
Mike Miller	Vice President	08/20/01
Kent Avery	Vice President	04/23/08
Amy Poulson	Assistant Secretary	12/01/07

SAVAGE COMPANIES

Type of Entity: Utah Corporation
Date of Formation: October 2, 1970

Shareholders:

Class A (voting):

LaRae T. Savage Q-Tip Marital Trust	
Neal Savage	06/01/57
Estate of Luke Savage	06/01/57

Class C (voting):

Allen B. Alexander	33.3%	05/15/78
H. Benson Lewis	33.3%	08/01/85
James T. Jensen	33.3%	07/01/90

Officers and Directors for Savage Companies:

Directors:		Date:
Allen B. Alexander	Chairman	05/15/78
Neal Savage	Vice Chairman	06/22/59
H. Benson Lewis	Vice Chairman	08/01/85
James T. Jensen	Director	07/01/90

David G. Wolach	Director	04/29/87
Todd L. Savage	Director	09/23/76
John K. Savage	Director	01/01/70
Howard F. Goodman	Director	05/01/84
Donald W. Alexander	Director	02/01/83
Nathan N. Savage	Director	06/02/86

Officers:		Date:
Allen B. Alexander	President and CEO	05/15/78
H. Benson Lewis	Exec. VP and Vice Chairman	08/01/85
David G. Wolach	Exec. VP	04/29/87
Todd L. Savage	Exec. VP	09/23/76
Donald W. Alexander	Sr. Vice President	02/01/83
John K. Savage	Sr. Vice President	01/01/70
Kelly J. Flint	Sr. VP, Gen. Counsel, Secretary	01/01/03
Howard F. Goodman	Sr. Vice President	05/01/94
Curtis C. Dowd	Sr. Vice President, CFO	08/30/04
Nathan N. Savage	Sr. Vice President	06/02/86
Tad A. Koch	Vice President	09/16/86
David L. Harris	Vice President and Controller	08/04/99
C. Scott Smith	Vice President	08/01/97
Sharon Broadwater	Vice President	10/30/06
Amy Poulson	Assistant Secretary	12/01/07

Previous officers and end dates:

Isaac Haboucha	05/08/08
Butch Jentzsch	12/31/07
Kevin R. Haugh	02/01/08
Mark Andrew Nelson	02/15/06

112.320. All stock is owned by The Savage Companies (see Section 112.300).

112.330. See Section 112.310.

112.340. N/A - None.

112.350. N/A - There are no other coal mine operation permits in the name of Savage Services Corporation.

112.400. (See Section 112.340)

112.500. The owner of the surface and coal is:

Savage Services Corporation
6340 South 3000 East, Suite 600
Salt Lake City, Utah 84121

112.600. See Plate 1-1 for owners of record, and Table 1-1 for details and addresses.

112.700. The MSHA numbers for all mine-associated structures are:

Mine Name: Savage Coal Terminal.
MSHA I.D. # 42-01444
(See also Appendix 1-2 for MSHA Refuse Pile Numbers).

Please note the appendix 1-2 shows 2 refuse permits. The temporary permit was terminated on 3/19/81. The permanent permit was reassigned a new MSHA ID# on 08/10/00.

112.800. N/A - None.

112.900. When notified the application is approved, but before the permit is issued, the applicant shall, as applicable, update, correct or indicate that no change has occurred in the information previously submitted under R645-301-112.100 through R645-301-112.800.

113. Violation Information

113.110. The applicant has not had a federal or state permit to conduct coal mining and reclamation operations suspended or revoked in the last 5 years.

113.120. The applicant has not forfeited a performance bond or similar security deposited in lieu of bond.

113.200. N/A

113.300. A list of all notices of violation received by the applicant in the past 3 years for violations pertaining to air or water environmental protection is included in Appendix 1-1.

113.310. See Appendix 1-1.

113.320. See Appendix 1-1.

113.330. See Appendix 1-1.

113.340. See Appendix 1-1.

113.350. See Appendix 1-1.

113.400. After the applicant is notified that the application is approved, but before the permit is issued, the applicant shall, as applicable, update, correct or indicate that no change has occurred in the information previously submitted under R645-301-113.

114. Right of Entry Information.

General:

Utah Power & Light originally leased the site for coal loading operations because of its proximity to the Denver and Rio Grande Western (D&RGW) railroad siding. Swisher Coal Company purchased the SW ½ of Section 11 for the purpose of developing a preparation and loadout facility for unit coal trains. Original UP&L disturbance occurred in 1975. Expansion activities by Swisher Coal Company were conducted between October 1977 and April 1978. The site was purchased by ARCO Coal (Atlantic Richfield Co.) In 1980. The local company name was changed from Swisher Coal Company to Beaver Creek Coal Company. The Utah and Colorado coal operations (including Beaver Creek Coal Co.) were placed under a subsidiary company of ARCO Coal, known as Mountain Coal Co. The coal terminal was sold to Savage Industries, Inc. (now Savage Services Corporation) in 1995, by the parent company of Beaver Creek Coal - Mountain Coal Company. The facility name formerly Castle Valley Spur or C.V. Spur was then changed to Savage Coal Terminal, in 1999.

114.100. A description of the documents upon which the applicant bases its legal right to enter and begin underground coal activities in the permit area and whether the rights are the subject of pending litigation.

Documents Establishing Legal Right to Enter

It should be noted that wherever right-of-entry documents name Swisher Coal Company or Beaver Creek Coal Company, these documents have been transferred and filed with the County Recorder in the name of Savage Services Corporation.

Plate 1-1 shows the boundaries of lands within the proposed permit area upon which the applicant has the legal right to enter and conduct coal operations. The documents which give applicant the legal right to enter, commence and maintain coal preparation and load-out activities in the permit area are as follows:

1. Special Warranty Deed dated November 11, 1977 from Utah Power & Light Company, grantor, to Swisher Coal Company (later Beaver Creek Coal Company), grantee, covering all the surface and part of the minerals of the following described lands:

   Township 15 South, Range 10 East, SLBM

   Section 11: SW 1/4, expecting therefrom the most Easterly 100 feet thereof.

2. Lease, granted for the purposes of railroad trackage and coal loading facilities, dated January 15, 1981, from The Denver and Rio Grande Western Railroad Company, lessor, to Beaver Creek Coal Company, lessee, covering the surface of the following described lands:

   Township 15 South, Range 10 East, SLBM

   A rectangle tract of lessor's land near Price, Utah, being the Westerly 42.5 feet of lessor's right-of-way from Engr. Sta. 91 plus 70 to Engr. Sta. 132 plus 70 of lessor's Castle Valley Spur.

3. Trackage agreement, dated January 22, 1974, between The Denver and Rio Grande Western Railroad and Utah Power & Light Company providing for construction and operation of trackage between Station 90 + 20 and Station 134 + 20 off the main track of Castle Valley Spur. With the consent of The Denver and Rio Grande Western Railroad Company, said agreement was assigned to Swisher Coal Company (later Beaver Creek Coal Company) on February 27, 1978.

4. Letter agreement, dated January 17, 1978, between R. D. & Peggy Campbell and Swisher Coal Co. (later Beaver Creek Coal Company) wherein Campbells grant a 20-foot right-of-way for water pipelines over and across their land in Sections 2 and 11, Township 15 South, Range 10 East, between the Price River and Beaver Creek Coal Company's coal preparation and loadout facilities in the SW ¼ of Section 11, Township 15 South, Range 10 East.

5. Right-Of-Way Agreement, dated January 1, 1978, between David and Mildred Cave and Judson D. and Cherie Critchlow, grantors, and Swisher Coal Co. (later Beaver Creek Coal Company), grantee wherein Cave and Critchlow grant a 20-foot right-of-way for water pipelines over and across their property in Section 2, Township 15 South, Range 10 East, together with the right to build a pumphouse thereon.

6. Approved Change of Diversion Application No. 1308, covering 357 acre-feet of water for industrial use in the coal preparation plant.

7. Lease Agreement with Option to Purchase between Mountain Coal Company and Savage Industries, Inc. September 9, 1994. Site purchased December 9, 1997 by Savage Industries, Inc. (See Appendix 1-5).

8. Name change from Savage Industries, Inc. to Savage Service Corporation, June 22, 2003, filed with the Department of Commerce.

<u>Pending Litigation:</u>
None.

<u>Surface Mining Rights:</u>
The surface operations associated with coal processing and loadout activities do not involve the surface mining of coal. No private coal mineral estate is to be severed from the property during the term of this permit.

114.200. N/A - This is a coal processing and loadout facility. There are no plans for mining of coal.

114.300. Nothing given under R645-301-114.100 through R645-301-114.200 will be construed to provide the Division with the authority to adjudicate property rights disputes.

115. Status of Unsuitability Claims.

115.100. Areas Designated Unsuitable for Mining

The proposed permit area is not within an area designated unsuitable for the surface effects of underground coal mine activities under the R645 regulations. Neither is the proposed permit area under study for designation in an administrative proceeding initiated under renewable resource lands and would not result in substantial losses of food fiber, or water supply. The permit area contains no prime farmland or merchandisable timber. Mining would not affect natural hazard lands and thereby endanger life and property. It contains no cemeteries, no national trails, no wild and scenic rivers, no wilderness or wilderness study areas, and no sufficient harvestable forest cover.

115.200. Exemption

The applicant does not claim exemption.

115.300. Dwellings

There are no occupied dwellings within ¼ mile of the proposed permit area.

The operations are within 100' of a public road which provides access to the site.

This has been approved under the existing permit.

116. Permit Term

116.100. Surface Acres Affected

The number of surface acres to be disturbed by the operation is 153.46 acres. There are no plans for additional surface disturbance for this operation at this time.

The permit area is described as follows:

Township 15 South, Range 10 East, Salt Lake Base & Meridian.

Section 11: W1/2 SW1/4 except 0.24 ac. in the NW corner and 5.42 ac. in the SW corner;
E1/2 SW1/4 except East 100'.

Also included in the permit area is a 20' Right-of-Way for a pipeline across the SE¼ NW¼ and NW¼ NW¼ of Section 11 (1.21 acres), and across the SW¼ SW¼, NW¼ SW¼, SW¼ NW¼ and NE¼ NW¼ of Section 2 (3.97 acres). This area is located on the "Price Quadrangle", U.S. Geological Survey 7.5 minute map.

Horizontal Extent of Underground Workings - N/A

All 153.46 acres of the permit area may be affected by surface activities.

Vertical Extent of Workings - N/A

This permit will be for a period of 5 years. The permit is expected to be renewed at 5-year intervals throughout the life of the property.

116.200. N/A - The initial permit term is <u>not</u> requested for more than 5 years.

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

117.100. A Certificate of Liability Insurance is included in Chapter 8, Appendix 8-3.

117.200. A copy of the newspaper advertisement for renewal of this permit is included in Appendix 1-3.

117.300. N/A

118. Filing Fee.

A filing fee of $5.00 has been submitted to the Division with this application.

120. Permit Application Format and Contents.

121. The Permit Application:

121.100. The permit application contains current information.

121.200. The permit application is intended to be clear and concise.

121.300. This application is filed in the format required by the Division.

122. All reference materials used in this application have been provided in the permit, or are readily available to the division.

123. A notarized statement is included in Appendix 1-5.

130. Reporting of Technical Data

131. All technical data submitted in the permit application is accompanied by the names of persons or organizations that collected and analyzed the data, dates of collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data.

132. Technical analyses will be planned by or under the direction of a professional qualified in the subject to be analyzed.

140. Maps and Plans

141. Maps have been submitted in a consolidated format and per regulation.

142. Maps are included to show both operation and reclamation phases. In addition, Plate 5-1 shows areas of the site disturbed prior to August 3, 1977, after August 3, 1977 and prior to May 3, 1978, after May 3, 1978 and prior to approval of the State Program and after issuance of the Permit.142.100 Prior to August 3, 1977;

142.200. See Plate 5-1.

142.210. See Plate 5-1.

142.220. N/A - There have been no small operator's exemptions.

142.300. See Plate 5-1.

142.400. See Plate 5-1.

150. Completeness

This is a reformatted permit application submitted for renewal of an existing approved permit. This application is intended to address each of the R645-301 regulations for completeness and technical adequacy.

TABLE 1-1
RECORD HOLDERS OF LEGAL INTERESTS
SURFACE OWNERSHIP

Surface Owner:	Address:
Savage Services Corporation	6340 South 3000 East, Suite 600 Salt Lake City, Utah 84121
Agnes K. Pierce	735 North 700 East Price, Utah 84501
UPC Inc.	53 West Angelo Avenue Salt Lake City, Utah 84115
John Brown	53 West Angelo Avenue Salt Lake City, Utah 84115
Circle K Ranch	P.O. Box 700 Price, Utah 84501
John L. & Christy L. Hanna	1830 East 5000 South Price, Utah 84501
Kevin Ray & Lois W. Jensen	P.O. Box 219 Cleveland, Utah 84518
David C. Swenson	2269 N. Hillcrest Drive Wellington, Utah 84542
High Country Forest Products	8243 Old Federal Road Montgomery, AL 36117
David R. Cave	1220 South 530 West Price, Utah 84501
Roy D. & Peggy L. Campbell	P.O. Box 269 Wellington, Ut 84542
Alan Walton	3212 South State Street Salt Lake City, Utah 84115
E. W. Stoddard	P.O. Box 65644 Salt Lake City, Utah 84165
E. W. Stoddard	53 West Angelo Ave Salt Lake City, Utah 84115
Denver & Rio Grande Western Union Pacific Railroad Company	1400 Douglas - Stop 1640 Omaha, NE 68179
2 C's Properties, LLC.	1865 West Ridge Road Wellington, Utah 84542

TABLE 1-1
RECORD HOLDERS OF LEGAL INTERESTS
MINERAL OWNERSHIP

Mineral Owner:	Address:
John C. & Sophia Critchlow	Rout 1, Box 331 Price, Utah 84501
Olga Downard	223 South 5th East Price, Utah 84501
Ervin & Violet Feichko	Route 1 Helper, Utah 84526
Geraldine Thomas & Eldred E. Pierce, Jr.	6715 Lederer Street Canoga Park, California 91300
Kent E. & Clara W. Peterson	Unknown Salt Lake City, Utah 84101
Price City	City Hall, 185 East Main Street Price, Utah 84501
G.W. Waterman	Route 1 Box 113 Price, Utah 84501
State of Utah Division of State Lands	675 East 500 South, Suite 500 Salt Lake City, Utah 84102
Jack & Frank World	760 North 5th East Price, Utah 84501
Mountain Coal Company	P.O. Box 591 Somerset, Colorado 81434
Denver & Rio Grande Western Union Pacific Railroad Company	1400 Douglas - Stop 1640 Omaha, NE 68179
USA	203 State Capital Building Salt Lake City, Utah 84114
KDS Commercial Property, LLC. Kent Shiner	P.O. Box 973 Price, Utah 84501

See Plate 1-1 for Surface & Mineral Ownership Map.

Appendix 1-1

Compliance History

Savage Services Corporation
Savage Coal Terminal

Appendix 1-1
Compliance History

N.O.V.#: 06-46-3-1	
Date:	07/14/06
Location:	Savage Coal Terminal
Agency:	Utah Division of Oil, Gas & Mining
Description:	Activities without Approval
Proceedings:	None
Status:	Terminated - 7/28/06
Abatement Action:	Salvage & Store Topsoil

Appendix 1-2

Other Licenses and Permits

Savage Services Corporation
Savage Coal Terminal

Appendix 1-2
Permits and Licenses Needed to Operate Savage Coal Terminal

Type of Permit/License	Permit License Issuing Authority	Application Number	Status
Construction Approval	Utah Division of Health 288 N. 1460 W. Salt Lake City, Utah 84116-0690	N/A	Approved 07/21/77
Building Permit	Carbon County County Courthouse Price, Utah 84501	No. 979	Issued 10/06/77
Refuse Fill Permit	State of Utah Division of Oil, Gas & Mining 355 W. North Temple Salt Lake City, Utah 84180-1203	N/A	Issued 10/02/79
Temporary Refuse Permit	MSHA P.O. Box 25367 Denver, Colorado 80225	1211-UT-9-0033	Issued 10/02/79 Terminated on 03/19/81
Permanent Refuse Permit	MSHA P.O. Box 25367 Denver, Colorado 80225	1211-UT-09-01444-01	Issued 10-02/79 Reassigned No. on 08/10/00
UPDES Discharge Permit	Utah Dept. of Environmental Quality 288 North 1460 West Salt Lake City, Utah 84114-4870	UTG040005	Issued 05/01/03
Air Quality Approval Order	Utah Division of Health Bureau of Air Quality 150 North 1950 West Salt Lake City, Utah 84114-4820	DAQE-ANI793003-06	Issued 08/16/06
State Permit Approval	State of Utah Division of Oil, Gas & Mining 1594 West No. Temple Suite 1210 Salt Lake City, Utah 84114-5801	C/007/022	Issued 08/06/84 Renewal 08/06/04

Appendix 1-3

Public Notice
Permit Renewal Application

Savage Services Corporation
Savage Coal Terminal

PUBLIC NOTICE FOR PERMIT RENEWAL
SAVAGE COAL TERMINAL
SAVAGE SERVICES CORPORATION
6340 SO. 3000 E. #600
SALT LAKE CITY, UTAH 84121

Savage Services Corporation has filed with the Utah Division of Oil, Gas & Mining, an application for renewal of its Mining and Reclamation Plan Permit for the Savage Coal Terminal.

The permit for which renewal is being sought is Utah #C/007/022. This is a Mining and Reclamation Permit for the Savage Coal Terminal, which is located in the Miller Creek area of Carbon County, Utah in Sections 2 and 11, Township 15 South, Range 10 East, Salt Lake Base & Meridian.

The permit area is further described as follows:
Township 15 South, Range 10 East, Salt Lake Base & Meridian
Sec. 11: W ½ SW ¼ except 0.24 ac. in NW corner, E ½ SW ¼ except East 100' and 5.42 ac. in SW corner.

Also included in the permit area is a 20' Right-of-Way for a pipeline across the SE ¼ NW ¼ and NW ¼ NW ¼ of Section 11 (1.21 acres), and across the SW ¼ SW ¼, NW ¼ SW ¼, SW ¼ NW ¼ and NE ¼ NW ¼ of Section 2 (3.97 acres). This area is located on the "Price Quadrangle", U.S. Geological Survey 7.5 minute map.

The permit is available for inspection at the Utah Division of Oil, Gas & Mining office in Price, 319 N. Carbonville Road #C, Price, Utah, and the Utah Division of Oil, Gas & Mining office, 1594 West North Temple, Suite 1210, Salt Lake City, Utah.

The application for renewal is available for inspection at the Utah Division of Oil, Gas and Mining Office in Price, 319 N. Carbonville Road #C, Price, Utah, and the Utah Division of Oil, Gas & Mining office, 1594 West North Temple, Suite 1210, Salt Lake City, Utah.

Written comments, objections or requests for informal conferences on the application may be submitted to: State of 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.

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Carbon,)

I, Richard Shaw, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and the first publication was on the 31st day of March, 2009, and that the last publication of such notice was in the issue of such newspaper dated the 21st day of April, 2009.

Richard Shaw - Publisher

Subscribed and sworn to before me this 21st day of April, 2009.

Notary Public My commission expires January 10, 2011 Residing at Price, Utah

Publication fee, $ 432.64

LINDA THAYN
NOTARY PUBLIC-STATE OF UTAH
548 EAST MAIN
PRICE, UTAH 84501
COMM. EXP. 01-10-2011

PUBLIC NOTICE FOR PERMIT RENEWAL
SAVAGE COAL TERMINAL
SAVAGE SERVICES CORPORATION
6340 SO. 3000 E. #600
SALT LAKE CITY, UTAH 84121

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The permit for which renwal is being sought is Uah #C/007/022. This is a Mining and Reclamation Permit for the Savage Coal Terminal, which is located in the Miller Creek area of Carbon County, Utah in Sections 2 and 11, Township 15 South, Range 10 East, Salt lake Base & Meridian.

The permit area is further described as follows:
Township 15 South, Range 10 East, Salt Lake Base & Meridian
Sec. 11: W 1/2 SW 1/4 except 0.24 ac. in NW corner, E 1/2 SW 1/4 except East 100' and 5.42 ac. in SW corner.

Also included in the permit area is a 20' Right-of-Way for a pipeline across the SE 1/4 NW 1/4 and NW 1/4 NW 1/4 of Section 11 (1.21 acres), and across the SW 1/4 SW 1/4, NW 1/4 SW 1/4, SW 1/4 NW 1/4 and NE 1/4 NW 1/4 of Section 2 (3.97 acres). This area is located on the "Price Quadrangle", U.S. Geological Survey 7.5 minute map.

The permit is available for inspection at the Utah Division of Oil, Gas & Mining office in Price, 319 N. Carbonville Road #C, Price, Utah, and the Utah Division of Oil, Gas & Mining office, 1594 West North Temple, Suite 1210, Salt Lake City, Utah.

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Written comments, objections or requests for informal conferences on the application may be submitted to: State of 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.

Published in the Sun Advocate March 31, April 7, 14 and 21, 2009.

Appendix 1-4

Certification
of
Corporate Secretary

Savage Services Corporation
Savage Coal Terminal

CERTIFICATION STATEMENT

I, as a responsible official of the applicant, do hereby certify that the information included in this application is true and correct to the best of my information and belief.

Kelly J. Flint
Sr. Vice President, General Counsel and Secretary

Subscribed and sworn to before me this 5th day of February 2009

Notary Public

LISA PIZZA
NOTARY PUBLIC - STATE OF UTAH
6340 S. 3100 E. #800
COTTONWOOD HEIGHTS, UT 84121
COMM. EXP. 09-10-2011

My Commission Expires: 9-10-11

State of: Utah

County of: Salt Lake

Appendix 1-5

Purchase Agreement for Savage Coal Terminal

Savage Services Corporation
Savage Coal Terminal

00063249 Bk00399 Pg00609-00609

ANN B. O'BRIEN-COUNTY OF CARBON
1997 DEC 09 15:49 PM FEE $12.00 BY
REQUEST: PROFESSIONAL TITLE SERVICES

SPECIAL WARRANTY DEED

For Ten Dollars ($10.00) and other good and valuable consideration, MOUNTAIN COAL COMPANY, a Delaware corporation, successor to Beaver Creek Coal Company, and successor to Swisher Coal Company, whose address is 555 17th Street, Denver, Colorado 80202, hereby conveys and warrants against all claiming by, through, or under it, to SAVAGE INDUSTRIES INC., a Utah corporation whose address is 5250 South 300 West, Suite 200, Salt Lake City, Utah 84107 the following described tract of land:

The Southwest Quarter of Section 11, Township 15 South, Range 10 East, Salt Lake Base and Meridian.

Situate in Carbon County, State of Utah.

EXCEPTING the most Easterly 100 feet thereof.

ALSO EXCEPTING the following: BEGINNING at a point 227.59 feet North and 269.61 feet East of the Southwest Corner of said Section 11, and running thence North 45°39'45" East 69.47 feet; thence North 58°29'30" East 372.17 feet; thence South 68°31'00" East 516.41 feet; thence South 280.99 feet, more or less, to the South boundary of said Section 11; thence South 89°58'22" West 342.25 feet along the South boundary of said Section 11; thence North 49°17'10" West 225.38 feet; thence North 76°30'50" West 343.93 feet, more or less, to the point of beginning.

ALSO EXCEPTING the following: BEGINNING at the West Quarter Corner of said Section 11, and running thence East 200.00 feet; thence Southwesterly along the arc of a 225 feet radius curve 306.3 feet, more or less, to a point 200.00 feet South of the point of beginning, thence North 200.00 feet to the point of beginning.

EXCEPTING therefrom all oil and gas in the West one-Half of said Southwest Quarter, with the right to prospect for, mine and remove the same.

EXCEPTING therefrom all oil, gas and other minerals in the East One-Half of said Southwest Quarter, with the right to prospect for, mine and remove the same.

Dated: December 4, 1997.

MOUNTAIN COAL COMPANY,
a Delaware corporation

By: Gene E. DiClaudio
Gene E. DiClaudio

PTS 9941

RECORDED AT THE REQUEST OF
PROFESSIONAL TITLE SERVICES

STATE OF COLORADO)
) ss.
COUNTY OF Delta)

The foregoing instrument was acknowledged before me this 4th day of December, 1997 by Gene E. DiClaudio, the President of MOUNTAIN COAL COMPANY, a Delaware corporation.

F. Jean Morris
Notary Public

F. JEAN MORRIS
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires 03/26/2000

JEAN MORRIS NOTARY PUBLIC COLORADO

Appendix 1-6

Designation of Authorized Representatives

Savage Services Corporation
Savage Coal Terminal

James T. Jensen
Executive Vice President
& General Counsel

Savage Industries Inc.
5250 South Commerce Drive
Suite 200
Salt Lake City, Utah 84107
(801) 263-9400
(801) 261-8766 Fax

January 25, 2000

Pamela Grubaugh-Littig
Permit Supervisor
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

RECEIVED
JAN 27 2000
DIVISION OF
OIL, GAS AND MINING

RE: Designation of Authorized Representatives
Savage Coal Terminal
ACT/007/002
Carbon County, Utah

This letter is to inform your agency that the following people have been designated "Authorized Representatives" for Savage Industries Inc. for matters pertaining to the Savage Coal Terminal permit and environmental monitoring:

(1) James T. Jensen
Executive Vice President
and General Counsel
Savage Industries Inc.

(2) Boyd Rhodes
Manager
Savage Coal Terminal

(3) Dan W. Guy
President
Blackhawk Engineering, Inc.

Any of the above individuals are empowered to sign transmittal letters and C_1 Amendment forms to DOGM, and to submit required water monitoring data; however, since Dan Guy is not an employee of Savage Industries Inc., he may sign or submit such data <u>only</u> for Boyd Rhodes in the name of Savage Industries Inc.

INCORPORATED
EFFECTIVE:
FEB 08 2000
UTAH DIVISION OIL, GAS AND MINING

All correspondence from your agency concerning Savage Coal Terminal should continue to be sent to:

James T. Jensen
Executive Vice President
and General Counsel
Savage Industries Inc.
5250 South 300 West, Suite 200
Salt Lake City, Utah 84107

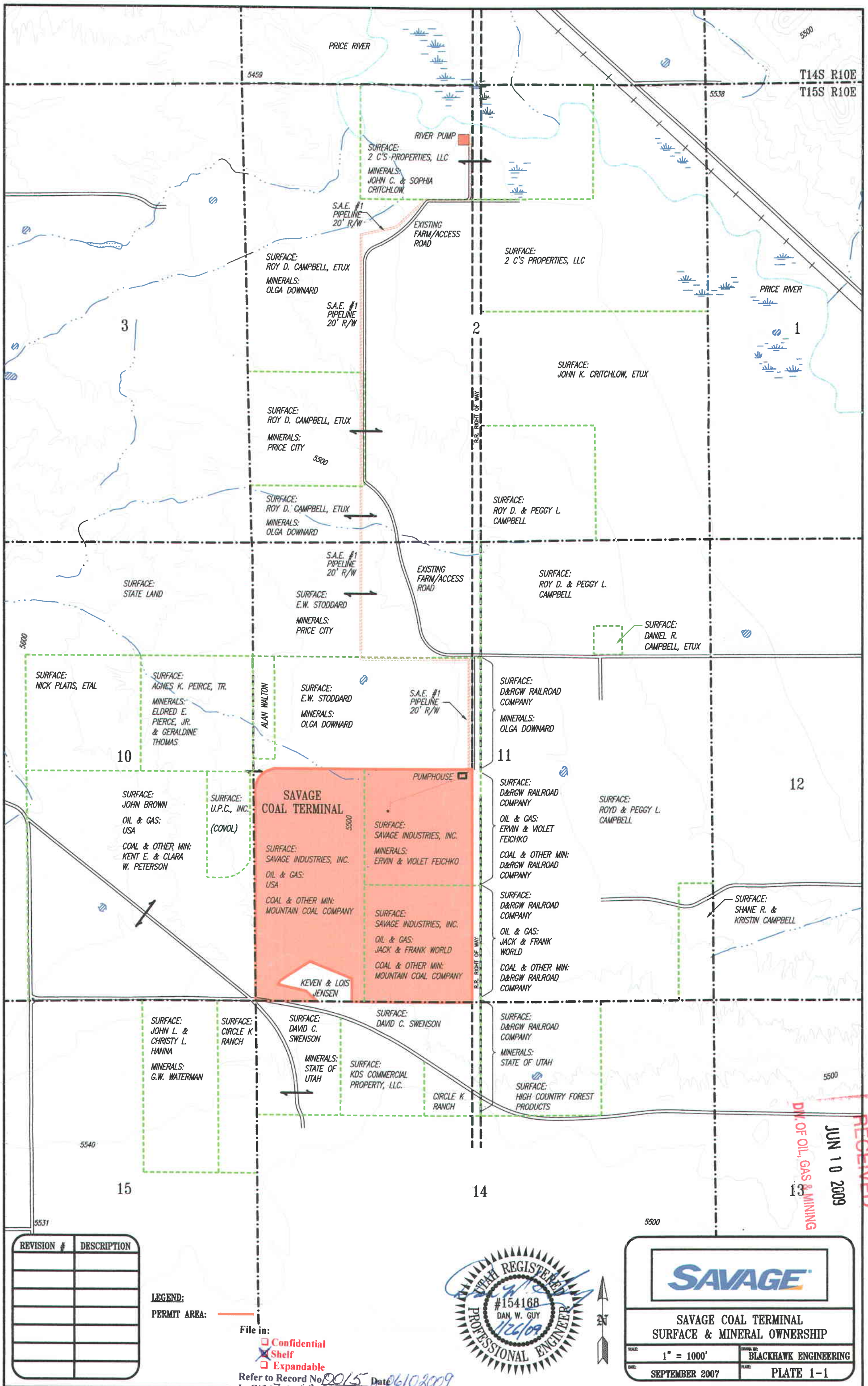
Sincerely,

James T. Jensen

James T. Jensen

cc: Boyd Rhodes
Dan Guy
File

INCORPORATED
EFFECTIVE:
FEB 08 2000
UTAH DIVISION OIL, GAS AND MINING



REVISION #	DESCRIPTION

LEGEND:

PERMIT AREA:

File in:
- ☐ Confidential
- ☒ Shelf
- ☐ Expandable

Refer to Record No 0015 Date 06/02/2009
In C/0070022, 2009, Incoming!
For additional information Confidential

RECEIVED
JUN 10 2009
DIV. OF OIL, GAS & MINING

Savage Services Corporation
Savage Coal Terminal
C/007/022

Chapter 2

Soils

R645-301-200

Table of Contents
Savage Coal Terminal
Chapter 2 - Soils

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R645-301-230. Operation Plan
R645-301-231. General Requirements
R645-301-232. Topsoil and Subsoil Removal
R645-301-233. Topsoil Substitutes and Supplements
R645-301-234. Topsoil Storage
R645-301-240. Reclamation Plan
R645-301-241. General Requirements
R645-301-242. Soil Redistribution
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Table 2-4 Evaluation of Seedbed Quality Material
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Appendix 2-1 Topsoil Stockpiles (As-Constructed)
Appendix 2-2 Topsoil Evaluation for New coal Stockpile Area
Appendix 2-3 Soils Evaluation for Settling Pond Area

Plate 2-1 Soils Map
Plate 2-2 As-Built Topsoil Map
Plate 2-3 Settling Pond Area
Plate 2-4 Baseline Soils Map

R645. Natural Resources; Oil, Gas and Mining; Coal.

R645-301. Coal Mine Permitting: Permit Application Requirements.

R645-301-200. Soils.

211. Premining Soil Resources.

The permit area was mapped by the USDA Soil Conservation Service (SCS) in 1970. The site was originally disturbed for industrial purposes in 1973-1974. The disturbance was expanded to accommodate most of the existing facilities in 1977-1978, with the majority of the disturbance occurring prior to S.M.C.R.A.; therefore, only limited areas had any topsoil/subsoil salvaged prior to disturbance.

Topsoil and subsoil have been removed and stored in separate piles for all areas disturbed since S.M.C.R.A. requirements were implemented on coal processing facilities.

212. Stockpiling and Redistribution.

Topsoil and subsoil have been removed from post-SMCRA disturbed areas and stockpiled as described under Section 230.

220. Environmental Description.

221. Prime Farmland Investigation and Determination.

In July 1980, Beaver Creek Coal Company (site owner at the time) requested that SCS personnel in Price, Utah review all the soils present within the Permit boundary to determine if any qualified as Prime Farmland. At that time, the SCS made a field reconnaissance to confirm soil types. The field information was then checked against a state listing of prime farmland soils. At this time the State Soil Scientist determined that there are no prime farmlands on CV Spur (Savage Coal Terminal) property. (See Figure 2-1).

222. Soil Survey.

A soil survey of the Savage Coal Terminal (C.V. Spur) was conducted to provide soil resource information to meet the requirements of the Utah Division of Oil, Gas and Mining and the Office of Surface Mining. The soil survey was performed by James P. Walsh & Associates based on a contract with Beaver Creek Coal Company, site owner at the time. Results of the survey are summarized in the following section.

An additional soils survey was conducted in March, 2002 on the area proposed for disturbance inside the railroad loop east of the office. This survey was conducted by Mr. Dan Larsen, Soils Scientist for E.I.S. Services, Co., Helper, Utah. The survey was conducted to determine topsoil stripping depths. Results of the survey are included in Appendix 2-2.

Another Order 1 Soils Survey was completed for the Settling Pond Area. This survey was conducted by Mr. Bruce Chesler, Soil Scientist, on August 21, 2006. Results of this survey are included in Appendix 2-3.

222.100. The permit area was mapped by the USDA Soil Conservation Service (SCS) in 1970. Plate 2-1, Soil Map of SAVAGE COAL TERMINAL permit area was originally made by James P. Walsh & Associates in July 1980 as a refinement of the SCS survey. At the time of mapping, a large part of the area was mapped as disturbed land.

Map unit descriptions are site specific. Six map units are mapped and described.

Soil series descriptions are adapted from the SCS to be site specific. Detailed pedon descriptions are presented for the three major soil series at the site. Pedons were described in backhoe pits to 60 inches or to bedrock, whichever was shallowest.

The six major soil series were sampled at the site. Samples were analyzed by Colorado Agricultural Consultants of Brighton, Colorado. Parameters tested were pH, electrical conductivity, saturation percent, soluble calcium, magnesium and sodium, available potassium, texture class from percent sand, silt, clay and very fine sand, organic matter percent, phosphorous, lime, boron, ammonia-nitrogen, and nitrate-nitrogen.

Present and potential uses of the soils of the site have been evaluated based on SCS Soil Survey Interpretation information. The soils have no potential as cropland or pasture land. The soils have not been evaluated by the SCS for their potential production as rangeland but their capability groups are given.

The soils are evaluated as seedbed quality material for drastically disturbed land. The evaluation method used is that of the SCS. Each horizon of each pedon is rated as seedbed quality material based on the field description and the analytical data. Recommended use for each soil is given.

Soil names given in this report are tentative. The soils in this report are named for similar soils that are presently being mapped by the SCS in the area. In some cases the described pedons are outside of the accepted range in characteristics for the series and those differences are noted in the test.

The soils in this report have not been correlated by the SCS. Classifications are based on morphology as described in the field, and to a lesser degree on the analytical data. Where analytical data do not support the field descriptions, the soils are classified according to the field descriptions.

222.200. Soil Identification. The soils at the site were initially examined by stereoscopic examinations of serial photographs by the Company. This allowed the consultant to determine slopes, land forms, and vegetative patterns. Soils were then examined in the field. The soil descriptions were compared with recorded characteristics of the soils in adjacent counties and in the official Soil Conservation Service (SCS) series descriptions. Map units are comprised of soil series and inclusions found with an area to make them site specific.

222.300. Soil Description.

Billings Series - Typical Pedon

The Billings series is a member of the fine-silty, mixed (calcareous) mesic family of Typic Torrifluvents. Annual precipitation is 7 to 11 inches. The mean annual soil temperature ranges from 47 to 57 Degrees Fahrenheit, and the frost free period is 110 to 160 days. A representative profile of Billings silty clay, gently sloping 300 feet east and 1900 feet north of the southwest corner of Section 11, T 15 S, R 10 E is:

A11p 0 to 2 inches; light brownish gray (2.5Y 6/2) silty clay; dark grayish brown (2.5Y 4/2) moist; moderate thin platy structure on surface, moderate very fine granular below; slightly hard; very friable; sticky and plastic; calcareous; some thin salt crusts on surface; few very fine roots, clear smooth boundary.

A12p 2 to 7 inches; light brownish gray (2.5Y 6/2) silty clay; dark gray brown (2.5Y 4/2) moist; strong coarse angular blocky structure; hard; friable; very sticky and plastic; calcareous, few very fine roots; abrupt smooth boundary.

C11cs 7 to 18 inches; light brownish gray (2.5Y 6/2) silty clay; gray brown (2.5Y 5/2) moist; massive; friable; very sticky and plastic; calcareous; few faint light yellowish brown (2.5Y 6/4) mottles; diffuse boundary.

C12cs 18 to 26 inches; light brownish gray (2.5Y 6/2) silty clay; gray brown (2.5Y 5/2) moist, massive; friable; very sticky and plastic; calcareous; many nodules and threads of gypsum; clear smooth boundary.

C13cs 26 to 45 inches; light brownish gray (2.5Y 6/2) silty clay; gray brown (2.5Y 5/2) moist; massive; friable; very sticky and plastic; calcareous; many nodules and threads of gypsum; few very fine roots, clear smooth boundary.

C2cs 45 to 60 inches; light brownish gray (2.5Y 6/2) silty clay; gray brown (2.5Y 5/2) moist; massive; friable; very sticky and plastic; calcareous; abundant nodules and threads of gypsum, few very fine roots.

The described pedon may have a higher percent clay than is allowed in the established series.

Chipeta Series - Typical Pedon

The Chipeta Series is a member of the clayey, mixed (calcareous) mesic, shallow family of Typic Torriorthents. These soils formed in residuum derived from alkaline marine shale with gypsum. Annual precipitation is 6 to 11 inches. The mean annual soil temperatures ranges from 47 to 52 Degrees Fahrenheit, and the frost free period is 110 to 160 days. A representative profile of Chipeta silty clay, gently sloping, 1200 feet east and 500 feet north of the southwest corner on Section 11, T 15 S, R 10 E is:

A1 0 to 3 inches; light brownish gray (2.5Y 6/2) silty clay; dark grayish brown (2.5Y 4/2) moist; moderate medium platy structure at surface, weak fine subangular blocky structure below; slightly hard, very friable, very sticky and very plastic; calcareous, few medium roots; 5% shale channers; clean smooth boundary.

C1 3 to 19 inches; light brownish gray (2.5Y 6/2) silty clay; gray brown (2.5Y 5/2) moist; weak fine subangular blocky; soft, very friable, very sticky and very plastic, calcareous, numerous gypsum crystals up to 20 mm in diameter; many fine roots to 10 inches; common fine roots from 10 to 19 inches; 28% shale channers.

Cr 19 inches; weathered shale.

Disturbed Land Soils - Typical Pedon

The available water capacity is high, and permeability is moderate to slow. These soils are used for mining activities. These soils formed in alluvium derived from marine shales with gypsum. Annual precipitation is 6 to 11 inches. The mean annual soil temperature ranges from 17 to 52 Degrees Fahrenheit, and the frost free period is 110 to 160 days. A representative profile of a disturbed soil 1100 feet east and 1000 feet north of the southwest corner of Section 11, T 15 S, R 10 E is:

0 to 12 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam fill; dark yellowish brown (10YR 4/4) moist; compacted at surface, loose below, very friable, nonsticky and nonplastic; calcareous, with numerous gypsum crystals and threads.

12 to 60 inches; light grayish brown (2.5Y 6/2) silty clay, gray brown (2.5Y 5/2) moist; massive, hard, very sticky and very plastic; calcareous, with numerous gypsum crystals and threads.

Killpack Series - Typical Pedon

The Killpack series is a member of the fine-silty mixed (calcareous) mesic family of Typic Torriorthents. These soils formed in alluvium derived from marine shale with gypsum. Annual precipitation is 7 to 11 inches. The mean annual soil temperature ranges from 47 to 48 Degrees Fahrenheit, and the frost free period is 110 to 130 days. A representative profile of Killpack silty clay loam, gently sloping, 1800 feet east and 500 feet north of the southwest corner of Section 11, T 15 S, R 10 E is:

A11	0 to 2 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium platy structure at surface about 5 mm thick; moderate fine granular below; slightly hard, friable, sticky and plastic; calcareous, common fine roots; clear smooth boundary.
A12	2 to 8 inches; light brownish gray (2.5Y 6/2) silty clay, moderate medium and coarse subangular blocky; slightly hard, friable, sticky and plastic; calcareous, common fine roots, clear wavy boundary.
C11	8 to 22 inches; light brownish gray (10YR 6/2) silty clay, gray brown (10YR 5/2) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; many gypsum nodules up to 10 mm in diameter; 10% shale channers, few fine roots, calcareous, diffuse boundary.
C12	22 to 29 inches; light brownish gray (10YR 6/2) silty clay; gray brown (10YR 5/2) moist; moderate fine angular blocky structure; hard friable, sticky and plastic; many gypsum nodules up to 10 mm in diameter; 10% shale channers, few fine roots, calcareous, clear wavy boundary.
Cr	39 inches; weathered shale and sand stone.

The described pedon may have a higher percentage of clay than is allowed in the established soil series.

Killpack Series, High Water Table Variant - Typical Pedon

The Killpack series High Water Table Variant is a member of the fine-silty, mixed (calcareous) mesic family of Typic Torriorthents. These soils formed in alluvium derived from marine shales with gypsum. Annual precipitation is 7 to 11 inches. The mean annual soil temperature ranges from 47 to 48 Degrees Fahrenheit, and the frost free period is 110 to 160 days. A representative profile of Killpack silt loam, high water table variant, gently sloping, 600 feet east and 1300 feet north of the southwest corner of Section 11, T 15 S, R 10 E is:

A11 0 to 4 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist, moderate coarse platy structure; soft' very friable; sticky and plastic; calcareous; slightly stratified; common fine distinct strong brown (7.5YR 5/6) mottles; few fine roots; clear smooth boundary.

A12 4 to 10 inches; pale brown (10YR 6/3) silty clay loam; dark brown (10Yr 3/3) moist; moderate course platy structure, slightly hard, very friable, sticky and plastic; common fine distinct strong brown (7.5YR 5/6) mottles; calcareous; common very fine roots; slightly stratified, clear smooth boundary.

Clcs 10 to 16 inches; light brownish gray (2.5YR 6/2) silty clay; dark gray brown (2.5YR 4/2) moist; strong medium and course angular blocky; hard; very friable; sticky and plastic; calcareous, few fine and medium roots; common fine white gypsum crystals; few fine faint olive yellow (2.5Y 6/6) mottles; some cracking; clear smooth boundary.

C2 16 to 31 inches; light brownish gray (2.5Y 6/2) silty clay; dark grayish brown (2.5Y 4/2) moist; massive, very hard, firm, very sticky and plastic, calcareous, many threads of gypsum; no roots; clear wavy boundary.

Cr 31 inches; weathered shale.

The described pedon may have more clay than is allowed in the established series.

Saltair Series - Typical Pedon

The Saltair series is a member of the fine-silty mixed mesic family of Typic Salorthids. These soils formed in alluvium derived from marine shale and sandstone. Annual precipitation is 6 to 11 inches. The mean annual soil temperature ranges from 47 to 54 Degrees Fahrenheit, and the frost free period is 110 to 160 days. A representative profile of Saltair silty clay loam, 1200 feet north and 500 feet west of the southeast corner of Section 13, T 17 S, R 9 E is:

A11sa 0 to ½ inch, grayish brown (2.5Y 5/2) silty clay loam, dark grayish brown (2.5Y 4/2) when moist; weak, thin, platy structure breaking to moderate, fine granular structure; soft firm, very sticky and plastic; plentiful large roots, many medium and fine vesicular pores; strongly calcareous; strongly alkaline (pH 8.9); thin salt crusts; clear smooth boundary.

A12sa ½ inch to 7 inches light brownish-gray (2.5Y 6/2) silty clay loam, grayish brown (2.5Y 5/2) when moist; many fine distinct, yellowish brown (10YR 5/6) mottles; weak to moderate, fine angular blocky structure; very hard, very firm, very sticky and very plastic; plentiful medium and fine roots; common medium and fine pores; strongly calcareous; moderately alkaline (pH 8.3); very strongly saline; efflorescent salt on many ped surfaces and in pores; clear, smooth boundary.

Clgsa	7 to 14 inches;, light brownish-gray (2.5Y 6/2) heavy silt loam, grayish brown (2.5Y 5/2) when moist; common, fine, distinct, yellowish-brown (10Y 5/4) mottles and common, fine, faint, grey (N 5/0) mottles; weak, fine angular blocky structure; very hard, very firm, very sticky and very plastic; few fine roots; common medium pores; strongly calcareous; very strongly saline; efflorescent salt on many ped surfaces and in pores; strongly alkaline (8.5); gradual, wavy boundary.
C2gsa	14 to 32 inches, light brownish-gray (2.5Y 6/2) heavy silt loam, grayish brown (2.5Y 5/2) when moist; many, fine, distinct, yellowish-brown (10Yr 5/4) mottles and common, fine, faint, gray (N 5/0) mottles; massive; very hard, firm, sticky and plastic; few fine roots; common medium and fine pores; strongly calcareous; very strongly saline; efflorescent salt on the surfaces of many peds and in pores; strongly alkaline (pH 8.5); gradual, wavy boundary.
C3g	32 to 60 inches, light-grey (2.5Y 7/2) heavy silt loam, grayish brown (2.5Y 5/2) when moist; few, fine, distinct, yellowish-brown (10YR 5/4) mottles and medium, faint, gray (2.5 5/0) mottles; massive; hard, firm, sticky and plastic; few fine roots; common fine pores; strongly calcareous; strongly alkaline (pH 8.5).

The Saltair series was not sampled or described in the permit area as it is of limited occurrence and is unsuited for reclamation material.

Map Unit Descriptions

Map Unit: B1B - Billings Silty Clay, 1 to 3 Percent Slopes

This map unit is on alluvial fans and flood-plains. The slope is 1 to 3 percent. The native vegetation is mainly greasewood, shadscale, galleta grass and Indian rice grass.

This unit is 75 percent Billings silty clay and 1.5 percent Bunderson loam. The Bunderson loam occupies barren spots. Included in this map unit is about 10 percent Saltair silty clay loam on the lowest parts of the map units, where seepage waters from irrigation effect the soils. Included areas make up about 10 percent of the total acreage.

The Billings soil is deep and very deep and moderately well-drained. It is formed in alluvium derived from alkaline, gypsum bearing marine shale.

Typically, the surface layer is light brownish gray, calcareous, silty clay about 7 inches thick. The subsoil is a light brownish gray, massive gypsiferous silty clay about 38 inches thick. The sub-stratum to a depth of 60 inches or more is light brownish gray, strongly gypsiferous silty clay.

Permeability of the Billings soil is slow. Available water capacity is about 5 inches. Effective rooting depth is 60 inches. Runoff is rapid and the erosion hazard for water is moderately high.

The unit is mainly used for mining activities in the mapped area. It is also used for irrigated crops where it is not too saline in parts of Carbon County. The present plant community is mainly shadscale, galleta grass and greasewood.

Production potential is 400/150 pounds of air-dry vegetation in favorable and unfavorable years, respectively.

This map unit is in capability unit VIIe non-irrigated, Desert Loamy Shale site, and 6 to 11 inch precipitation zone.

Map Unit: ChC - Chipeta Silty Clay, 3 to 6 Percent Slopes

This map unit is on toeslopes of low shale hills. The slope is 3 to 6 percent. The native vegetation is mainly shadscale and Indian ricegrass.

This unit is 80 percent Chipeta silty clay. Included in this map unit is about 10 percent Killpack soils on the lower portions of the landscape. Also included are 10 percent other soils. Included areas make up about 20 percent of the total acreage.

The Chipeta soil is shallow and moderately well-drained. It is formed in residuum derived from alkaline, gypsiferous marine shale.

Typically, the surface layer is a light brownish gray silty clay about 3 inches thick. The subsoil is a light brownish gray gypsiferous silty clay about 16 inches thick. Slightly weathered marine shale bedrock is at a depth of 19 inches.

Permeability of the Chipeta soil is slow. Available water capacity is low. Effective rooting depth is less than 20 inches. Runoff is medium and the erosion hazard for water is moderate.

The unit is mainly used for range in Carbon County. It is also used for mining activities in the mapped area.

The present plant community is mainly a saltbush-grassland.

The potential productivity produces 200/100 pounds of air-dry vegetation in favorable/and unfavorable years, respectively.

This map unit is in capability unit VIIE, Desert Shallow Shale range site, and 6 to 11 inch precipitation zone.

Map Unit: ChE2 - Chipeta Silty Clay, 3 to 20 Percent Slopes, Eroded

This map unit is on shale hills. The slope is 3 to 20 percent. The native vegetation is mainly mat saltbrush and Castle Valley clover.

This unit is 75 percent Chipeta soils, 15 percent shale outcrop, 5 percent Persayo soils, and 5 percent other soils. The Chipeta soil is on the side-slopes and toeslopes. Shale outcrops consist of nearly bare, strongly sloping, actively eroding shale. Tiny channels of numerous intermittent drainages form a branching pattern in most places. Inclusions comprise 25 percent of the map unit.

The Chipeta soil is shallow and moderately well-drained. It is formed in residuum derived from alkaline, gypsiferous marine shale.

Typically, the surface layer is light brownish gray silty clay about 3 inches thick. The subsoil is a light brownish gray gypsiferous silty clay about 16 inches thick. Slightly weathered marine shale bedrock is at a depth of 19 inches.

Permeability of the Chipeta soil is slow. Available water capacity is low. Effective rooting depth is less than 20 inches. Runoff is medium and the erosion hazard for water is moderate.

The unit is mainly used for range. It is also used for mining activities in the mapped area.

The present plant community is mainly mat saltbrush and Castle Valley clover.

The potential productivity produces 200/100 pounds of air-dry vegetation in favorable/and unfavorable years, respectively.

The Chipeta soil is in capability unit VIIE nonirrigated, Desert Shallow Shale range site, and 6 to 11 inch precipitation zone. The shale outcrop is in capability unit VIIIs nonirrigated.

Map Unit: DL - Disturbed Land, 1 to 6 Percent Slopes

This map unit is throughout the mapped area. The slope is 1 to 6 percent. The native vegetation has been removed. In many places weeds have pioneered in disturbed areas.

The unit is 90 percent disturbed land. Included are small areas where removal of vegetation, heavy traffic or a thin layer of coal waste have obscured the pre-existing soils.

Based on soil mapping prior to disturbance (USDA, 1970) the disturbed soils are generally fine textured, deep and moderately well-drained. They are formed in alluvium derived from alkaline gypsiferous shale.

Typically, the surface layer has been removed. The subsoil is a calcareous, gypsiferous, silty clay, about 60 inches thick.

Permeability of the disturbed soils is slow. Available water capacity is high. Effective rooting depth is more than 60 inches. Runoff is moderate and the erosion hazard for water is high.

The unit is mainly used for mining activities.

The present plant community, where plants occur, is mainly weeds.

The map unit is in capability unit VIIE, and 6 to 11 inch precipitation zone.

Map Unit: K1B - Killpack Silty Clay Loam, 1 to 3 Percent Slopes

This map unit is on toeslopes, below the Chipeta soils. The slope is 1 to 3 percent. The native vegetation is mainly shadscale and Indian ricegrass.

This unit is 90 percent Killpack soils, and 10 percent soils similar to the Killpack but deeper than 40 inches to shale.

Killpack soil is moderately deep and moderately well drained. It is formed in alluvium derived from alkaline and gypsiferous shale.

Typically, the surface layer is a light grayish brown silty clay loam about 2 inches thick. The subsoil is a light grayish brown or light brownish gray silty clay about 31 inches thick. Weathered shale is at a depth of about 39 inches.

Permeability of the Killpack soil is slow. Available water capacity is low. Effective rooting depth is less than 40 inches. Runoff is medium and the erosion hazard for water is moderate.

The unit is mainly used for range, irrigated pasture, irrigated alfalfa and small grains. It is also used for mining activities in the mapped area.

The present plant community is mainly a saltbrush or grassland.

The potential productivity produces 400/150 pounds of air-dry vegetation in favorable/and unfavorable years, respectively.

The map unit is in capability unit I'VE irrigated and VIIE nonirrigated, Desert Loamy Shale range site, and 6 to 11 inch precipitation zone.

Map Unit: KmB - Killpack Silt Loam, High Water Table Variant 1 to 3 Percent Slopes

This map unit is on low areas that receive seepage water. The slope is 1 to 3 percent. The native vegetation is mainly greasewood.

This unit is 80 percent Killpack silt loam, High Water Table Variant and 10 percent soils more than 40 inches or less than 20 inches deep. Included in this map unit is about 10 percent other soils.

The Killpack silt loam, High Water Table Variant soil is moderately deep and somewhat poorly-drained. It is formed in alluvium derived from alkaline, gypsiferous shale.

Typically, the surface layer is a brown, silt loam about 4 inches thick. The subsoil is a pale brown silty clay loam about 6 inches thick. The substratum to a depth of 31 inches is light brownish gray saline silty clay.

Permeability of the Killpack silt loam, High Water Table Variant is slow. Available water capacity is low. Effective rooting depth is less than 40 inches. Runoff is slow and the erosion hazard for water is slight.

The unit is mainly used for range. It is also used for mining activities in the areas mapped. It is used for mining activities in the areas mapped.

The present plant community is mainly greasewood and saltgrass.

The potential productivity is not established.

This map unit is in capability unit Vlw nonirrigated, Desert Loamy Shale range site, and 6 to 11 inch precipitation zone.

Map Unit: Sa-Saltair Silty Clay Loam, Barren 0 to 3 Percent Slopes

This map unit is on alluvial fans, on flood plains and narrow alluvial valleys. The slope is 0 to 3 percent. The soil is mainly without vegetation.

This unit is 90 percent Saltair silty clay loam, barren, and 10 percent other soils.

The Saltair soil is deep and poorly-drained. It is formed in fine textured alluvium derived from calcareous marine shale with gypsum.

Typically, the surface layer is light brownish gray, strongly calcareous, very strongly saline silty clay loam about 7 inches thick. The subsoil is a light brownish gray heavy silt loam to a depth of 60 inches.

Permeability of the Saltair soil is slow. Available water capacity is low. Effective rooting depth is 60 inches. Runoff is slow or ponded and the erosion hazard for water is low.

The Unit is mainly used for mining activities. It is also used for range and wildlife in Carbon County but is poor bor both uses.

The soil is mainly barren of vegetation.

The potential productivity data is not available but it is very low. This map unit is in capability unit VIII-w, not rated for range site.

222.400. Present and Potential Productivity of Existing Soils.

Present and potential uses of soils of the site have been evaluated based on SCS soil survey interpretation information. Potential production as irrigated crop land and pasture land and their key building groups are given. Potential production as range land, range site classification and their productivity groups are also given.

Crops and Pasturelands.

Table 2-1 lists the potential yields of a variety of crops for the Killpack and Billings soils under irrigation and other improved management practices in Carbon County. Predicted yields are based on information from the Carbon Emery Area Survey (USDA, 1970).

TABLE 2-1
PREDICTED AVERAGE YIELDS - PRINCIPAL IRRIGATED SOILS

Soil Series	Phase	NIRR	IRR	IRR Alfalfa Hay (tons)	IRR Corn Silage (tons)	IRR Pasture (AUM)	IRR Sugar Beets (tons)	IRR Bailey (Bu)	IRR Wheat Spring (Bu)
		Capability							
Billings (a)	0 - 3%	VIIs	IIIE	6.0	2.0	11	20	100	80
Killpack (b)	0 - 3%	VIIE	I'VE	4.0	15	8	-	60	-
(a) - Billings soil on the site is too salty for cultivation.									
(b) - Killpack soil on the site has been cultivated in the past.									

The U. S. Department of Agriculture has the authority to identify farmlands of national, state, or local importance. These farmlands are referred to as prime farmlands, farmlands of statewide importance, and unique farmlands. The SCS has determined that there are no prime, important or unique farmlands at the Castle Valley Spur site (see Figure 2-1, SCS Prime Farmland Clearance).

Rangelands.

The soils of the site area have been used as rangeland in the past. Table 2-2 lists the predicted forage production for rangeland soils during favorable, normal, and unfavorable years for various sites. Table 2-2 is based on generalized SCS data. Capability classes for the rangeland soils are VI, VII, and VIII. The principal limitations are erosion, wetness, and shallowness. Capability units show, in a general way, the availability of soils to support cultivated crops. Soils in Class VI are generally unsuited for cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover. Soils in Class VII have very severe limitations that make them unsuited for cultivation and that restrict their use largely to grazing limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply or aesthetic purposes.

TABLE 2-2
ESTIMATED POTENTIAL PRODUCTION - FORAGE

Soil Series	Potential Production Favorable/Normal/ Unfavorable Years (lbs/ac)*	Sites	Soil Capability Class
Billings	400/150	all	VIIs
Chipeta	200/100	all	VIIE
Killpack	400/-/150	all	VIIE
Killpack High Water Table	NA	NA	VIw
Saltair	NA	very strongly saline	VIIIw
NA - data not available			

223. Soil Characterization.

The survey discussed in Section 222. was conducted in 1980. This survey was conducted in accordance with standards applicable at that time.

224. Substitute Topsoil.

The criteria for evaluating if topsoil is seedbed quality material are given in Table 2-3. References to topsoil means only those soil horizons suitable for use as seedbed quality material. The criteria include sodium absorption ratio (SAR), electrical conductivity or salinity (EC), toxic materials, soil reaction (pH), available water holding capacity (AWHC), erosion factor (k), wind erosion group, texture, and percent coarse fragments.

Criteria are given for good, fair or poor sources of seedbed quality material (Table 2-4). "A good rating means vegetation can be relatively easy to establish and maintain, the surface is stable and resists erosion, and the topsoil has good potential productivity. Material rated fair can be vegetated and stabilized by modifying one or more properties. Top dressing with better material or application of soil amendments may be necessary for satisfactory performance. Material rated poor has such severe problems that revegetation and stabilization is very difficult and costly. Top dressing with better material may be necessary to establish and maintain vegetation," (USDA, 1978).

TABLE 2-3
SOIL SUITABILITY AS SEEDBED QUALITY MATERIAL

Property	Good	Limits/Fair	Poor	Restrictive Feature
1. Sodium Adsorption Ratio (SAR)	5	5-12	12	Excess Sodium
2. Salinity (MMHOS/CM)	8	8-16	16	Excess Salt
3. Toxic Materials	Low	Medium	High	Toxicity
4. Soil Reaction (pH)[a]	5.6-7.8	4.5-5.5	4.5	Too Acid
5. Soil Reaction (pH)	7.9	7.9-8.4	8.4	Excess Line
6. Available Water Capacity (IN/IN)	.10	.05-.10	.05	Droughty
7. Erosion Factor (K)	.37	.37	-	Erodes Easily
8. Wind Erod. Group	3	3	1,2	Soil Blowing
9. USDA Texture	-	SCL, CL, SICL	C[b],SIC[b],SC	Too Clayey
10. USDA Texture	-	LCOS, LS, LFS, LVFS	COS, S, FS, VFS	Too Sandy
11. Coarse Frag. (WT PCT) 3-10 in. (7.6-25.4 cm)	15	15-35	35	Large Stones
12. 10 in. (725.4 cm)	3	3-10	10	Large Stones

[a] Layers with high potential acidity should be rated poor.

[b] If in kaolinitic family, rate one class better if experience confirms.

From National Soils Handbook 1978, NSH - Part II (403.6(a))

TABLE 2-4
EVALUATION OF SEEDBED QUALITY MATERIAL

Series	Sample Point[a]	Depth (in)	SAR	Salinity	Toxic Materials[a] (Boron)	Soil Reaction	Available Water Cap[d]	Erosion Factor	Wind Erodibility Group[b]	USDA Texture[c]	Coarse Frags[d]	Overall Rating
Billings	3	0-2	good	fair	good	good	good	fair	good	fair[e]	good	FAIR
		2-7	good	fair	good	good	good	fair	NA	fair[e]	good	FAIR
		7-18	fair	poor	good	good	good	fair	NA	poor	good	POOR
		18-26	fair	poor	good	good	good	fair	NA	poor	good	POOR
		45-60	fair	poor	good	good	good	fair	NA	poor	good	POOR
Chipeta	5	0-3	fair	good	good	good	good	fair	good	fair[e]	good	FAIR
		3-19	good	fair	good	good	good	fair	NA	fair	good	Fair-poor
Disturbed Land	6	0-12	fair	fair	good	good	fair	NA	NA	fair	poor[f]	POOR
		12-60	god	poor	good	good	good	NA	NA	poor	good	POOR
Killpack	4	0-2	good	good	good	good	good	fair	good	fair	good	FAIR
		2-8	fair	good	good	good	good	fair	NA	fair[e]	good	FAIR
		8-22	good	good	good	good	good	fair	NA	fair[e]	good	FAIR
		22-39	poor	poor	good	good	good	fair	NA	poor	good	POOR

Series	Sample Point[a]	Depth (In)	SAR	Salinity	Toxic Materials[a] (Boron)	Soil Reaction	Available Water Cap[d]	Erosion Factor	Wind Erodibility Group[b]	USDA Texture[c]	Coarse Frags[d]	Overall Rating
Killpack, high water table	7	0-4	fair	fair	good	good	good	fair	good	good	good	FAIR
		4-10	good	good	good	good	good	fair	NA	fair	good	FAIR
		10-16	good	fair	good	good	good	fair	NA	poor	good	POOR
		16-31	fair	poor	good	good	good	fair	NA	poor	good	POOR
Saltair	not sampled	NA	NA	poor	NA	NA	fair-poor[b]	fair	good	NA	NA	POOR

[a] evaluation based on WDEQ Guideline No. 3 for boron limits
[b] from sol survey interpretation records, USDA SCS
[c] from field description of soil texture; not taken from lab analysis
[d] from field description of texture and coarse fragments (USDA, 1979)
[e] rated one category better due to satisfactory fifth as described in field description and adequate organic matter content
[f] rated one category lower due to excessive ravels
NA - data not available

Soil Chemistry and Physical Properties

Chemical and physical data for project area soils (Table 2-5) were collected to evaluate the soils as seedbed quality material for reclamation. Soil chemical and physical data are from analysis by Colorado Agricultural consultants. Other sources of information used to evaluate soils for reclamation are manuscript SCS soil survey information and soil survey interpretation records.

Soils were sampled by horizon and analyzed using standard agricultural techniques as specified in Table 2-3. The parameters tested were paste pH, electrical conductivity, moisture saturation percentage, SAR, organic matter, plant available phosphorus and potassium, particle size distribution, nitrate nitrogen, ammonia nitrogen, lime and boron. The techniques used were those of USDA Handbook 60 (1954), the American Society of Agronomy Monograph #9 (Black, 1965).

Suitability as Seedbed Quality Material for Reclamation of Disturbed Lands

Table 2-4 is an evaluation of topsoil for each horizon on each project area soil type. The evaluation is based on the soil chemical and physical data in Table 2-5 and the criteria of Table 2-3. The soils are rated good, fair, or poor sources of seedbed quality material. The overall rating given for each horizon is the rating for most limiting criteria.

"Vegetation is difficult to establish on soils with high SAR which indicates potential instability and water transmission problems (USDA, 1978)." SAR ranges from good to poor and high SAR is a potential restrictive feature for several of the soils tested.

TABLE 2-5
SOIL CHEMICAL AND PHYSICAL ANALYSIS

Sample Indent	PH	EC MMHO S/CM	SAT %	NA MEQ/L	CA MEQ/L	MG MEQ/L	SAR Ton 1000T	AK $CaCO_3$	TEXT USDA	SN %	SI %	CL %	VFS %	N %	OM %	P PPM	LM %	B PPM	NH3 %
Billing/Hole: 3																			
0-2	6.9	10.1	43.3	8.84	47.69	27.72	1.4	450	SILO	22	76	2	16	7	1.7	0	9.2	0.47	0.5
2-7	7.0	15.7	39.6	16.69	50.83	65.68	2.2	300	SILO	21	78	1	16	3	1.2	0	9.2	0.40	0.4
7-18	7.3	28.0	38.3	51.78	53.16	137.54	5.3	210	SILO	19	78	3	17	4	0.9	0	9.2	0.50	0.5
18-45	7.5	43.1	43.0	95.42	49.65	223.53	8.2	190	LO	37	48	15	14	7	0.7	4	9.2	0.73	0.3
45-60	7.5	28.0	53.8	72.46	35.45	136.40	7.8	290	CLLO	31	37	32	14	6	9.8	11	9.2	0.92	0.5
Chipeta/Hole: 5																			
0-3	7.7	4.8	45.4	19.91	15.50	5.87	6.1	790	CLLO	35	33	32	14	5	1.0	3	9.1	0.62	1.1
3-19	7.0	9.2	46.3	20.28	39.21	27.36	3.5	500	CLLO	39	31	30	12	4	0.8	0	9.0	0.65	0.5
Disturbed Land Material/Hole: 6																			
0-12	7.1	10.2	35.3	31.49	35.97	39.18	5.5	290	SNLO	61	34	5	12	39	1.1	0	9.2	0.79	0.4
12-60	7.6	47.9	37.1	194.21	56.81	157.13	18.8	320	SILO	38	52	10	14	72	0.7	5	9.0	0.98	2.9
Killpack/Hole: 4																			
0-2	7.3	5.3	37.8	11.04	19.79	12.34	2.8	580	LO	39	41	20	12	14	1.4	5	8.9	0.25	1.4
2-8	7.4	5.0	45.4	23.75	14.21	2.94	8.1	570	CLLO	33	29	38	14	9	1.7	4	9.2	0.25	1.2
8-22	7.2	4.9	69.9	8.46	26.71	6.67	2.1	810	CL	32	23	45	14	5	1.0	0	9.1	0.48	0.7
22-39	7.4	14.8	68.3	74.34	18.98	40.99	13.6	860	CL	41	15	44	12	10	0.7	0	9.1	1.40	0.6

Sample Indent	PH	EC MMHO S/CM	SAT %	NA MEQ/L	CA MEQ/L	MG MEQ/L	SAR Ton 1000T	AK $CaCO_3$	TEXT USDA	SN %	SI %	CL %	VFS %	N %	OM %	P PPM	LM %	B PPM	NH3 %
Killpack, High Water Table Variant/Hole: 7																			
0-4	7.2	9.6	39.4	33.52	23.35	18.60	7.3	1440	SILO	39	511	10	10	7	2.4	15	9.2	0.60	1.3
4-10	7.3	5.0	37.2	10.28	18.91	12.53	2.6	460	LO	36	48	16	12	3	1.3	2	9.2	0.43	0.9
10-16	7.1	11.4	50.4	27.60	35.93	52.91	4.1	430	CLLO	35	31	34	14	6	1.2	0	9.2	0.51	0.5
16-31	7.1	21.89	38.7	62.90	51.15	82.67	7.7	210	SILO	361	60	4	41	5	0.7	0	8.3	0.36	0.4

"Electrical conductivity is a measure of soil salinity. Excessive salts restrict plant growth, create problems in establishing vegetation and therefore also influence erosion and the stability of the surface, USDA, 1978." Electrical conductivity of the soils of the site ranges from good to poor and is a restrictive feature for a number of soils. Salt tends to be highest in the subsoils, but also accumulates in crusts at the surface in poorly drained soils.

"Toxic materials such as boron get into the food chain and are toxic to animals who eat the vegetation. Excessively high or low pH causes problems in establishing vegetation and as a result influence erosion and stability of the surface, USDA 1978." The soils of the site are rated good for boron and pH. "The available water holding capacity (AWHC) also is important in establishing vegetation. Soils with low available water capacity may require irrigation for establishment of vegetation, USDA, 1978." AWHC is estimated according to the U.S. Forest Service (USDA, 1979) based on field texture and coarse fragments, and is good for most of the soils of the site. It is fair for the fill material.

"The stability of the soils depends upon its erodibility by water and wind and its strength. Water erodibility is indicated by the K factor; wind erodibility is rated according to the wind erodibility group, USDA, 1978." K values for soils of the project area are from the best data available in the SCS Soil Survey Interpretation Records. The soils of the site are rated fair for erodibility by water. Wind erodibility data are available for only the surface soils of the site. The surface layers are rated good for wind erodibility.

USDA texture also influences available water capacity and erodibility by wind or water. Texture influences soil structure, consistence, water intake rate, runoff, fertility, workability, and trafficability. Potential slippage hazard is related to soil texture, and although other factors also contribute, the ratings of soil texture represent one important factor (USDA, 1978). Clay textures are a restrictive feature for most of the soils of the site.

Textures for soils of the site were described in the field and the evaluations are abased on the field determinations. Lab data on soil textures have been disregarded because it is thought that dispersion of silt and clay particles was not adequate, possibly because of high gypsum contents.

Coarse fragments influence the ease of excavation, stock piling and respreading, and suitability for the final use of the land. A certain amount of coarse fragments can be tolerated depending upon the size and intended use of the reclaimed area. If the size of rock fragments exceeds 10 inches (25cm) the problems are more severe (USDA, 1978). Coarse fragments are evaluated based on pedon descriptions for soils of project areas and are rated good for most of the project area.

Topsoil Replacement and Use of Selected Overburden Materials

Very little seedbed quality material exists for areas to be disturbed or previously disturbed and topsoil salvaged (see previous for physical and chemical analysis and Table 2-6 for topsoil available for reclamation). In addition, as a result of surface disturbance created prior to enactment of laws requiring salvaging of topsoil, areas mapped as Disturbed Land contain in-place soil material underlying coal waste and rock.

Since there is not sufficient topsoil to cover all pre and post-law disturbed areas to a minimum depth of six (6) inches, Savage Services Corporation proposes to alleviate and amend the poor features of the pre-law disturbed areas.

As shown by Table 2-4, the upper portion of the disturbed land material is rated as good or fair for all parameters except for the presence of coarse fragments. Many of these fragments are present in the upper portions of the road base. The subsoil material is clayey in areas and may contain high quantities of salt.

The disturbed land areas will have any large amounts of coal waste and excessive rocks removed and disposed of properly prior to reclamation. These areas will ten be graded to the appropriate contour, and scarified to reduce compacted zones. If cloddy surfaces exist they can be pulverized with a disc to crate a more desirable seedbed. Application of mulch will add organic matter to the soil and help recreate soil structure. Additional discussion of the redistribution and handling of the disturbed land fill conductive to successful establishment of vegetation during reclamation is given in Section 240.

The actual reclaimability of the substitute topsoil (in-place soils on Disturbed Lands) will be based on results from the test plots. The Mass Balance Table 2-9 is based on "worst case" conditions, wherein the refuse pile would be covered with a minimum of 6" of soil and any remaining soil would be placed over only a portion of pre-law disturbed lands. This would require that the upper 12" of the disturbed land areas be reconditioned as necessary to meet topsoil standards. The material below a depth of 12" on the disturbed land would not be used as a topsoil substitute.

If the test plots are successful, it may mean that less than 6" of topsoil cover would be adequate on the refuse area, and more material would be available for the pre-law disturbed areas.

Because of the lack of large volumes of suitable subsoil and topsoil on the site, as demonstrated in Tables 2-4 and 2-6, less than four feet of sub and topsoil will be available for utilization during revegetation of the processed waste disposal banks. An analysis of the waste disposal material demonstrates that this material is rated good utilizing soil suitability standards, (see Table 2-7 for chemical analysis of refuse material).

Based on the suitability analysis results for the refuse disposal area and the fact that baseline vegetation studies at Savage Coal Terminal indicates that vegetation is shallow-rooted due to the close proximity of Manco Shale to the soil surface, all disturbed area should be able to be adequately reclaimed to the established vegetation standards with an even redistribution of stockpiled material.

TABLE 2-6
SEEDBED QUALITY MATERIAL VOLUMES

(Including Acres Disturbed in 2006)

Mapping Unit	Suitable Stripping Depth	Acreage	Volume - Bank Cubic Yards BCY
*Killpack - KmB	12" Topsoil 12" Subsoil	1.77	5,490
*Billing - Blbm	12" Topsoil 12" Subsoil	2.43	7,538
**Topsoil Stockpile	NA	NA	49,286
Total Seedbed Quality Material Available (After 2006 Stripping)			62,314

* Actual Volumes Stripped in 2006.
** From Appendix 2-1.

TABLE 2-7
SOIL ANALYSIS OF SAVAGE COAL TERMINAL REFUSE MATERIAL

	Wet Refuse	Suitability*	Dry Refuse	Suitability*
pH	7.70	Good	7.62	Good
E.C. mmhos/cm	4.50	Good	4.80	Good
Saturation %	44.70	N/A	30.30	N/A
Soluble Ca (meq./l)	13.00	N/A	15.50	N/A
Soluble Mg (meq./l)	22.10	N/A	27.90	N/A
Soluble Na (meq./l)	10.70	N/A	10.20	N/A
SAR	2.55	Good	2.19	Good
ESP	2.44	N/A	1.93	N/A
Boron ppm**	0.30	Good	0.25	Good

*Based on National Soils Handbook 1978, NSH - Part II (403.6(a)).

**Based on WDEQ Guideline No. 1 Table 1-3 for boron limits.

If erosion is detected after revegetation which may result in the possibility of exposure of the covered waste material, remedial steps will be taken as described in R645-301-541.

230. Operation Plan.

Future areas of disturbance have been identified to the extent possible and plans have been made to remove all suitable topsoil prior to disturbance (see Plate 5-2). Most of the plans for future disturbance consist of land needed for coal stockpile areas.

When additional storage area becomes necessary topsoil will be stripped using standard earth moving equipment and taken to the topsoil piles. (See Plate 5-2 for location of stockpiles). A qualified Soils Scientist will be on site during topsoil stripping to ensure adequate recovery of soils. The topography on Plate 5-2 represent the "as-built" or present configuration of the topsoil and subsoil piles.

231. General Requirements.

231.100 Removal Storage and Protection of Soils

The in-place depths of seedbed quality material available for reclamation of the project area is listed on Table 2-8 by map unit. The table includes the map unit, map unit components, depth of horizon, rating (from Table 2-4), percent of map unit, recommended depth of stripping and the restrictive features of the suitable material. Volumes of seedbed quality material in stockpile or in-place and to be disturbed in the future can be found in Table 2-6.

All of map unit ChC can be stripped to 6 inches. Included with the Chipeta are other soils that can be stripped to the same depth. The soils report in Appendix 2-2 indicates the Chipeta in the track loop area can be stripped from 2" to 7", with an average of approximately 6". This has been completed.

Based on a recent soils study for the settling pond area (Appendix 2-3), the Map Unit Blb (Billings) was subdivided into 2 units - BlBe and BlBm, as shown on Plate 2-1. Based on analyses, it was determined that the top 12" of BlBm (and KmB) could be salvaged as topsoil and the next 12" of both BlBm and KmB could be salvaged as subsoil. It was also determined that none of map unit BlBe should be salvaged due to poor quality.

Disturbed lands in the mapped area have variable surface materials. Gravelly road till does not have adverse chemical characteristics but may be too gravelly to be used as a reclamation material. Clayey subsoil in areas mapped as disturbed lands may be excessively salty. Much of the area mapped as disturbed land has surface contamination with coal.

Map unit KmB can be stripped to 9 inches, and as indicated above, up to 12" for topsoil and 12" for subsoil in the area of the settling ponds. See Table 2-6 for available volume of that soil unit. This is based on the soils report in Appendix 2-2.

Barren areas and salty spots should be avoided in stripping. This includes the Saltair Unit, for which a variance in topsoil stripping is requested due to poor quality. (See Plate 2-1 for locations.)

Prior to the Reclamation Act of 1977 and Utah Interim Program, 77.2 acres of C.V. Spur were disturbed and topsoil not salvaged.

Of the remaining 76.8 acres, 48.7 acres have had topsoil stripped as of April 2002, leaving approximately 28.1 acres within the permit area that will need to have available topsoil removed, if disturbed. An additional 4.20 acres were stripped in 2006. Although 6.61 acres were disturbed, only 4.20 acres were stripped to a total depth of 24" due to poor quality of the remaining acreage.

The topsoil and subsoil stripped from the settling pond was placed in separate storage piles. Organic debris existing on the surface of the newly stripped area was left in the soil when stockpiled to maintain the organic content.

Once the newly stripped soil was placed in new stockpiles, 2000 pounds per acre of weed free hay mulch was added to the surface. The surface was then roughened using a trackhoe. Once the site was prepared, the piles were hydroseeded using the Temporary Seed Mix described on Table 5-1. In addition to the seeding, a potassium fertilizer (manufactured by 3 Tier Tech) and 2 bio-stimulants (manufactured by P.B.I. Gordon) were applied to the topsoil & subsoil piles. The fertilizer was a liquid concentrate called "Establish" (5: 16: 12), applied at a rate of 48 ounces per acre. One of the bio-stimulants was called "Launch ® CF", consisting of 1 % K, 0.36% Fe, 74.3% Manure extract, 9% Humic and Folic Acid and 1.2% Kelp. The other bio-stimulant was "Huma-Cal Plus", consisting of 8% Ca, 4% Humic Acid and 27.5 billion microbes/gallon. Each bio-stimulant was applied at a rate of 4 gallons/acre. 2000 pounds per acre of wood fiber mulch and 60

gallons/acre. 2000 pounds per acre of wood fiber mulch and 60 pounds per acre of tacifier were then applied to the surface. Seeding took place during the week of October 23, 2006. It should be noted that the berm constructed with other excavated material from the ponds was also seeded at this time.

The topsoil piles are protected by a combination of efforts, including existing berms and revegetation as described above.

Plate 5-1 indicates disturbance created before and after May 1978. Topsoil material that has been stockpiled and in-place soil to be disturbed contain insufficient volumes of material to cover all of the projected disturbed area to a minimum of six (6) inches. Thus, as discussed in Section 224, the Disturbed Land Map Unit will be revegetated in-place since no better topsoil material exists for reclamation.

All post-law disturbance and the entire refuse area (a total of 55.31 acres after the 2006 stripping) will receive a minimum cover of six inches of topsoil/subsoil. Table 2-6 provides the volumes of soil currently in storage.

Even distribution of six inches over 55.31 acres would require 44,617 cubic yards of material. Therefore, the 62,314 cubic yards of topsoil/subsoil currently in storage is enough to accommodate the proposed reclamation plan.

231.200 Nutrients and Soil Amendments

Soil tests will be taken in materials to be used for final reclamation in order to evaluate the need for soil amendments and nutrients. Soil testing will be performed by a qualified laboratory which uses accepted analytical procedures.

TABLE 2-8
DEPTHS OF SUITABLE TOPSOIL AVAILABLE FOR SEEDBED MATERIAL
(By Map Unit)

Mapping Unit	Component	Depth (in.)	Rating	Percent of Map Unit	Available Depth Suitable Material (restrictive feature of recommended material)
Chc	Chipeta	0-3	fair	80	6 inches (sodic and clayey)
		3-19	fair/poor		
	Killpack	0-8	fair	10	6 to 9 inches
	Other Soils	var	var	10	6 inches
DL	Disturbed Land	0-12	poor	NA	0 inches (various restrictive features)
		12-60	poor		
KmB	Killpack-high water table	0-10	fair	80	6 inches (clayey and sodic)
	Other	var	var	20	0 inches
Blb	Billings	0-7	Fair	100	7 inches

NA = data not available Var = variable

231.300 Effects of Mining Operations on Soils, Nutrients and Soil Amendments to be Used

The Disturbed Landfill which has been impacted by mining operations has some inherit problems that will be addressed prior to reclamation. These include gravelly road fill, clayey subsoil, and surface contamination with coal fines. The coal fines and gravelly road fill will be removed by standard earth moving equipment. The clayey subsoil will be deep chiseled to eliminate compacted zones.

The disturbed soils samples show it to be of a quality similar to the stockpiled soil on site. This material can be upgraded as needed to provide a plant growth medium; therefore, no soil substitute is necessary for reclamation of the disturbed soil areas.

Additional soil testing will be performed on the disturbed soils prior to regrading and final reclamation.

Location and number of soil tests will be determined in consultation with the Division at least 60 days prior to final reclamation.

All soils will be properly fertilized to bring them up to the level necessary for vegetation establishment. Fertilizer application will be based on soil test analysis as discussed in Section 231.200.

231.400 Mitigation and Control Plans

All suitable seedbed quality material (topsoil) will be stripped and stockpiled prior to disturbance. Topsoil stockpiles will be placed on a stable surface in an attempt to limit wind and water erosion and other factors which would lessen the capability of the material to support vegetation. Every effort will be made to minimize the area of disturbance to only that area needed immediately. A quick-growing cover of annual and perennial plants will be seeded or planted during the first desirable planting period after disturbance. Topsoil stockpiles will remain in-place and undisturbed until the material is to be redistributed on disturbed areas.

An as-built survey was performed on the soil stockpiles, as required. Results of the survey show a total of 49,286 cubic yards of material presently in storage, as indicated on Table 2-6. The survey is summarized in Appendix 2-1, and the as-built map of the piles is shown on Plate 2-2.

In April 2002, an additional 12,140 cubic yards of topsoil were stripped and placed between the existing topsoil and subsoil piles. The topsoil and subsoil piles were then blended together into one pile, roughened, mulched and seeded. This increased the volume of the Topsoil Stockpile to 49,286 cubic yards. In 2006, an additional 13,028 cubic yards of topsoil/sub-soil were stripped and placed in separate storage piles located north of the office building, bringing the total storage volume to approximately 62,314 cubic yards.

TABLE 2-9
TOPSOIL MASS BALANCE TABLE

Topsoil Available	62,314 cu. yds.
Disturbed Area	132.5 ac.
Pre-law Disturbance	77.2 ac.
Post-law Disturbance	55.3 ac.
Topsoil Required (Post-law)	44,617 cu. yds.
*Topsoil Required (All Disturbance)	106,883 cu. yds.
Max. Area for 6" Redistribution	77.25 ac.
* As discussed in Section 220, pre-law disturbed areas will utilize in-place soils, since no better topsoil exists for reclamation.	

232. Topsoil and Subsoil removal.

Topsoil and subsoil removal are described in Section 231.100 above.

231.100. As indicated in Section 231.100, the topsoil will be removed as a separate layer from the area to be disturbed, and segregated.

232.200. As described in Section 231.100, barren areas and salty spots (Saltair Unit) will not be stripped per a variance requested due to poor quality.

232.300. Based on soil tests described in Section 231.100, soils will be stripped to the in-place depths of seedbed quality as shown on Table 2-8.

232.410. There are no plans to strip topsoil for minor disturbances such as power poles, signs or fence lines.

232.420. Topsoil will not be stripped on minor disturbances which will not destroy the existing vegetation and will not cause erosion.

232.500. Subsoil has been combined with the refuse area topsoil stripping. This was done to allow adequate material to cover the refuse pile to meet DOGM and MSHA regulations. In other areas, the removal plan is to take all of the soil of seedbed quality for use as topsoil replacement.

232.600. For all areas not disturbed prior to SMCRA, soil removal has been, and will continue to be, prior to disturbance. Only large trees would be typically removed prior to soil stripping, since small vegetation will enhance organics in the soil.

232.700. N/A - There have been no adverse conditions to date at this site to prevent removal of topsoil or subsoil.

233. Topsoil substitutes and supplements.

Topsoil substitutes and supplements are discussed under Section 231.200.

233.100. See Sections 231.200 and 231.300.

233.200. See Section 231.200.

233.300. See Sections 224 and 231.200.

233.310. See Section 224.

233.320. See Section 224.

233.330. N/A

233.340. See Sections 224 and 231.200.

233.400. See Section 224.

234. Topsoil Storage.

Topsoil storage is described in Section 231.100.

234.100. Soil materials are segregated and stockpiled on site, since the entire disturbed area is being utilized and final regrading is not practical.

234.200. Stockpiling criteria are discussed in Section 231.100.

234.210. As described in Section 231.100, stockpiled materials are selectively placed on a stable site within the permit area;

234.220. Stockpiled materials are protected from contaminants and compaction by their isolated location and prevention of vehicle access.

234.230. Topsoil piles have been reseeded on 5 separate occasions. Although vegetative success has been minimal, some cover is established; however, the main protection against erosion has been the roughening of the pile sides to maximize water retention.

234.240. Stockpiled materials are not planned to be moved until final reclamation as approved by the Division.

234.300. N/A - There are no plans to temporarily distribute soil materials on this site.

240. Reclamation Plan

Detailed reclamation plans for this site are presented in Section 540. Soils redistribution plans are also described in Section 224. of this chapter.

241. General Requirements.

Plans for redistribution of soils, use of nutrients and stabilization are discussed in Section 224.

242. Soil Redistribution.

See Section 224 for redistribution plans.

242.100. Soils will be redistributed according to the plan presented in Section 224.

242.110. Per discussion in Section 224, soils will be redistributed in a manner to achieve an approximately uniform, stable thickness consistent with the approved post-mining land use, contours, and surface water drainage system.

242.120. Redistributed topsoil will not be compacted.

242.130. As discussed in Section 224, topsoil and subsoil piles have been reseeded and roughened for erosion protection. As discussed in Chapter 5 under Section 540, redistributed topsoil will be seeded and mulched as soon as practical after preparation.

242.200. See Sections 224 and 540 for redistribution and reclamation details.

242.300. N/A - There are no permanent impoundments or roads proposed for this site.

242.310. N/A

242.320. N/A

243. Soil Nutrients and Amendments.

As described in Section 540 nutrients and soil amendments will be applied to the initially redistributed material when necessary to establish the vegetative cover.

244. Soil Stabilization.

See Sections 224 and 540 for reclamation and treatment details.

244.100. See Section 540 for reclamation details.

244.200. See Section 540.

244.300. See Section 540.

244.310. See Section 540.

244.320. See Section 540.

250. Performance Standards.

251. All topsoil, subsoil and topsoil substitutes or supplements will be removed, maintained and redistributed according to the plan (R645-301-540) given under R645-301-230 and R645-301-240 and 252. All stockpiled topsoil, subsoil and topsoil substitutes or supplements will be located, maintained and redistributed according to plans given under R645-301-230 and R645-301-240, (also R645-301-540).

References.

Black, C.A., 1965, Methods of Soil Analysis. American Society of Agronomy Mono. No. 9 Parts 1 and 2. Madison, Wisconsin. 1572 pgs.

USDA, Soil Conservation Service. Soil Survey Staff, 1975. Soil Taxonomy - a basic system of soil classification for making and interpreting soil surveys, USDA Agricultural handbook No. 436.

USDA, 1978 Soil Conservation Service, National Soils Handbook (Compedium of SCS in-house memos) Part II (403.6(a)).

USDA, Soil Survey Staff, 1951, Soil Survey Manual, USDA Agricultural Handbook No. 18.

USDA, Soil Conservation Services, 1979, Soil Survey Carbon Emery Area, Utah.

USDA, 1974, Guidelines to Making Soil Interpretations, Branch of Soils, Division of Watershed Management, Rocky Mountain Region.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

4012 Federal Building
125 South State Street
Salt Lake City, Ut 84138

June 16, 1980

Mr. David Chenoweth
ARCO Coal Company
555 17th Street
P.O. Box 5300
Denver, CO 80217

Dear Mr. Chenoweth:

After site investigation the Soil Conservation Service has determined that no prime farmland occurs on Beaver Creek Coal property known as Castle Valley Spur in Section 11, T.15 S., R. 10 E., SLBM.

Further detailed information may be obtained through the Price Field Office.

Sincerely,

T. B. Hutchings
State Soil Scientist

cc:
Ed Burton, AC, Orem
Gary Moreau, DC, Price

FIGURE 2-1

Appendix 2-1

Topsoil Stockpiles
(As-Constructed)

August 2006

Savage Services Corporation
Savage Coal Terminal

Appendix 2-1
Topsoil Stockpile
As-Constructed

Station	Area (sq.ft.)	Volume (cu.yds)	Acc. Volume (cu.yds)
0+00	0.00		
		1271.65	4709.80
1+00	2543.29		
		3169.26	11738.00
2+00	3795.23		
		4018.34	14882.72
3+00	4241.44		
		3293.62	12198.57
4+00	2345.79		
		1363.62	5050.44
5+00	381.45		
		190.73	706.39
6+00	0.00		
			49285.93

*Based on Aerial Survey and Cross Sections from Plate 2-2.

Appendix 2-2

Topsoil Evaluation
for
New Coal Stockpile Area

Savage Services Corporation
Savage Coal Terminal

April 3, 2002

Dan Guy
Blackhawk Engineering
1056 West 2060 North
Helper, Utah 84526

On March 27 and 29, 2002 I made a field evaluation of the available topsoil at the new coal stockpile area at the Savage Coal Terminal near Wellington, Utah as requested.

The existing soils map shows three soil types: ChC (Chipeta), KmB (Kilpack), and Sa (Saltair). These soils have developed mostly from parent materials of the Mancos shale under and arid environment. Representative vegetation includes shadscale, greasewood, tamarisk, and saltgrass. The area mapped as Sa supports mostly saltgrass and has been identified as a possible wetland site.

A topsoil layer about six inches thick was initially considered for salvage. Based on my field inspection, I found a range from about two to nine inches. The average is about six inches, however I have identified areas with seven to nine inches, four to seven inches, three to six inches, and two to three inches.

Thickness of suitable surface soil was determined by field observations of soil characteristics and root distribution. A tiling spade and bucket auger were used to excavate and expose soil materials. Restricting features were subsoils with very high salt content (crystals observed), very high carbonates (white patches predominant), shaly material (bedrock influence), and predominant mottling of colors (water table influence). Suitable surface soils have a dark grayish-brown to brown color and typically have higher organic matter and a more friable (looser and softer) consistency than the subsoils.

The soil-vegetation relationships are a key to identifying sites with different topsoil thickness. The sites with greasewood (KmB) have an average of about 8 inches of salvageable topsoil. Included in the area mapped as Kilpack soil is a patch of tamarisk. The soils are more of a brown to yellowish-brown color, but still average about 8 inches of suitable soil material. On the more sloping upland the soils are shallow over shale and support mostly shadscale and associated species. These sites are representatives of the Chipeta soil series and commonly have 3 to 6 inches of salvageable soil over a subsoil that is very high in carbonates and shaly material. Some spots that are nearly bare of vegetation have less than 3 inches of suitable soil material. The area in the northwest corner of the stockpile project site that is mapped as the Chipeta soil has suitable topsoil up to seven inches thick, but there are spots with as little as three inches. In the area with saltgrass there is about eight inches of suitable topsoil.

The site supporting saltgrass in the northeast corner of the project area was mapped as the Saltair soil series and was evaluated for wetness and drainage characteristics to aide in wetland determination. Most of this site was dry at the time of inspection. One small spot, about 25 feet long and six feet wide, was moist. The

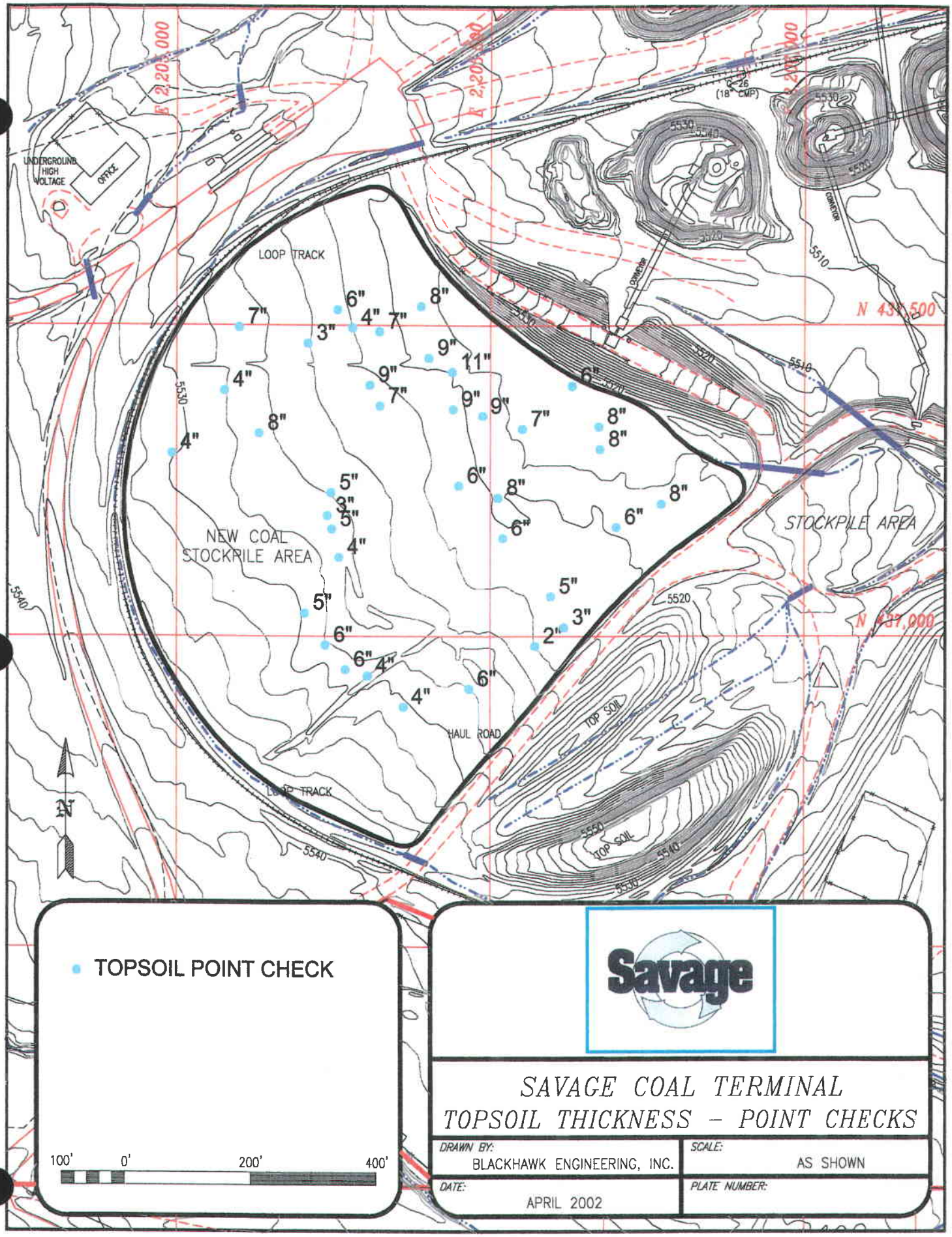
surface six to eight inches of soil at this spot has a very dark grayish-brown color and a silty clay loam texture. At about eight inches the soil has prominent mottling of gray and strong brown (rusty) colors. Weathered shaly material is present at about 24 inches. The soil appears to be more like the Libbings soil series, which is moderately deep over shale, different than Saltair, which is very deep.

Within the project area are two old irrigation ditches that were once used but are now dry and not used any more. At one time the soils supporting saltgrass, greasewood, and tamarisk were apparently wetter than under the present drainage situation, due to the influence of irrigation water.

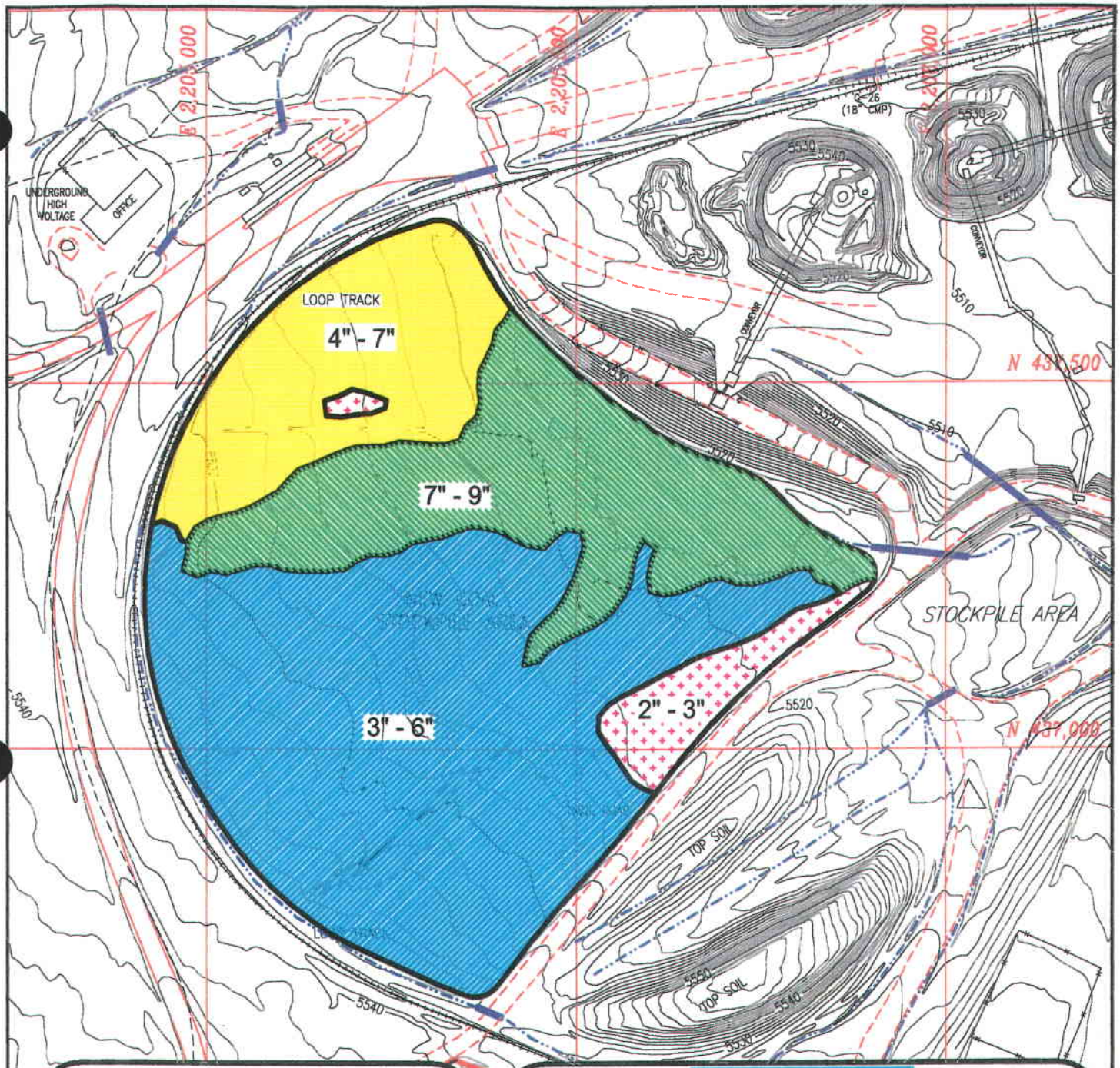
This information on topsoil thickness is intended to supplement the soil inventory information presented by James P. Walsh and Associates, July 1980. Topsoil thickness has been staked at about 20 locations within the project area, and a map showing topsoil thickness has been prepared. If you need further assistance or have any questions, please contact me.

Sincerely,

Daniel M. Larsen
Soil Scientist, EIS



UNDERGROUND HIGH VOLTAGE
OFFICE
LOOP TRACK
NEW COAL STOCKPILE AREA
STOCKPILE AREA
HAUL ROAD
TOP SOIL
TOP SOIL
N 437,500
N 437,000
E 2,205,000
E 2,205,500
E 2,206,000
C-26 (18" CMP)
CONVEYOR
CONVEYOR
5530
5540
5520
5510
5550
N
TOPSOIL POINT CHECK
100'
0'
200'
400'
Savage
SAVAGE COAL TERMINAL
TOPSOIL THICKNESS - POINT CHECKS
DRAWN BY:
BLACKHAWK ENGINEERING, INC.
SCALE:
AS SHOWN
DATE:
APRIL 2002
PLATE NUMBER:



4" - 7"

3" - 6"

7" - 9"

2" - 3"

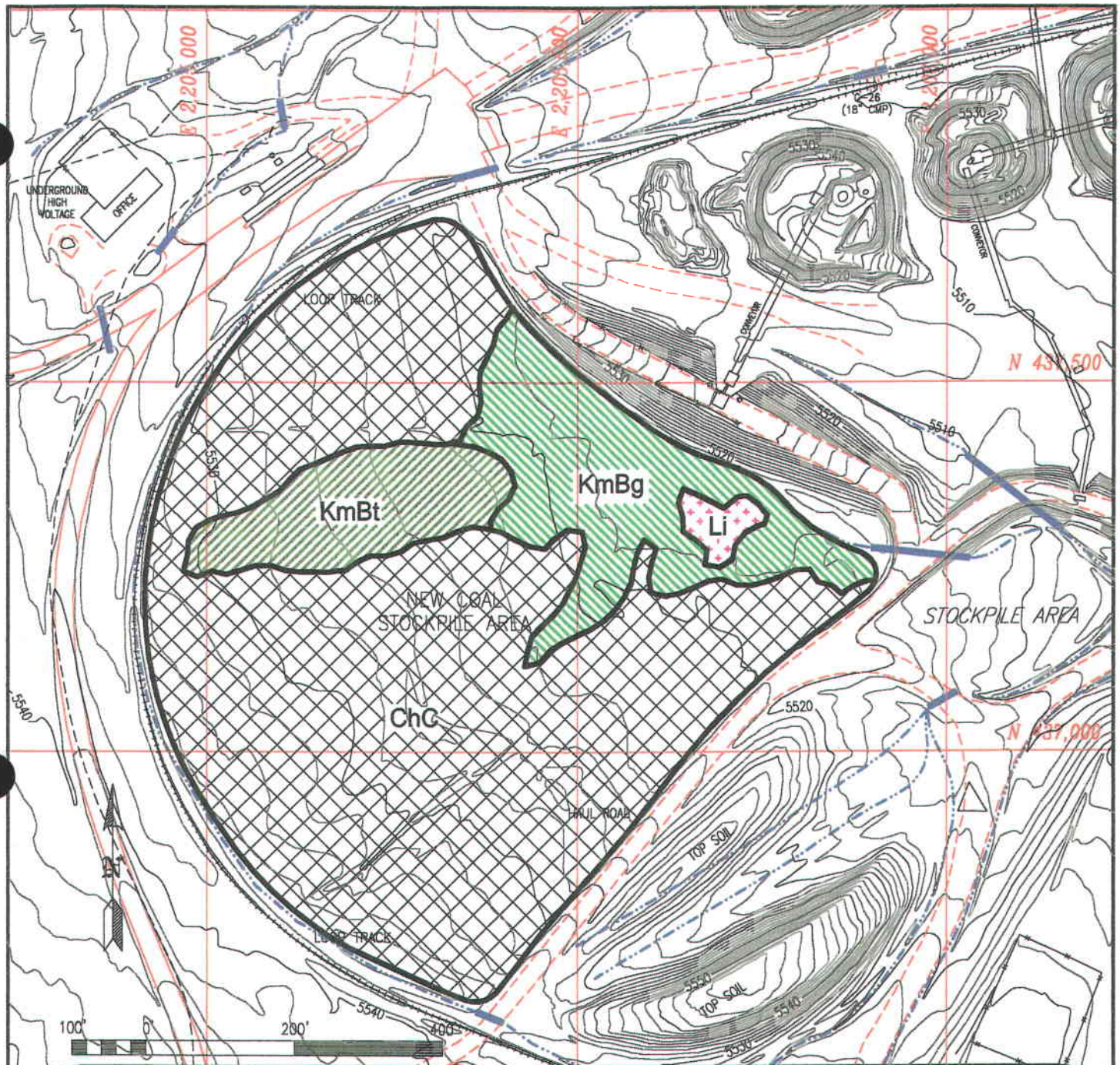
N

100' 0' 200' 400'

Savage

SAVAGE COAL TERMINAL TOPSOIL THICKNESS

DRAWN BY: BLACKHAWK ENGINEERING, INC.	SCALE: AS SHOWN
DATE: APRIL 2002	PLATE NUMBER:



ChC – Chipeta

KmBt – Killpack, High Water Table* Variant, Tamarisk

KmBg – Killpack, High Water Table* Variant, Greasewood

Li – Libbings*

* Drainage has been altered by changes in water supply. Presently drier than in the past.

Savage

SAVAGE COAL TERMINAL SOIL TYPE MAP

DRAWN BY: BLACKHAWK ENGINEERING, INC.	SCALE: AS SHOWN
DATE: APRIL 2002	PLATE NUMBER:

Li

61—Libbings silty clay loam. This moderately deep, poorly drained, strongly saline soil is on foot slopes of shale hills. It is adjacent to the Price, Carbon, and Wellington Canals. It formed in residuum derived dominantly from shale. Slope is 0 to 3 percent. Slopes are 200 to 400 feet long and are convex. The present vegetation in most areas is mainly greasewood and saltgrass. Elevation is 5,400 to 5,500 feet. The average annual precipitation is 6 to 8 inches, the average annual air temperature is 47 to 49 degrees F, and the average freeze-free period is 115 to 140 days.

Typically, the surface layer is grayish brown silty clay loam 9 inches thick. Below this to a depth of 34 inches is light brownish gray and gray silty clay loam and silty clay over soft shale. The content of salt above a depth of 20 inches is 2 to 5 percent.

Included in this unit are about 10 percent Saltair silty clay loam in narrow alluvial valleys and 5 percent Hunting loam.

Permeability of this Libbings soil is slow. Available water capacity is about 1 to 2 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. A water table is at a depth of 10 to 30 inches in January through December, but it is highest early in summer.

This unit is used for grazing.

The potential plant community on the Libbings soil is 85 percent grasses, 10 percent forbs, and 5 percent shrubs. Among the important plants are inland saltgrass, alkali sacaton, sedge, and Baltic rush.

Management practices that maintain or improve the rangeland vegetation include proper grazing use, a planned grazing system, and proper location of water developments. The suitability of this unit for grazing is good.

The suitability of this unit for rangeland seeding is poor. The main limitations are the high water table and salinity. Plants suitable for seeding include alkali sacaton and tall wheatgrass.

This map unit is in capability subclass VIIw, nonirrigated, and in Salt Meadow range site.

Appendix 2-3

Soils Evaluation
for
Settling Pond Area

Savage Services Corporation
Savage Coal Terminal

FINAL REPORT

for

ORDER 1 SOIL SURVEY including

SOIL TOPSOIL CHARACTERIZATION

Prepared for

PROPOSED SETTLING POND AREA
SAVAGE COAL TERMINAL
SAVAGE SERVICES CORPORATION
2025 East 5000 South
Price, Utah 84501

Prepared By

Mt. Nebo Scientific, Inc.
330 East 400 South, Suite 6
Springville , Utah 84663
(801) 489-6937

Bruce Chesler, Soil Scientist

August 21, 2006

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Introduction

An Order 1 soil survey was conducted on approximately 6.6 acres of Savage Coal Terminal Loadout area, on a previously non-disturbed area owned by Savage Services Corporation, Inc. The active loadout facility is currently under permit by the State of Utah, and comprises 154 total acres, most of which currently has coal loading and processing activities present. The 6.6 acre area study site lies to the northwest of Savage Services offices, and is characterized by gently-sloping Mancos shale fanslopes with a salt desert shrub vegetation type. Two settling ponds with a total area of approximately 2 acres are proposed for this site for coal wash water clarification, along with an undisturbed diversion and an area proposed for topsoil salvage storage along the southwest perimeter of the study site (see Savage Coal Terminal Soils Map, September 2005, Blackhawk Engineering, Inc).

Objectives

Provide a detailed Order 1 Soil Survey is provided on the 6.6 acre site to determine soil conditions and variability in accordance with National Cooperative Soil Survey standards.

Physical and chemical properties of both topsoil and subsoils were tested to determine suitability of topsoil for reclamation purposes according to R645-301-200 Soil Guidelines for Management of Topsoil and Overburden (OGM Price Field Office, October 2005).

Calculate topsoil salvage depths and provide a map showing areas of topsoil salvage and make recommendations to amend the quality of available topsoil materials, based on the above analytical studies and the Order 1 soil survey.

Make recommendations for the salvage operations with suggestions to reclamation specialists when using the topsoil materials to reclaim this site area to UDOGM standards.

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Methods

Prior to initiating fieldwork, Order 3 soil survey data from the area was reviewed (Sheet 19 of Soil Survey of Carbon Area, Jensen and Borchert, 1988.) A second, more detailed soil survey reconnaissance in this area was made at the Order 1 level of detail (James Walsh Associates, July 1980). This information was also reviewed and given consideration in my map unit design for the 6.6 area study site. Telephone discussions with Leland Sasser, NRCS Soil Scientist at the Price Field Office, were useful in the correlation and soil taxonomic classifications of these soils types. The current field survey of the study area was accomplished by Bruce Chesler on July 20 and 21, 2006. A telephone discussion between Bruce Chesler, soil surveyor, and Priscilla Burton, Soil Scientist at UDGOM Price Field office on July 18, 2006 was crucial for me, in detailing the scope of the projected soil survey and the type of soil analysis required for laboratory topsoil characterization at this site. Special considerations were made toward observing the extent of, and characterizing any high water table in the area.

An introduction to the proposed disturbed area was given to me by Dan Guy of Blackhawk Engineering, Inc. and the survey stakes representing ditch location and settling pond corners were noted. Spade and auger reconnaissance was made initially to determine soil surface variability, and to choose locations for backhoe soil description and sampling sites. Three soil profiles were chosen to represent map unit variability, then were sampled and bagged by horizon (or depth increment) and sent to BYU Soil and Plant Analysis Laboratory for characterization according to state standards (Table 3, OGM Topsoil Guidelines, 2003).

Soil and Landscape Description

Mancos Shale badlands comprise the geologic parent materials for soil development in the area. These Cretaceous age marine sediments are known from previous research to contain both strongly saline and sodic soil conditions in soils under these climatic conditions (USDA Soil Characterization Data, viewed on NSSC website). High dissolved salt contents, high Sodium Adsorption Ratios and Electrical Conductivities, and greater than 40 % clay content in both the soil epipedons and subsoils are evident in Mancos shale derived materials in general.

The landscape of the study area is characterized by flat to gently-sloping (less than 5 %), fanslopes derived from colluvial and alluvial materials comprised of marine sedimentary rock. These sediments appear in profile as olive to gray colored poorly defined horizons. Due to an arid climatic and the lack of mechanical weathering in a low precipitation area, combined with Mancos shale mineralogy, soil development is weak and difficult to define in the field. Soil moisture regime is Ustic, and soil temperature is mesic at this

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site. Soil Classifications at these sites fall within the Entisol Soil Order. Vegetation in the study area ranges from barren land to matted saltbrush and greasewood plant communities, with a shadscale component.

Results and Discussion

Three soil profiles were described in the area between the water diversion ditch and settling pond areas, chosen to represent the soil depth variability at the site. These pedon description sites were based upon previous soil surveys in the area and following a walk across the landscape. Appendix 1 includes the three soil profile descriptions identified as SP-1, 2, and 3. SP-1 is correlated to the Killpack Series, a Fine-silty, mixed, active, calcareous, mesic, Typic Torriorthent (OSD 7/2003), with weathered shale bedrock occurring at a depth of less than forty inches. Profiles SP-2 and SP-3 resemble the Billings Series, Fine-silty, mixed, active, calcareous, Typic Torrifluvent (OSD 7/2003) in that the Mancos shale bedrock is not evident in any depth greater than sixty inches. All three soil profiles were free of apparent mottling or other redoximorphic features which may indicate high water tables in the area. All of the soil profiles contained some concentrations of dissolved salts (crystallization), resulting from their transport and deposition in the profile. These salt concentrations were observed without magnification. Soils were generally moist at the time of sampling (7-21-06) at depths below 36 inches, on account of their dense, massive structure and slow permeability. Pedon SP-2 had the most apparent water content of the three sites. Surface cracks were apparent near SP-2, indicative of the high clay contents in these surface soils.

The clay mineralogy of the Mancos shales include both illite and kaolinite, which may have been a factor in the difficulties in accurately dispersing clays in samples for particle size laboratory analysis. In conversations with soil chemists (Henry Sauer in Denver, Colorado and Bruce Webb, Provo, Utah) the presence of certain clay minerals in these samples may have influenced a complete dispersion of clay. Thus, only surface soil data for mechanical particle sizes were analysed by the lab, and my field estimates of these soil samples were generally underestimated for clays by 20-25% in the field.

One other feature of the soil landscape which pertain to topsoil suitability and reseeding potential of this area are certain land use practices on adjacent properties which have, at times in the past, contributed coal dust and coal waste by-products onto the surfaces of these soils. I noticed that less than 1 inch of coal fines were present, but erratically distributed, on western portions of the study area. Some of the coal waste products (fines) may have already been incorporated into soil profiles in this area.

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Soil Chemical and textural properties are presented in Table 1. The chemical analyses concur with projected high salt, sodium, and clay contents generally recognized on Mancos shale derived soils, and referred to in the above discussion. Electrical conductivities in SP-1 were in the good range to 13 inch depths, then fair to poorly rated to 35 inches (bedrock contact). In SP-2, the EC were fair to 24 inch depth, then poor to unacceptable ratings. SP-3 has EC rated only poor to unacceptable.

Sodium Adsorption Ratios at soil SP-1 is fair to good to 13 inches, then poor in the subsoil. SP-2 has fairly rated SAR in the depth increments 0-12 inches and 24-48 inches, otherwise poor to unacceptable rated. SP-3 are all greater than 14 SAR, unacceptable by UDOGM Guidelines (Table 4, Topsoil Suitability Evaluations).

These data indicate to me the presence of both strongly saline conditions and sodic (high SAR) in these soils. Native topsoil (0-12 inches) in the study area were found to be suitable materials for seed and plant media, except for their clayey textures. Subsoils in this area are poorly suited as substitute topsoil material due to their high salt accumulations and clay content over 40% (field estimate). This could be anticipated due to the arid climate and the marine shale mineralogy of the geologic parent material.

Figure 1. shows my recommended depths of topsoil salvage at the three soil map units. The upper 26 inches of SP-1 (Killpack, clayey surface) and upper 24 inches SP-2 (Billings, moist) provide the best choice for topsoil materials with regard to salt content management. Only the upper 6 inches of SP-3 (Billings, eroded) should be considered for replacement topsoil due to high SAR values throughout the subsoils here.

Irrigation with less saline water with the intent of leaching the salts into the lower soil profile is a means whereby beneficial change in chemical composition could occur. Leaching with irrigation water found in the Price River nearby would not appreciably affect the salt movement, because of its inherently high salt contents.

Clay contents are all higher than 40 % in the all topsoils at the sampling sites. My field textural estimates for epipedons were generally 25% less than values derived by mechanical laboratory analysis. Thus, I can assume that a minimum of 40-50% clay particles comprise the lower soil profiles for each site. The management of clays in topsoil suitability poses another serious challenge for plant seed viability and plant growth at this site. Along with very slow permeability, lack of pore space, and their massive structural aggregates, certain types of clay minerals may repel vital plant nutrients. Recommendations I have to improve the physical properties of these high clay content materials include adding some of the waste rock from the coal wash process (sandier material) and using sewage sludge or other organic amendments to the topsoil stockpile to increase soil permeability, porosity, and decrease structural aggregations.

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Conclusions

A soil survey of the Order 1 magnitude and soil characterizations for three soils representing the soil landscape variability were made at the Savage property proposed for settling ponds and coal wash water clarification. High dissolved salt contents, high sodium, and high clay contents are three of the more limiting properties of these soils with respect to topsoil salvage and plant regrowth. The results of this soil survey and laboratory analyses make recommendations for the salvage of as much as 26 inches of the topsoil at this site (less in certain areas) to be used as topsoil, and if possible amended in some way to improve aggregation of soil, and water and air movement properties. The use of sewage sludge, organic matter, and fine materials derived from coal wash waste rock are some possibilities suggestions by this contractor to improve topsoil conditions and perhaps allow for additional substitute soil borrowed from the site (up to 3 feet depth) to be used in future reclamation.

I recommend that a qualified soil scientist with soil identification experience be monitoring soil recovery in the field at time of topsoil removal/stockpile operations.

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Bibliography

National Soil Survey Center. Lincoln, Nebraska. Soil Characterization Data. Website.

Personal Communications with Leland Sasser, NRCS Soil Scientist, Price Field Office
Personal Communications with Priscilla Burton, Soil Scientist DOGM, Price Utah
Personal Communications with Henry Sauer, Soil Scientist, Walsh and Associates.
Personal Communications with Bruce Webb. Director, BYU Soil and Plant Analysis Lab

Utah Division of Oil Gas and Mining. Price Field Office. October 2005. Guidelines for Management of Topsoil and Overburden. R645-301-200 Soils. 42 pages.

Saxton K. E. and W. J. Rawls. 2006. Website www.BSYSE>WSU>EDU/SAXTON/SOIL WATER. SPAW Model for Estimating Soil-Water Content from Textures.

Schoeneberger, P. J., D. A. Wysocki, E. C. Benham, and W. Broderson. September 2002. Field Book for Describing and Sampling Soils. Version 2.0. NRCS National Soil Survey Center. Lincoln, Nebraska.

Soil Survey of Carbon Area, Utah. USDA-SCS. 1988. Earl H. Jensen and James W. Borchert. 294 pages.

Soil Survey Staff. 2003. Soil Taxonomy, Ninth Edition. USDA-NRCS. US Government Printing Office. Washington D.C. 331 pages.

Soil Survey Staff. 1993. Soil Survey Manual. Agricultural Handbook 318. US GPO. Washington D.C. 4347 pages.

Soil Survey Staff. 2005, as amended. Internet version of National Soils Handbook.

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APPENDIX 1. Soil Pedon Descriptions from SP-1, SP-2, SP-3

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SP-1

SOIL DESCRIPTION

Soil Type: KILLPACK, CLAYEY SURFACE | File No.

Area: SAVAGE COAL TERMINAL | Date: 7/20/06 | Stop No.

Classification: FINESILTY USTIC TORRIORTHENT, MIXED, ACTIVE, CALCAREOUS, MESIC

Location: Section T R

N. Veg.: SHADSCALE W/ GREASEWOOD

Parent Material: ALLUVIUM OVER RESIDUUM | Climate (Precip.): USTIC

Physiography: FANSLOPES | Surface Rock Fragments Gravel: 0 → T

Relief: SLIGHTLY CONVEX | Drainage: SPD | Surface Rock Fragments Cobble: 0

Elevation | Gr.water: NONE | Surface Rock Fragments Stones: 0

Slope: 2 | Range: 1-3% | Moisture: — | Surface Rock Fragments Other: 0

Aspect/Degrees: 40° | Root Distr. | % Clay *PSCS: >35 (Est)

Erosion: NONE → SLIGHT | % Coarse fragments*PSCS: 0 | % Coarser than V.F.S.*PSCS: <20

Permeability: SLOW | Range Site

GPS Latitude N: 12 S 0519190 | Microbiotic Crust Class: NONE

GPS Longitude W: UTM 4375819 | Rock Formation/Type: MANCOS SHALE

GPS Elevation: 1666 M. | Topo Quad Name

Soil Temp at 20" F: NOT MEASURED | Photo Number

Additional Notes: SECONDARY DEPOSITS OF GYPSUM AND CALCIUM CARBONATES COMMON

COAL DUST FINES ERRATICALLY OCCUR ON SURFACES < 1 INCH DEPTH

PHOTOS 1 & 2 PEDON AND LANDSCAPE

BRUCE CHESLER DESCRIBER

BACKHOE PIT 4½ FEET DEEP

FIELD / LAB

*Control Section Average

Horizon	Depth (Inch)	Color Dry	Color Moist	Texture Clay	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction Effer.	Boundary	Rock Frags	Root	Pore	Ped Surface Features
A	0-4	10YR 6/2	2.5Y 4/3	CLAY / 51	2CPL → MGR	SH	FI	S P	VE	CS	TR COAL FINE + SS	2VF	2VF + TU 2F.	
C1	4-12	2.5Y 6/2	2.5Y 4/3	SICL / 30	2C-M SBK	SH	FI	S P	VE	CW	/	IVF	2VF 1	GYSUM & CACO3 FILAMENTS
C2	12-26	2.5Y 7/1	2.5Y 4/2	SICL / 31	3C SBK	HA	VFI	S P	VE	GW	/	IVF	IVF, IFTU	GYPSUM XTL CACO3 NODES AND FILAMENTS
CY	26-35	5Y 7/2	5Y 5/3	SICL / 33	3C-M SBK	VH	VFI	S P	VE	G.S	10 SHALE FRAGS	/	/	GYPSUM CRYSTALS & SHALE FRAGS
Cr	35+	35-50% WEATHERED OLIVECOLORED SHALE BEDROCK												

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SP-2

SOIL DESCRIPTION

Soil Type: BILLINGS, MOIST PHASE | File No.

Area: SAVAGE COAL TERMINAL | Date: 7/20/06 | Stop No.

Classification: FINE-SILTY TYPIC TORRIFLUVENT, MIXED ACTIVE, CALCAREOUS MESIC

Location: Section T R

N. Veg.: GREASEWOOD

Parent Material: ALLUVIUM | Climate (Precip.): USTIC

Physiography: TOESLOPE | Surface Rock Fragments Gravel: 0

Relief: PLANAR | Drainage: POORLY DRAINED | Surface Rock Fragments Cobble: 0

Elevation | Gr.water: NONE APPARENT | Surface Rock Fragments Stones: 0

Slope: 1 | Range: 1-2% | Moisture: YES, BELOW 48" | Surface Rock Fragments Other: 0

Aspect/Degrees: 50° | Root Distr. | % Clay *PSCS: >40% (EST)

Erosion: NONE | % Coarse fragments *PSCS: 0 | % Coarser than V.F.S. *PSCS: <20%

Permeability: SLOW | Range Site

GPS Latitude N: 0519259 | Microbiotic Crust Class: NONE

GPS Longitude W: 4375852 | Rock Formation/Type: MANCOS

GPS Elevation: 1676 M | Topo Quad Name: PRICE

Soil Temp at 20" F | Photo Number

Additional Notes: BACKHOE PIT 8 FEET DEEP OBSERVED. BRUCE CHESIER DESCRIBED

SOIL MOIST FROM 48-96 INCHES

SECONDARY GYPSUM AND CALCIUM CARBONATES COMMON IN SOIL

*Control Section Average

Horizon	Depth (inches)	Color Dry	Color Moist	Texture / Clay	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction Effer.	Boundary	Rock Frags	Root	Pore	Ped Surface Features
A1	0-6	2.5Y 5/1	2.5Y 3/2	SiC / 29*	3M,C ABK → MGR	HA	FI	S P	VE	CS	/	VF IF IM	2VF i 2F tu	PLATY STRUCTURES
A2	6-12	2.5Y 6/3	2.5Y 4/3	SiCL / 29	3C-M SBK	VH	FI	S P	VE	CS	/	VF IF IM	VF i IF tu	
C1	12-24	2.5Y 6/2	2.5Y 4/2	SiCL / 33	3C SBK	VH	VFI	S P	VE	GW	/	VF	VF tu, i	FEW VFAINT MOTTLES, ROOT CHANN
Cy1	24-48	2.5Y 6/3	2.5Y 5/2	SiCL / 32	3C SBK	VH	VFI	S P	VE	GW	/	/	VF i	GYSUM & CACO3 FILAMENTS
Cy2	48-72	5Y 5/2	5Y 4/1	SiCL / 30	MASSIVE	EH	EFI	S P	VE	DW	/	/	VF T	GYSUM CRYSTALS
Cy3	72-96	5Y 6/2	5Y 5/3	SiC / 47	MASSIVE	EH	EFI	VS VP	SE		/	/	/	GYPSUM CRYSTALS

* LAB ANALYSIS 54% CLAY 0-6" DEPTH

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SP-3

SOIL DESCRIPTION

Soil Type: BILLINGS, ERODED PHASE | File No.

Area: SAVAGE COAL TERMINAL | Date: 7-21-06 | Stop No.

Classification: FINE-SILTY USTIC TORRIFLUVENT, MIXED, ACTIVE, CALCAREOUS, MESIC

Location: Section T R

N. Veg.: MATTED SALTBRUSH, WEEDS, GREASEWOOD

Parent Material: ALLUVIUM, RESIDUUM FROM SHALE | Climate (Precip.): USTIC

Physiography: FANSLOPE | Surface Rock Fragments Gravel: 0

Relief: SL CONCAVE → UNDULATING | Drainage: PD | Surface Rock Fragments Cobble: 0

Elevation | Gr.water: NONE | Surface Rock Fragments Stones: 0

Slope: 2% | Range: 1-2 | Moisture: BELOW 36" | Surface Rock Fragments Other: 0

Aspect/Degrees: 60 | Root Distr.: 0-12" | % Clay *PSCS: > 40%

Erosion: SLIGHT - MODERATE | % Coarse fragments *PSCS: 0 | % Coarser than V.F.S. *PSCS: < 20%

Permeability: SLOW RILL EROSION | Range Site

GPS Latitude N: 0519252 | Microbiotic Crust Class: NONE

GPS Longitude W: 4375912 | Rock Formation/Type: MANCOS SHALE

GPS Elevation | Topo Quad Name

Soil Temp at 20" F | Photo Number

Additional Notes: BACKHOE PIT 5+ FEET DEEP DESCRIBED BY BRUCE CHESLEY

POSSIBLY CLASSIFIED SAGERS SERIES, IF THE SITE IS UPLAND

SOIL SURFACE CRACKS + SUBSIDENCE APPARENT W/ CHEMICAL SOIL CRUSTS

SMALL 1/2-1' ARROYOS DISSECT LANDSCAPE W → E DIRECTION

*Control Section Average

Hori-zon	Inches Depth	Color Dry	Color Moist	Texture Clay	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction Effer.	Boundary	Rock Frags	Root	Pore	Ped Surface Features
A	0-6	2.5Y 5/3	2.5Y 4/2	SiL / 27	3M-C SBK → MGR	SH	FR	SS PS	VE	CS	/	VF IF	2VF 1F IN	SOME PLATY SFC STRUCTURES CHEMICAL CRUST SFC CRACKS
A	6-12	2.5Y 5/2	2.5Y 4/3	SiCL /	3M-C ABK	HA	FI	S P	VE	CW	/	VF	1F+ VF IN	CACO3 FILAMENTS + DISSEMINATE
C1	12-24	2.5Y 6/3	2.5Y 4/2	SiCL / 32	3M-C SBK	HA	VFI	S P	VE	CW	/	/	VF-F IN	GYPSUM + CRYSTAL CACO3 NODULES + FILAMENTS
C2	24-48	5Y 5/2	5Y 4/2	SiC / 42	MASSIVE	VH	EFI	VS VP	VE	GW	/	/	/	CACO3 FILAMENTS MOIST
C1	48-60+	5Y 6/2	5Y 5/3	SiC / 49	MASSIVE	EH	EFI	VS VP	SE		/	/	/	GYPSUM CRYSTALS MOIST-WET

* LAB MECHANICAL ANALYSIS (48% CLAY)

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BYU Soil Sample Site Laboratory Analysis SAVAGE LOADOUT SITE

													Cations (mg/kg)					
Sample Site	Soil Depth (in.)	Lab #	Sand (%)	Clay (%)	Silt (%)	vfsand %	USDA tex	Saturation %	pH	EC (mmhos/cm)*	$CaCO_3$	Total Organic Carbon %	Soluble meq/L Ca	Soluble meg/L Mg	Soluble meg/L K	Soluble meg/L Na	mg/Kg P	mg/Kg NO3-N
A SP-1	0-4	975.00	21.00	51.28	27.72	14.80	clay	46.51	7.77	3.30	24.25	1.80	21.94	4.69	0.62	24.15	5.35	8.77
C1 SP-1	13-Apr	976	16.92	53.28	29.80	11.68	silty clay	44.04	7.69	3.60	24.47	0.70	140.09	7.47	0.47	15.03	6.43	9.11
SP-1	13-26	977	no data	no data	ND	ND		46.52	8.01	8.50	21.90	0.40	25.16	28.59	0.16	63.44	2.45	14.28
SP-1	26-35	978	ND	ND	ND	ND		50.38	8.22	9.50	17.89	0.30	25.93	44.59	0.17	130.43	0.36	12.00
CR SP-1	35 plus	979	ND	ND	ND	ND		53.02	7.99	10.00	9.36	0.01	22.56	45.23	0.23	83.48	0.25	18.43
SP-2	0-6	980	17.28	54.28	28.44	12.56	silty clay	43.96	7.67	4.60	23.77	1.70	28.80	7.04	0.01	22.04	6.43	17.16
SP-2	6--12	981	no data	no data	no data	no data		55.95	7.70	4.60	21.24	0.70	30.17	10.03	0.23	22.59	3.13	7.42
SP-2	12--24	982	ND	ND	ND	ND		49.03	7.91	8.00	22.92	0.20	27.65	33.49	0.20	58.10	3.48	8.39
SP-2	24-48	983	ND	ND	ND	ND		58.82	8.55	9.50	16.56	0.02	17.96	146.56	0.24	73.46	0.03	8.69
SP-2	48-72	984	ND	ND	ND	ND		60.80	8.55	10.10	17.05	0.06	17.15	142.93	0.42	172.52	2.79	1.03
SP-2	72-96	985	ND	ND	ND	ND		59.09	8.53	5.10	17.32	0.02	17.03	138.88	0.58	278.26	4.99	4.62
SP-3	0-6	986	14.28	48.56	37.16	10.12	silty clay	50.85	8.30	14.00	20.71	1.00	25.85	6.83	1.01	161.74	7.78	28.32
SP-3	6 to 12	987	no data	no data	no data	no data		62.89	8.63	20.00	19.91	0.40	20.94	10.24	0.40	461.22	9.94	1.03
SP-3	12 to 24	988	ND	ND	ND	ND		63.79	8.68	30.00	17.95	0.07	17.82	33.92	0.33	439.65	1.34	20.61
SP-3	24-48	989	ND	ND	ND	ND		66.82	8.76	30.00	20.70	0.03	16.83	172.80	0.74	745.74	1.23	10.42
SP-3	48-72	990	ND	ND	ND	ND		69.06	8.67	30.50	22.51	0.02	16.50	160.21	0.56	617.74	2.68	3.36

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Table 1 - Soil Chemical and Textural Properties at SAVAGE LOADOUT SITE

																	Cations (mg/kg)					
Sample Site	Soil Depth (in.)	Lab #	Sand (%)	Clay (%)	Silt (%)	vfsand %	USDA tex	Saturation %	pH	EC (mmhos/cm)[1]	$CaCO_3$	Total Organic Carbon %	SAR	Est. K Factor	AWC %		Soluble meq/L Ca	Soluble meq/L Mg	Soluble meq/L K	Soluble meq/L Na	mg/Kg P	mg/Kg NO3-N
SP-1	0-4	975	21.00	51.28	27.72	14.80	clay	46.51	7.77	3.30	24.25	1.80	6.62	0.32	12.00		21.94	4.69	0.62	24.15	5.35	8.77
SP-1	4 to 13	976	16.92	53.28	29.80	11.68	silty clay	44.04	7.69	3.60	24.47	0.70	1.75	0.28	14.00		140.09	7.47	0.47	15.03	6.43	9.11
SP-1	13-26	977	no data	no data	ND	ND		46.52	8.01	8.50	21.90	0.40	12.25	0.28	14.00		25.16	28.59	0.16	63.44	2.45	14.28
SP-1	26-35	978	ND	ND	ND	ND		50.38	8.22	9.50	17.89	0.30	21.29	0.28	14.00		25.93	44.59	0.17	130.43	0.36	12.00
SP-1	35 +	979	ND	ND	ND	ND		53.02	7.99	10.00	9.36	0.01	14.34	0.28	14.00		22.56	45.23	0.23	83.48	0.25	18.43
SP-2	0-6	980	17.28	54.28	28.44	12.56	silty clay	43.98	7.67	4.60	23.77	1.70	5.21	0.32	14.00		28.80	7.04	0.01	22.04	6.43	17.16
SP-2	6--12	981	no data	no data	no data	no data		55.95	7.70	4.60	21.24	0.70	5.04	0.28	14.00		30.17	10.03	0.23	22.59	3.13	7.42
SP-2	12--24	982	ND	ND	ND	ND		49.03	7.91	8.00	22.92	0.20	10.51	0.28	14.00		27.65	33.49	0.20	58.10	3.48	8.39
SP-2	24-48	983	ND	ND	ND	ND		58.62	8.55	9.50	16.56	0.02	8.10	0.28	14.00		17.96	146.56	0.24	73.46	0.03	8.69
SP-2	48-72	984	ND	ND	ND	ND		60.80	8.55	10.10	17.05	0.06	19.28	0.28	14.00		17.15	142.93	0.42	172.52	2.79	1.03
SP-2	72-96	985	ND	ND	ND	ND		59.09	8.53	5.10	17.32	0.02	31.52	0.28	14.00		17.03	138.88	0.58	278.26	4.99	4.62
SP-3	0-6	986	14.28	48.56	37.16	10.12	silty clay	50.85	8.30	14.00	20.71	1.00	40.02	0.32	14.00		25.85	6.83	1.01	161.74	7.78	28.32
SP-3	6 to 12	987	no data	no data	no data	no data		62.89	8.63	20.00	19.91	0.40	116.55	0.28	14.00		20.94	10.24	0.40	461.22	9.94	1.03
SP-3	12 to 24	988	ND	ND	ND	ND		63.79	8.68	30.00	17.95	0.07	86.44	0.28	14.00		17.82	33.92	0.33	439.65	1.34	20.61
SP-3	24-48	989	ND	ND	ND	ND		66.82	8.78	30.00	20.70	0.03	79.59	0.28	14.00		16.83	172.80	0.74	745.74	1.23	10.42
SP-3	48-72	990	ND	ND	ND	ND		69.06	8.67	30.50	22.51	0.02	65.72	0.28	14.00		16.50	160.21	0.56	617.74	2.68	3.36

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Escalante, UT 84726

8/8/06

SOIL ID:

Customer Sample ID		Lab #	mg/Kg P	mg/Kg NO3-N	Extractable meq/100g K	%OM
A 0-4 SP-1	r6	975	5.35	8.77	5.91	2.68
C1 4-13 SP-1		976	6.43	9.11	2.38	0.97
SP-1 13-26"		977	2.45	14.28	0.57	0.58
SP-1 26-35"		978	0.36	12.00	0.57	0.44
SP-1 35" Cr weathered mancos		979	0.25	18.43	0.57	0.01
SP-2 0-6"		980	6.43	17.16	3.45	2.39
SP-2 6-12"		981	3.13	7.42	1.48	0.99
SP-2 12-24"		982	3.48	8.39	0.98	0.31
SP-2 24-48"		983	0.03	8.69	0.98	0.02
SP-2 48-72"		984	2.79	1.03	1.39	0.06
SP-2 72-96"		985	4.99	4.62	3.77	0.02
SP-3 0-6"		986	7.78	28.32	5.01	1.44
SP-3 6-12"		987	9.94	1.03	3.69	0.50
SP-3 12-24"		988	1.34	20.61	1.23	0.07
SP-3 24-48"		989	1.23	10.42	1.07	0.03
SP-3 48-72"		990	2.68	3.36	2.38	0.02

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8/8/06

SOIL ID:

Customer Sample ID	Lab #	Soluble meq/L K	Soluble meq/L Na	% Moisture Sat.	%CaCO3
A 0-4 SP-1	r6 975	0.62	24.15	6.6	46.51	24.25
C1 4-13 SP-1	976	0.47	15.03	1.8	44.04	24.47
SP-1 13-26"	977	0.16	63.44	12.2	46.52	21.90
SP-1 26-35"	978	0.17	130.43	21.3	50.38	17.89
SP-1 35" Cr weathered mancos	979	0.23	83.48	14.3	53.02	9.36
SP-2 0-6"	980	0.01	22.04	5.2	43.96	23.77
SP-2 6-12"	981	0.23	22.59	5.0	55.95	21.24
SP-2 12-24"	982	0.20	58.10	10.5	49.03	22.92
SP-2 24-48"	983	0.24	73.46	8.1	58.82	16.56
SP-2 48-72"	984	0.42	172.52	19.3	60.80	17.05
SP-2 72-96"	985	0.58	278.26	31.5	59.09	17.32
SP-3 0-6"	986	1.01	161.74	40.0	50.85	20.71
SP-3 6-12"	987	0.40	461.22	116.0	62.89	19.91
SP-3 12-24"	988	0.33	439.65	86.4	63.79	17.95
SP-3 24-48"	989	0.74	745.74	79.6	66.82	20.70
SP-3 48-72"	990	0.56	617.74	65.7	69.06	22.51

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SOIL ID:

% ORGANIC CARBON

USDA TEXTURE

Customer Sample ID		Lab #	% Organic Carbon	pH	EC dS\M	%Sand	%Clay	%Silt	% VF Sand		Soluble meq/L Ca	Soluble meq/L Mg
A 0-4 SP-1	r6	975	1.55	7.77	3.30	21.00	51.28	27.72	clay	14.80	21.94	4.69
C1 4-13 SP-1		976	0.56	7.69	3.60	16.92	53.28	29.80	s'c	11.68	140.09	7.47
SP-1 13-26"		977	0.34	8.01	8.50						25.16	28.59
SP-1 26-35"		978	0.25	8.22	9.50						25.93	44.59
SP-1 35" Cr weathered mancos		979	0.00	7.99	10.00						22.56	45.23
SP-2 0-6"		980	1.39	7.67	4.60	17.28	54.28	28.44	s'c	12.56	28.80	7.04
SP-2 6-12"		981	0.57	7.70	4.60						30.17	10.03
SP-2 12-24"		982	0.18	7.91	8.00						27.65	33.49
SP-2 24-48"		983	0.01	8.55	9.50						17.96	146.56
SP-2 48-72"		984	0.03	8.55	10.10						17.15	142.93
SP-2 72-96"		985	0.01	8.53	5.10						17.03	138.88
SP-3 0-6"		986	0.84	8.30	14.00	14.28	48.56	37.16	s'c	10.12	25.85	6.83
SP-3 6-12"		987	0.29	8.63	20.00						20.94	10.24
SP-3 12-24"		988	0.04	8.68	30.00						17.82	33.92
SP-3 24-48"		989	0.02	8.76	30.00						16.83	172.80
SP-3 48-72"		990	0.01	8.67	30.50						16.50	160.21

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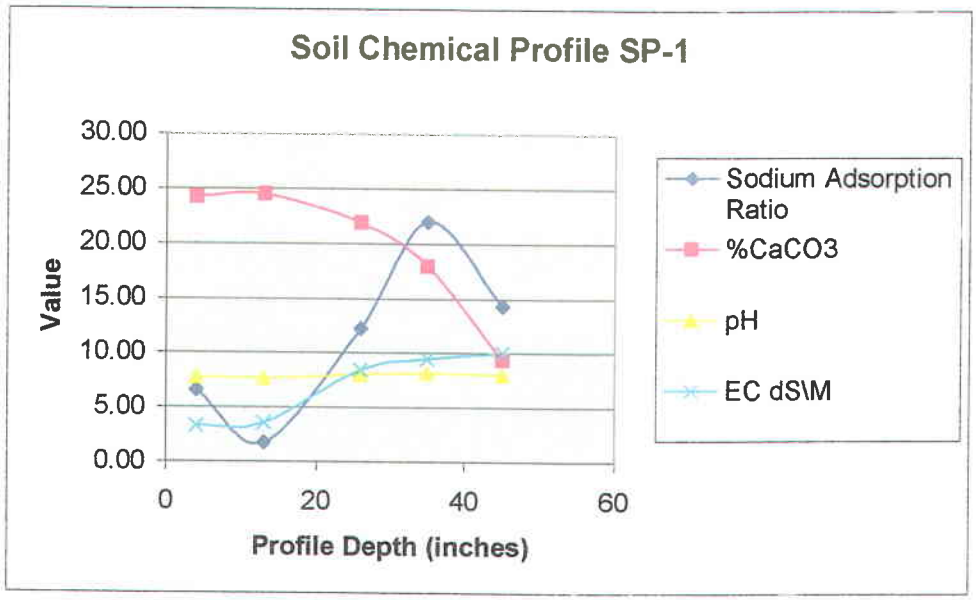

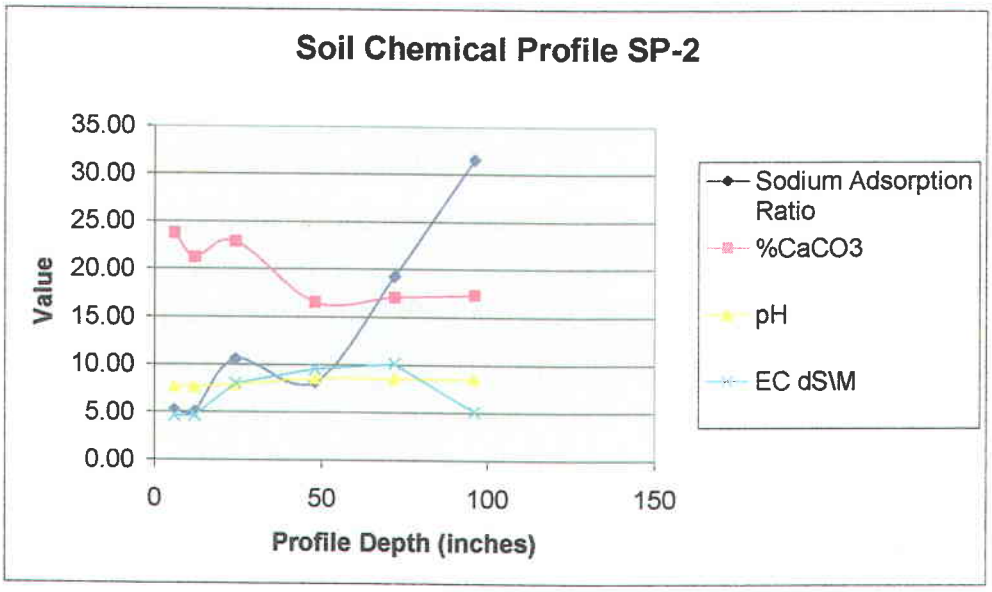

Figure 1

Soil Chemical Profiles, At Savage Loadout sites SP-1, SP-2

courtesy of Henry Sauer, Soil Scientist, Walsh and Associates, Inc.

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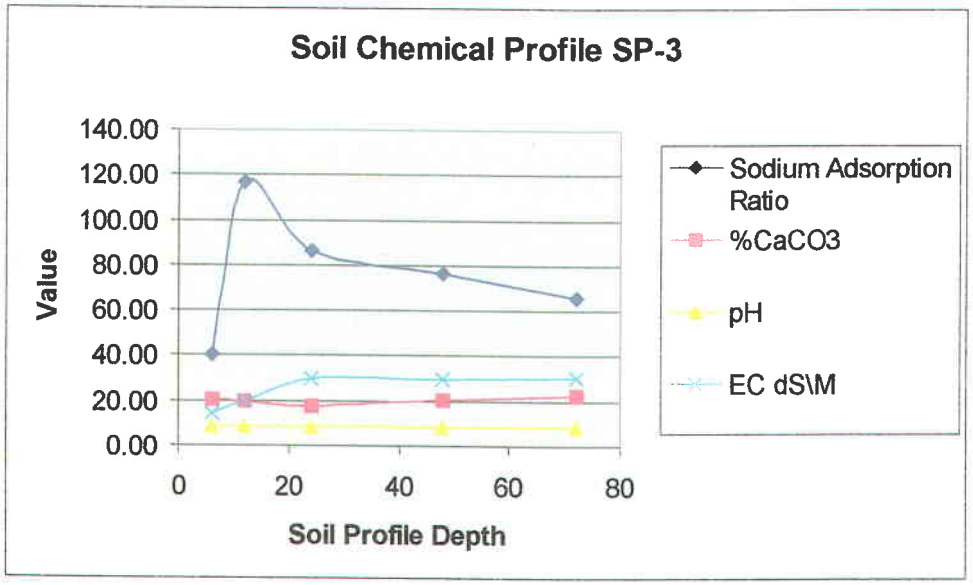
FIGURE 2. Soil Chemical Profile for SP-3, Savage Loadout Site



Graph courtesy of Henry Sauer, Soil Scientist, Walsh and Associates, Inc.

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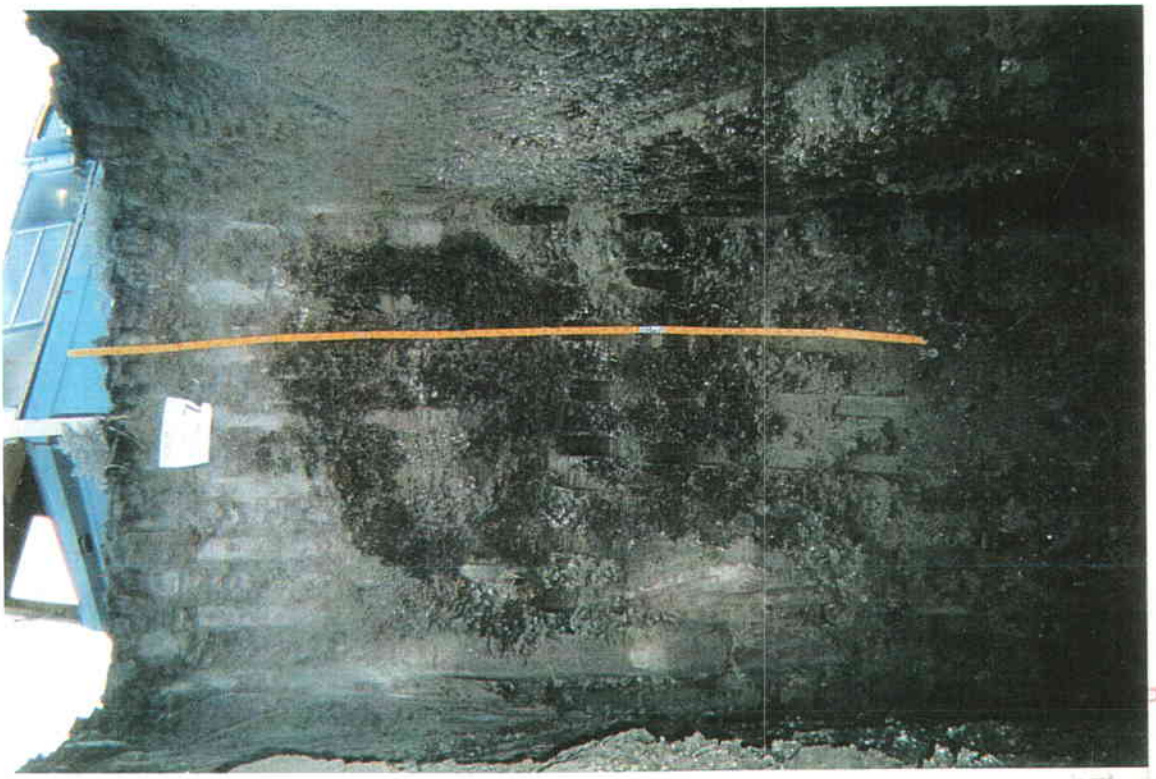
APPENDIX 1
PEDON SP-3 PHOTOGRAPHS including landscape position



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APPENDIX 1
PHOTOGRAPHS OF SP-2, with geographic setting

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APPENDIX 1
PHOTOGRAPHS of PEDON SP-1, with landscape position

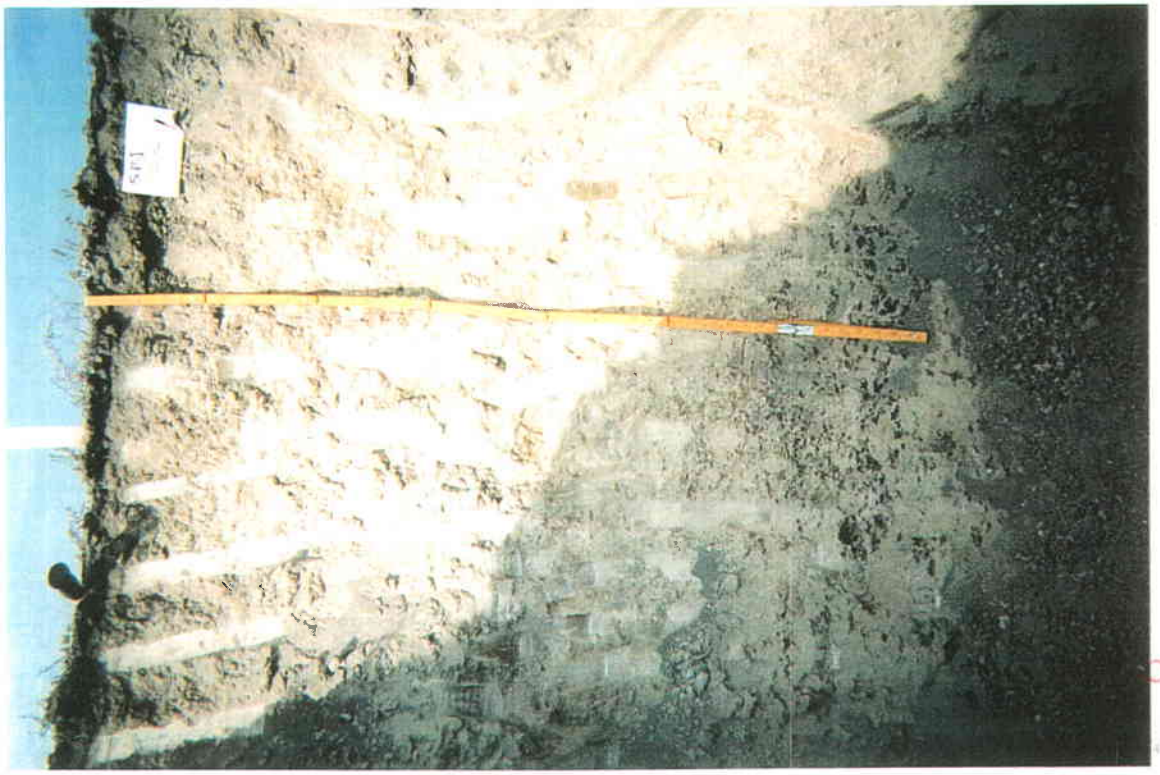

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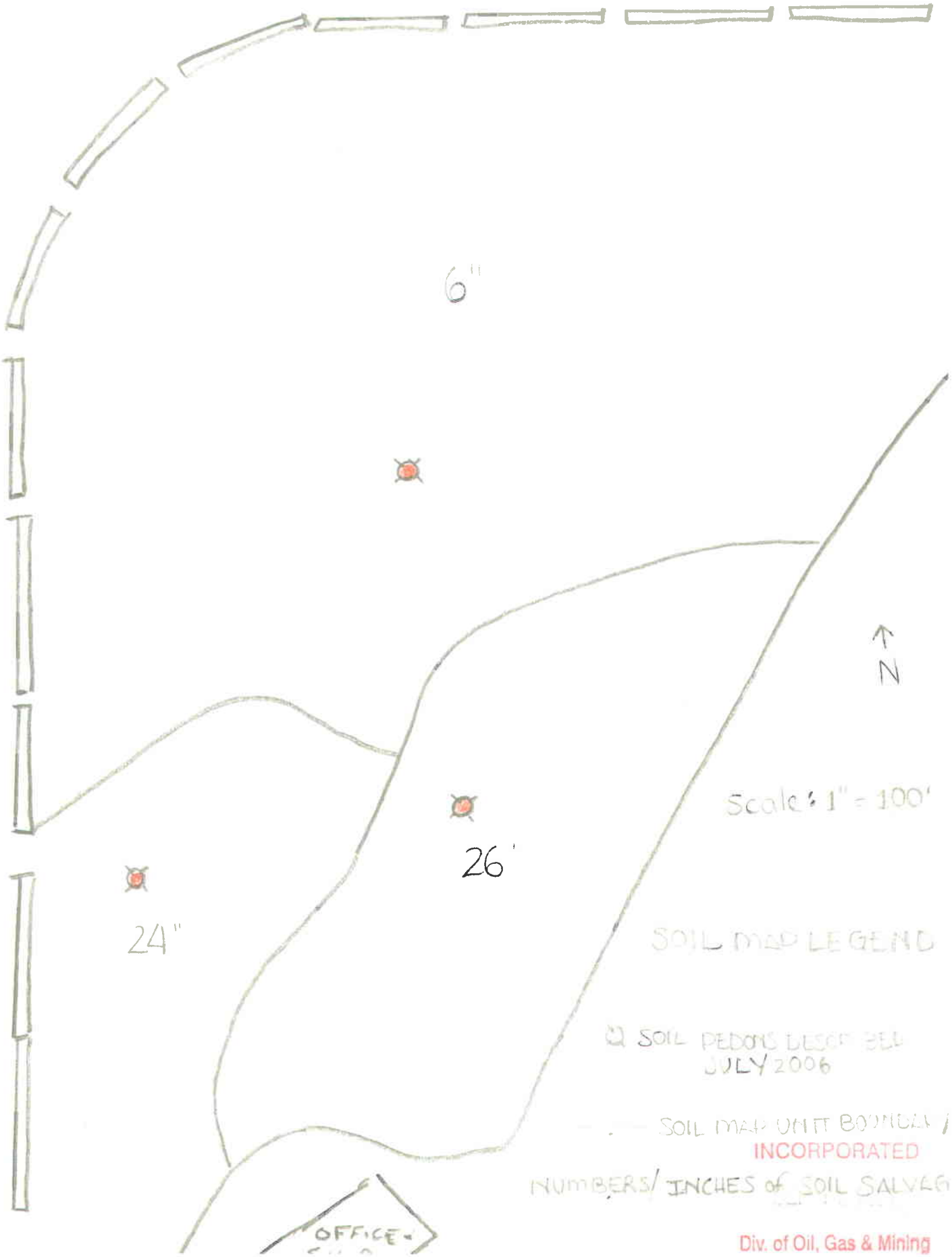
FIGURE 1. SOIL SALVAGE MAP



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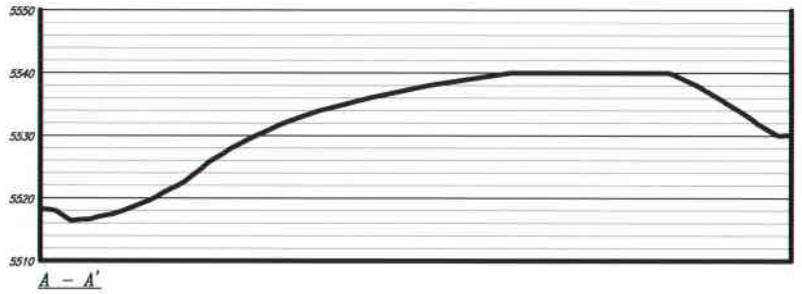

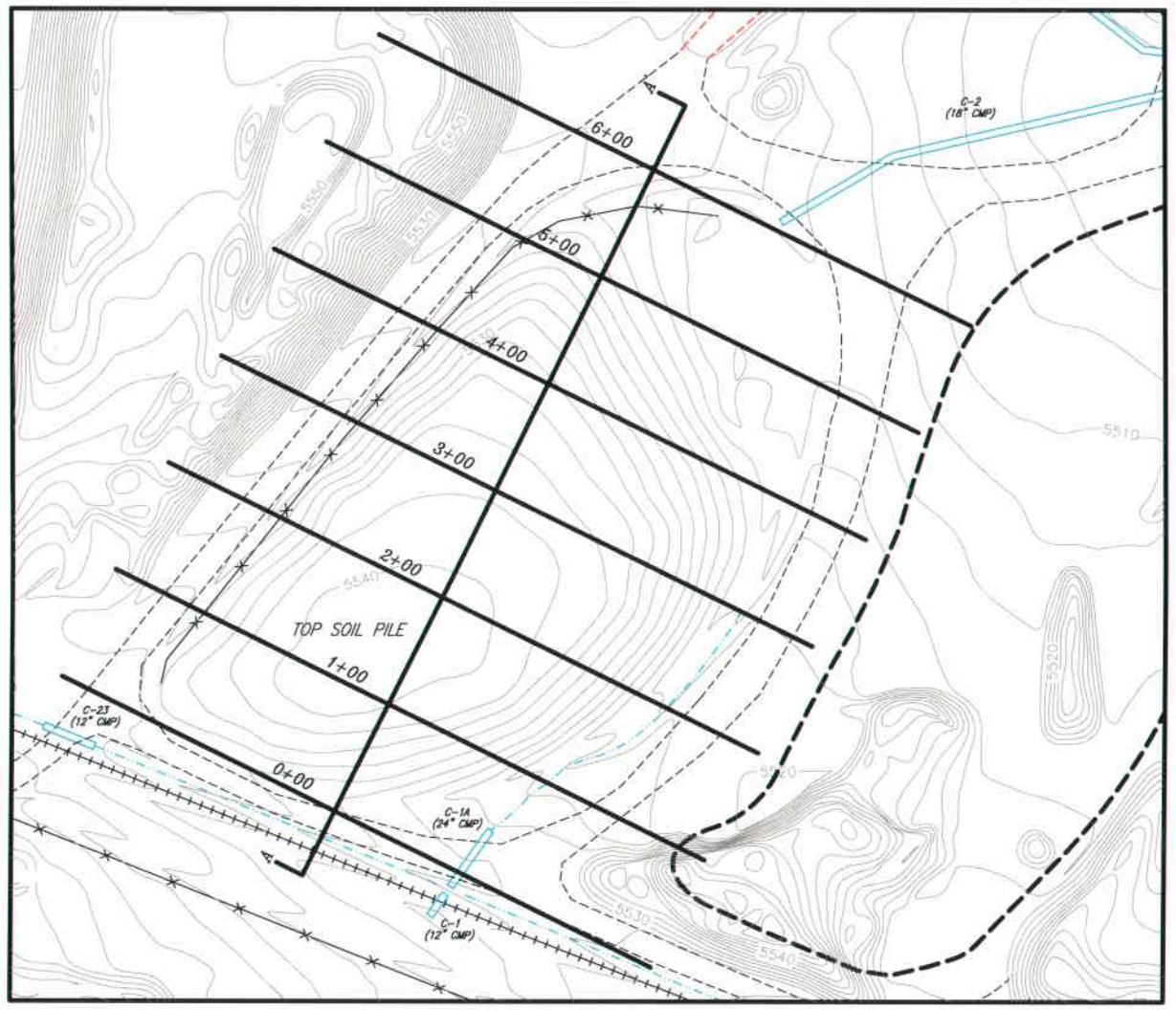

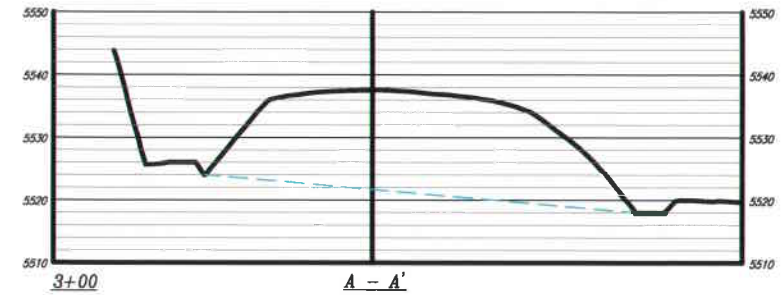

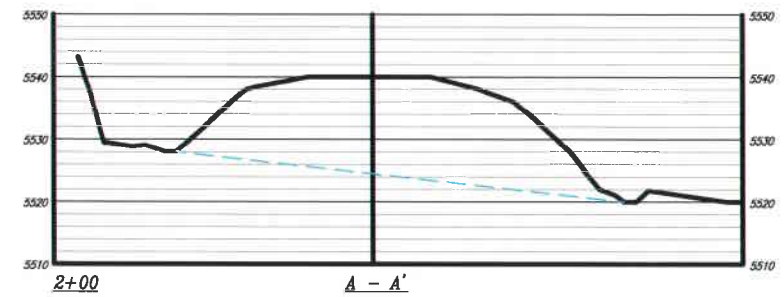

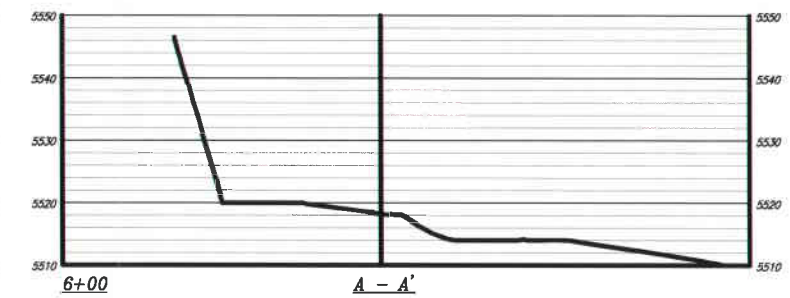

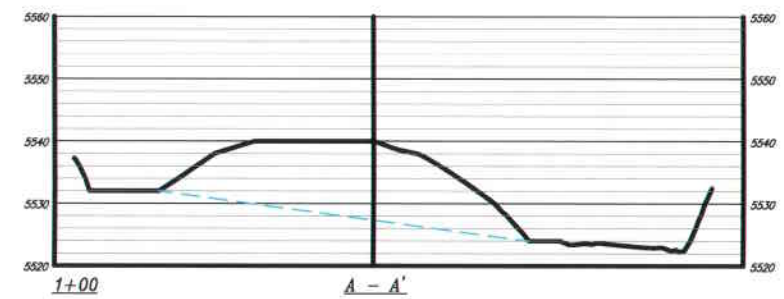

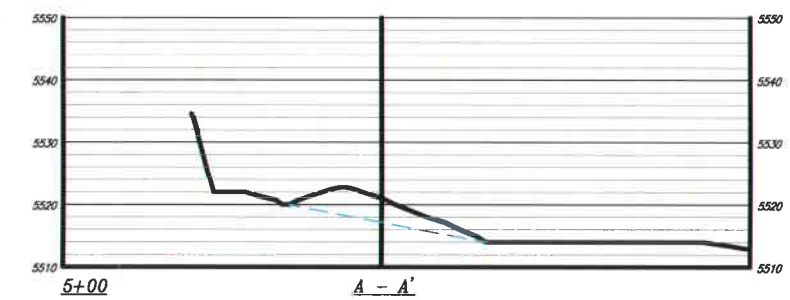

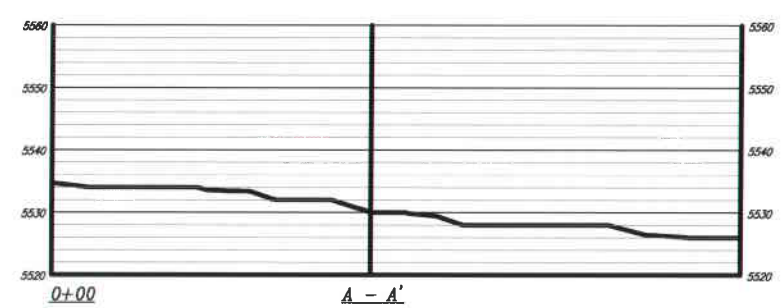

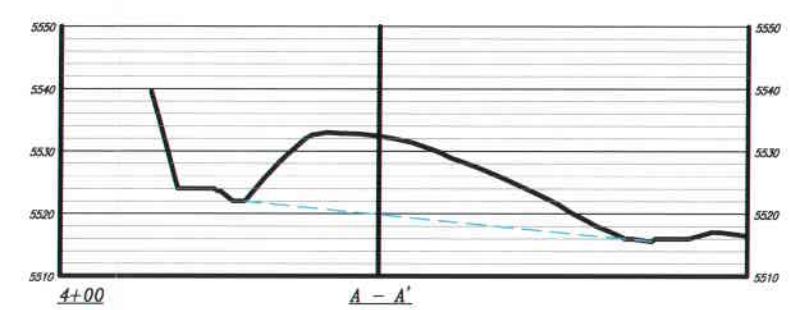

VERTICAL SCALE: 1:5
HORIZONTAL SCALE: 1:1

LEGEND:
EXISTING GROUND LINE: — — —
CROSS-SECTION LINE: ———

REVISION #	DESCRIPTION

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 6/5/09

N

SAVAGE

SAVAGE COAL TERMINAL
AS-BUILT TOPSOIL MAP

SCALE: 1" = 150'	DRAWN BY: BLACKHAWK ENGINEERING
DATE: AUGUST 2006	PLATE: PLATE 2-2

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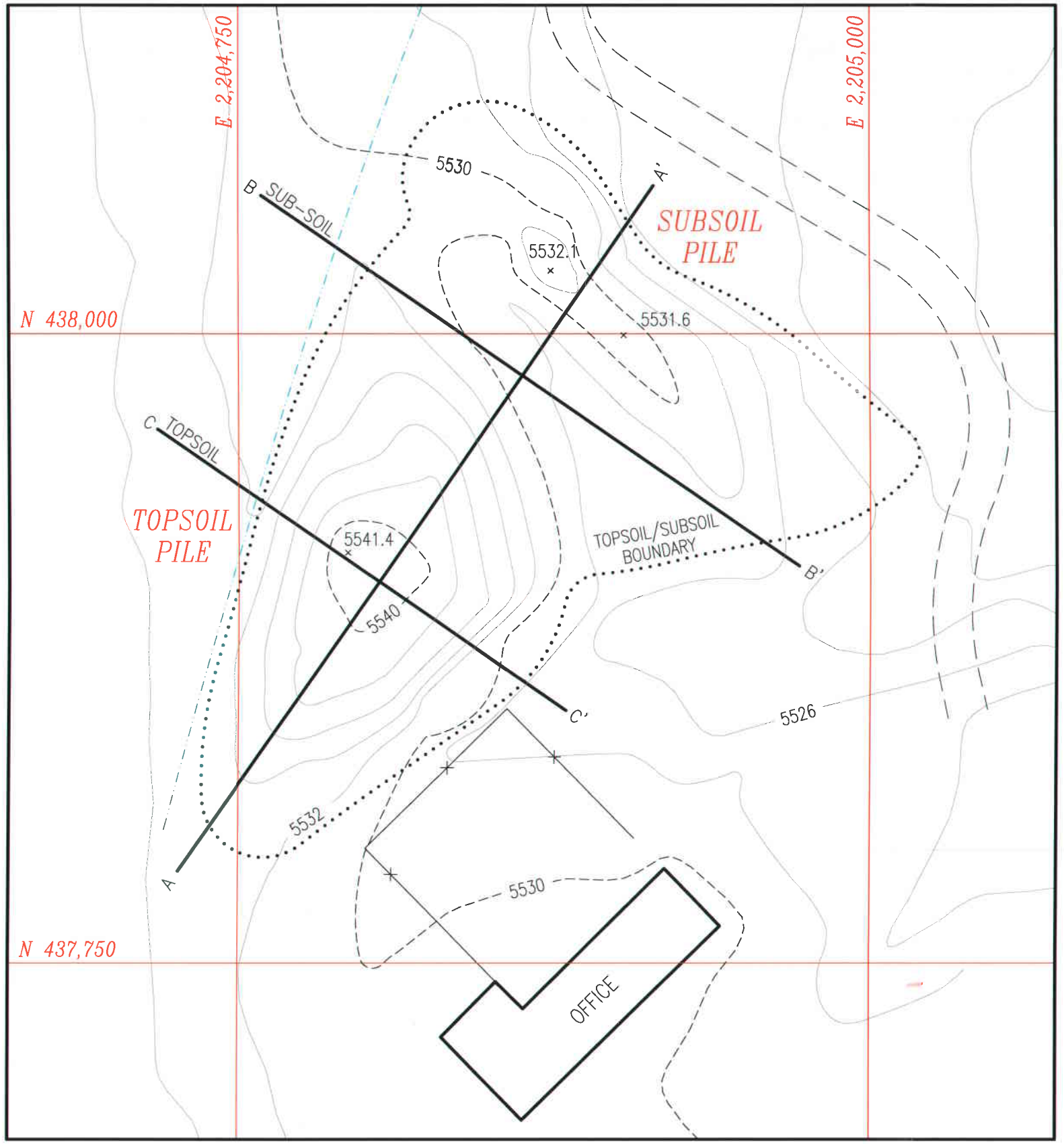
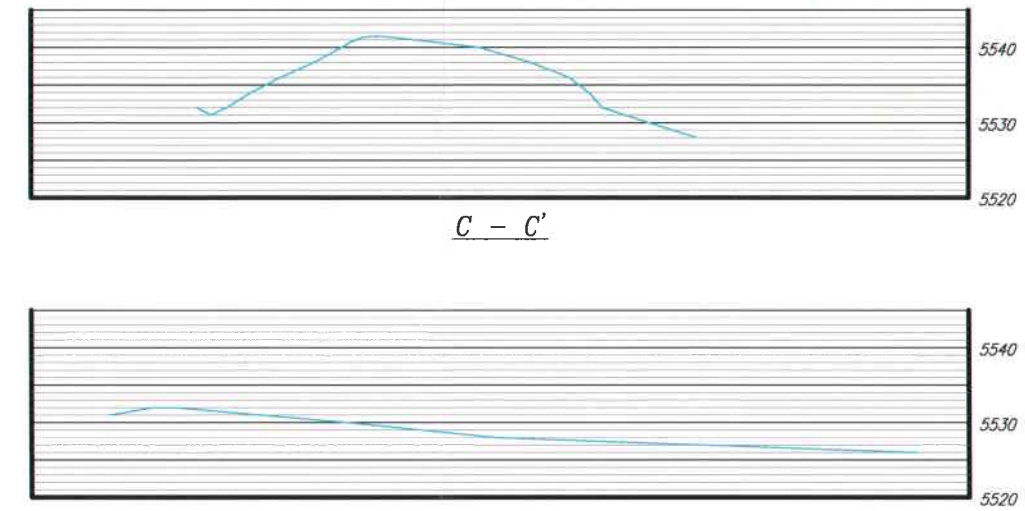
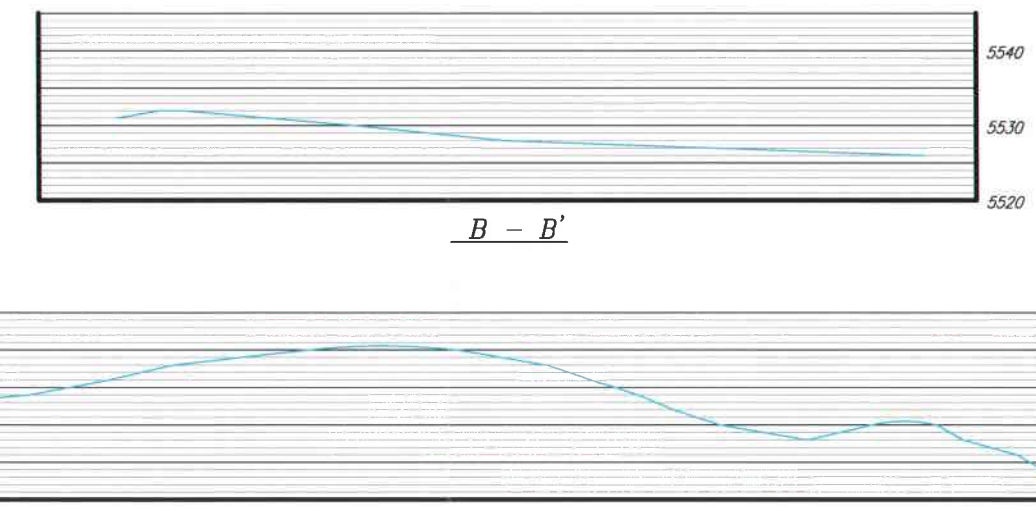
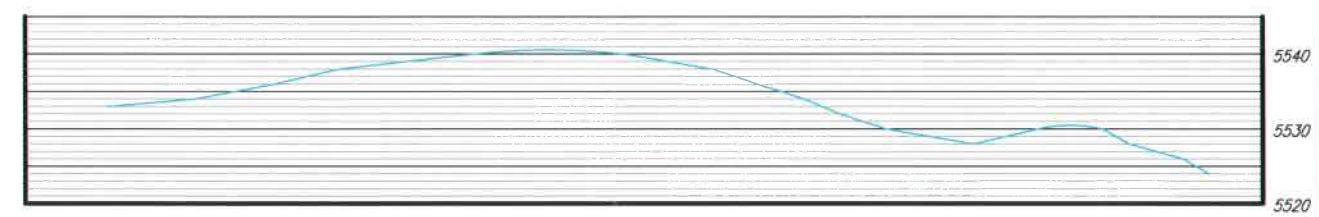




C – C'



B – B'



A – A'

NOTE:

TOPSOIL STORED =	6514 c.y.
SUB-SOIL STORED =	6514 c.y.
TOTAL AVAILABLE = AT THIS LOCATION.	13,028 c.y.

REVISION #	DESCRIPTION

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 6/5/09

SAVAGE

SAVAGE COAL TERMINAL
SETTLING POND AREA

SCALE: 1" = 50'	DRAWN BY: BLACKHAWK ENGINEERING
DATE: JANUARY 2007	PLATE: PLATE 2-3

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Savage Services Corporation
Savage Coal Terminal
C/007/022

Chapter 3

Biology

R645-301-300

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R645-301-333. Expected Impacts of Mining Operations on Fish and Wildlife
R645-301-340. Reclamation Plan
R645-301-350. Performance Standards

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Plate 3-1 Vegetation Map

R645. Natural Resources; Oil, Gas and Mining; Coal.

R645-301. Coal Mine Permitting: Permit Application Requirements.

R645-301-300. Biology.

310. Introduction. Each permit application will include descriptions of the:

311. Vegetative, fish, and wildlife resources of the permit area and adjacent areas as described under R645-301-320;

311. See Section R645-301-320.

312. Potential impacts to vegetative, fish and wildlife resources and methods proposed to minimize these impacts during coal mining and reclamation operations as described under R645-301-330 and R645-301-340; and

312. See Sections R645-301-330 and R645-301-340.

313. Proposed reclamation designed to restore or enhance vegetative, fish, and wildlife resources to a condition suitable for the designated postmining land use as described under R645-301-340.

313. See Section R645-301-340.

320. Environmental Description.

321. Vegetation Information.

321.100. Scope

Vegetation studies at Savage Coal Terminal were originally executed in June and August, 1980 by Espey, Huston and Associates, Inc. of Denver, Colorado. The study included initial vegetation mapping, a floristic survey to identify any threatened or endangered species, the vegetation communities, and quantitative estimations of vegetation production, cover, and frequency. Vegetation information was included in the original August 1980 submittal and in the updated November 1980 supplement.

Shrub density information within the reference area was collected in July 1981 by ARCO Coal Company staff. Due to problems with shrub identification in this earlier study, shrub density was re-sampled in September 1982 by Stoecker-Keammerer & Associates Ecological Consultants of Boulder, Colorado.

Methodology

Vegetation Map

The original vegetation map compiled in June 1980 showed three mapping units within the permit area: Shadscale Community, Weed Community and Disturbed Area. This earlier map was expanded in March 1982 to better qualitatively describe the existing vegetation, specifically the Salt Desert type (formerly the Shadscale Community).

Plate 3-1, Vegetation Map of the Savage Coal Terminal was prepared from black and white aerial photos. Visually distinct areas on the photos were inspected on the ground and the vegetation characterized by community type. Only the shadscale phase of the salt desert community was of sufficient extent (Table 3-1) to warrant quantitative analysis. The other phases as well as the remaining mapping units, have been described qualitatively.

During the original mapping, a Weed Community was mapped. That is comparable to the currently mapped Disturbed, Agricultural area.

A Sedge Meadow type was mapped during the original study (June 1980), adjacent to the current western permit boundary. Although no such type was actually mapped within the permit area, a low area does exist within the currently mapped Disturbed, Agricultural area, now drained by a French drain.

Qualitative Analysis

Each vegetation mapping unit at S.C.T. has been qualitatively described in terms of its dominant and conspicuous species. An estimate of maturity, persistence, and degree of disturbance within each unit is also provided.

Quantitative Analysis

Sample locations were chosen by random from a grid originating in the southwest corner of the study area with its extending north-south and east-west. Grid spacing on the ground was approximately 1 x 1 meter. Coordinate points were obtained from a random numbers table.

Line transects, 50 meters in length with 20 x 50 cm ($0.1m^2$), quadrants placed at 1 meter intervals, were used to collect cover information (Daubenmire 1959). The location and orientation of the line transects were randomly determined. The percentage of ground covered by a vertical projection of the foliage or stems of each species onto the ground was estimated by visual inspection in each plot (Oosting 1956).

Standing crop biomass measurements were obtained from randomly located $0.25m^2$ circular plots. The species within the plots were harvested by clipping the standing vegetation at ground level. The clipped material was placed in paper bags, taken to a laboratory, and oven dried for 24 hours at 105 degrees Celsius. The material was weighed on a triple beam balance to the nearest 0.1 gram.

Data reduction for the $0.1m^2$ quadrants and line transects was carried out as follows:

$$\% \text{ Cover} = \frac{\text{aerial coverage value}}{\text{area sampled}}$$

$$\text{Frequency} = \frac{\text{number of plots in which a species occurs}}{\text{total number of plots sampled}}$$

Sample adequacy for cover was evaluated using the formula outlines in Utah DOGM guideline for vegetation information. Adequacy for randomly placed production samples was evaluated utilizing the adequate sample size formula, outlined in the Wyoming DEQ Guideline 2 (March 1979).

Shrub density data (September 1982) were collected using a line strip transect approach. Sixteen line strip transects 20 meters ling and 2 meters wide were randomly located within the existing reference area. All shrubs within the 20m area were counted on the basis of height classes (0.10m - 0.25m and 0.26m - 0.75m). None of the individual shrubs were more than 0.75m tall. The data were summarized by calculating mean density for each species as well as a mean density for all species combine.

Existing Resources

General Site Description

The Savage Coal Terminal is located on relatively level Mancos shale in very typical salt desert vegetation. The dominant plants are shadscale (Atriplex confertifolia) and matbush (Atriplex corruagata). The primary land uses are small wildlife habitat and, to a limited extent, grazing. The climate is arid to semi -arid continental with peaks of precipitation in the spring and early fall.

Vegetation Types

Salt Desert Community

The salt desert community is the only vegetation type at Savage Coal Terminal that has not been greatly modified by man. For purposes of mapping and general qualitative description, it has been divided into four phases: Shadscale, Matbush, Greasewood (Sarcobatus vermiculatus), and Saltgrass (Distichlis stricta). The Shadscale Phase is the dominant phase in the salt desert community at Savage Coal Terminal.

The Shadscale Phase comprises 5.1% of the Savage Coal Terminal property (Table 3-1). This phase was dominated by low, widely-spaced shrubs. Relief was relatively level, with a slight slope to the northeast. The elevation was approximately 5500 feet. The major soil types included the Killpack loam, Persayo loam, Chipeta silty clay, and Billings silty clay. Based on cover data, the vegetation was represented by 22 known species of plants, nine shrubs, nine orbs, and four grasses. Shrubs were the dominant life form, contributing approximately 71.3%. The average total percent vegetation cover was 18.8%. Litter, rock, and moss cover were nearly nonexistent. All figures listed are absolute values for vegetation only.

The dominant shrubs were shadscale (Atriplex confertifolia), with cover of 5.2% (Table 3-2), and rubber rabbitbrush (Chrysothamnus nauseosus), with a cover of 4.8%. The most common grass, galleta (Hilaria jamesii) had a cover of 1.9%. Important forbs included marsh alder (Iva acillaris) and globe mallow (Sphaeralcea sp.,), with cover values of 0.7% and 0.3%, respectively.

The estimated Annual Net Production (ANP) of clipped plots within the Shadscale Phase ranged from 2.8 g/m^2 with a mean of 110.9 g/m^2 (Table 3-3). Shrubs are the major producers of biomass with an average 90.7 g/m^2 or 81.8% of the average total production.

Sample adequacy calculations for the Shadscale phase are presented in Table 3-4.

The other phases of the Salt Desert were not quantitatively sampled separately because of their small area and intergradation with the shadscale phase. Qualitative descriptions of these phases are given below.

The Matbush Phase of the salt desert community was sparsely vegetated and dominated by Matbush. It occurred on dry alkaline surfaces. As the alkalinity increased and salts accumulated at the surface, the vegetation cover decreased. Scattered throughout the Matbush phase were Saltbush (Atriplex cuneata) and Indian Ricegrass. The Matbush phase accounted for 0.2% of the Savage Coal Terminal area (Table 3-1).

The Greasewood Phase was represented at the Savage Coal Terminal by isolated strands of Greasewood (Sarcobatus vermiculatus) accompanied by a limited number of Tamarisk (Tamarix pentandra). The understory was dominated by Halogeton (Halogeton glometatus). An annual Atriplex (Atriplex powellii) was also common. This phase was eliminated through new disturbance (and topsoil stripping) in 2002.

The Saltgrass Phase consisted of a small but densely covered meadow of Saltgrass (Distichlis stricta). This meadow was found where the soil is alkaline and moist throughout much of the growing season.

Disturbed Community

This community includes industrial, refuse processing and disposal areas, as well as an area of land which had been farmed and/or grazed in the past. The disturbed community accounts for 94.6% of the area at the Savage Coal Terminal.

The industrial areas consisted primarily of weeds interspersed with native perennials: the most conspicuous annuals and longer lived adventives in this area were:

Russian Thistle	Salsola kali
Halogeton	Halogeton glomeratus
Sunflower	Helianthus annuus
Goosefoot	Chenopodium sp.
Burning-Bush	Kochia scoparia
Tansy Mustard	Descurainia sp.
Squirrel-tail	Sitanion hystrix
Field Bindweed	Convolvulus arvensis

The actual refuse processing and disposal areas had no vegetation cover.

The abandoned agricultural community was originally salt desert that had been disturbed in the past by cultivation and grazing. Historically, 40 acres of this property was in cultivation during the 1930's, but was abandoned because it was not economical (R.D. Campbell, personal communication). This mapping unit is comparable to the Weed community outlined on pervious vegetation maps (June 1980).

This region appears some what different than industrial disturbed areas because it supports a greater amount of native vegetation. The native perennials most conspicuous throughout include:

Shadscale	Atriplex confertifolia
Matbush	Atriplex corrugata
Indian Ricegrass	Oryzopsis hymenoides
Stemless Evening Primrose	Oenothera caespitosa
Saltbush	Atriplex cuneata

In the northeast portion of this area some small areas now exist which are dominated by matbush or saltgrass.

Plant Species List

Table 3-5 presents the plant species observed at Savage Coal Terminal. Within that table, plants observed or sampled within the reference area and affected areas are marked. Identification was through the use of Cronquist et al. (1972) and Welsh and Moore (1973).

Total Acres in Plan Area

There are currently 132.5 acres disturbed in the Mine Plan area, plus an additional 5.28 acres for the river pump and pipeline. There are no plans for additional disturbance at this time.

Reference Area

Two areas have been chosen to represent standards for final revegetation success. One area represents a shadscale (or upland) community. Savage Industries' permit required this reference area to be reassessed by the Natural Resource Conservation Service (NRCS) or other qualified biologists in 2002 for condition and biomass production. This task was accomplished. The reference area was rated in "good" condition. In a letter-report, the biologist from the NRCS also stated that *the potential production ranged from 350 to 400 lbs per acre on a favorable year and 100 to 150 lbs. per acre on an unfavorable year. This year the site will produce about 240 lbs. per acre* (see NRCS letter dated August 8, 2002, Figure 3-1).

A second reference area has been approved to represent final revegetation success standards for the lowland areas that have been disturbed by the loadout facilities. The disturbed lowland areas were once greasewood communities. Although this area had low species diversity, it does represent the site prior to disturbance. This reference area was also investigated by the NRCS in 2002 for range condition and productivity. In the aforementioned letter-report the biologist from the NRCS stated that this site was in "high fair" condition. Also, *the potential*

production ranges from 950 to 1000 lbs. per acre on a favorable year to 500 to 550 lbs. per acre on a unfavorable year. This year the site will produce about 560 lbs. per acre.

A reference area in the Shadscale Phase of the salt desert community was selected to represent the vegetation of the Savage Coal Terminal. The reference area is located within the extreme southwest corner of the property. It is bordered on the south primarily by a paved road, on the north and east by an irrigation canal, and on the west by the entrance road to the coal terminal.

Two randomly located cover transects were run during the 1980 study just south of the fenced portion of the current reference area. The dominant shrub was shadscale, with a cover of 6.4%. The most common grass was galleta, with a cover of 4.1% (Table 3-6). The average total cover of vegetation was 17.6%, of which 63% was contributed by shrubs. Refer to Tables 3-6A and 3-6B for cover summaries by individual transect.

The estimated annual net production of clipped plants ranged from 0.8 gm/m^2 to 313.6 gm/m^2 (Table 3-7). Shrubs produced the most biomass with an average of 61.4 gm/m^2 or 71.6% of the average total.

Calculations of sample adequacy for cover and production in the reference area transects are given in Table 3-4. The minimum number of samples for production were met, based on the Wyoming DEQ Guideline 2 in place at the time of sampling. Also, refer to the SCS statement on condition of the reference area (Figure 3-1).

Based on quantitative sampling, a total of 24 species were found within the reference area and a total of 22 species were located within the affected area (Shadscale Community or Salt Desert mapping unit). Refer to Table 3-5. In addition, 16 species were common to both. By incorporating these figures into the Sorensen's similarity Index:

$$I.S. = \frac{2C}{A+B} \times 100 = \frac{2(16)}{24+22} \times 100 = 70\%$$

Where: A = Total number of species in community A.
B = Total number of species in community B.
C = Total number of species common to both communities.

Shrub Area - Reference Area

The original shrub density survey information submitted in the May 1983 permit submittal was deleted. Information from an updated study completed September 1982 has been included in the current permit submittal.

The results of the 1982 shrub density measurements are presented in Table 3-8. The most abundant shrub species is shadscale (Atriplex confertifolia) followed by winter fat (Ceratoides lanata). Five other shrub species occur in the reference area, however, they occur only in limited numbers.

In order to satisfy the requirements of the Utah Division of Oil, Gas and Mining, enough samples were taken to obtain sample adequacy based on the requirements of their vegetation studies guideline. Sample adequacy was attained for total shrub density (Table 3-9).

Shrub Density of the Affected Area

Shrub density information within the 4.45 acre affected area was collected in November 1983 by NPI of Salt Lake City, Utah. The shrub density sampling methods used on the reference area were also used on the affected area. The locations of each of the 18 line-strip transects used to sample the affected area is shown on Vegetation Map (Plate 3-1).

The results of this survey are presented in Table 3-10. The most abundant shrub species on this area is low rabbitbrush (Chryothamnus viscidiflorus) followed by shadscale (Atriplex confertifilia) and Gardner's saltbush (Atriplex gardneri). Six other shrub species occur in the affected area; however, these species are more limited in number.

Sample adequacy was attained for total shrub density (see Table 3-11). No significant difference in shrub density was found to exist between the reference and affected areas ($t=1.1$, $p=0.29$). Shrub species composition was also similar between these two areas (Sorensen's Index of Similarity = 87.5%), although the relative contribution of each species to each area's overall shrub density differed.

The greasewood phase of the salt desert (shadscale) community type (see 1c on the Vegetation Map, Plate 3-1) appears to have been altered by some recent environmental changes. Shrub density and diversity is atypically low for this community type. Many dead and dying shrubs are also in evidence here. Because of the dramatic reduction in the size of the shrub populations which appeared to formerly characterize this phase and the small area this phase occupies on the site, the decision was made to exclude this phase from the density analysis for the affected area sampled.

Threatened and Endangered Species

No plants or animals cited by the U.S. Fish and Wildlife Service (USFWS) as threatened or endangered as shown on Table 3-15, were found at the Savage Coal Terminal.

321.200. See Section 321.100 and Figure 3-1.

322. Fish and Wildlife Information.

Each application will include fish and wildlife resource information for the permit area and adjacent areas.

322.100. Scope

Studies have been completed to ensure that fish and wildlife resources that might exist in the vicinity of the Savage Coal Terminal would not be irretrievably affected by proposed operations. Literature and field surveys were conducted to determine the presence and/or significance of wildlife resources.

Methodology

Company officials consulted with Utah Division of Wildlife Resources to determine the extent of existing information. Adequate data was supplied by this agency to answer questions relative to wildlife resource presence, status, relative abundance, and population trend. Vegetation information was correlated to wildlife habitat to answer remaining questions. Additional studies were carried out by consultants to evaluate the presence or significance of a Black-footed Ferret population on the Savage Coal Terminal area.

Existing Wildlife Resources

Wildlife Habitats

The company has analyzed wildlife resources at the Savage Coal Terminal both prior to the disturbance and at the present time. Conversations with the prior landowner indicate that the land contained with Savage Coal Terminal once provided a more diverse habitat than at present. Riparian and wetland communities appear to have been more abundant several years ago; however, due to the increasing alkaline conditions of the soils, a very limited acreage of these communities remains.

It should be noted that a wetland delineation was completed on an area of approximately 0.05 acres in 2002. This area was subsequently approved by the U.S. Army Corp of Engineers to be disturbed. All related information on this wetland area is included in Appendix 3-3.

Vegetation studies indicate that the project area is currently classified as a saltbush vegetation community with limited value as wildlife habitat. This community provides good cover and food availability for relatively few wildlife species when compared to other, more diverse vegetation types found in Utah.

Ground cover in the saltbush vegetation type averages about 18%. The large amount of ground, coupled with low shrub life, provides little cover and food. Lizards, lagomorphs, burrowing rodents, and those species which prey upon them, are the most abundant permanent residents of the saltbush area.

Because of the proximity of the project site to surrounding crop land and the Price River, the area could serve as a stopover and resting site for several species of migratory birds. However, because of the vast amount of saltbush vegetation in this portion of Utah, the value of the project site for migratory birds is minimal.

Wildlife

Two species of game birds are known to inhabit and nest on crop lands and wetlands surrounding the project area. They are the Ring-neck Pheasant and Morning Dove. These birds may cross the project area at various times but it is unlikely that any desirable habitat exists on the area (personal communication, Larry Dalton, Utah Division of Wildlife Resources).

Mammals observed on the study area during the Black-footed Ferret survey included black-tailed jackrabbit (Lepus californicus), white-tailed jackrabbit (L. townsendi), and desert cottontail (Sylvilagus audoboni). The latter two species were observed most frequently. Jackrabbits were seen in native desert shrub vegetation within and around the Savage Coal Terminal property. Cottontail were observed in both disturbed and undisturbed vegetation communities. Whereas, jackrabbits do not dig or normally occupy burrows, cottontail may utilize existing burrows in the ground. The latter species may use prairie dog burrows on the property, as cottontail fecal droppings were seen near the openings of several burrows.

Though no predators were actually observed, some evidence was found which indicates possible use of the area by badger (Taxidea taxus) and coyote (Canis latrans). Two burrows in the active mound had been excavated to a width greater than twenty centimeters and appeared elipitcal shape, suggesting badger activity. Coyote tracks were seen in the desert shrub community west of the property, outside the boundary.

Table 3-12 provides information on upland game birds and federally listed threatened or endangered species of wildlife, as well as other vertebrates-amphibians, reptiles, birds, and mammals which could inhabit the area.

322.200. Site-specific resource information necessary to address the respective species or habitats will be required when the permit area or adjacent area is likely to include:

322.210. Threatened and Endangered Species

Three federally listed threatened or endangered species of wildlife are of concern to the Utah Division of Wildlife Resources. They are the Bald Eagle, Peregrine Falcon, and Black-footed Ferret. The habitat surrounding the Savage Coal Terminal is ranked with substantial value for Bald Eagles and Peregrine Falcons. However, due to present disturbance, it is highly unlikely these raptors utilize this site. There are no conformed sightings of Black-footed Ferrets on or near Savage Coal Terminal; however, this area is classified as historic range for the Ferret (personal communications, Larry Dalton, Utah Division of Wildlife Resources).

Black-footed Ferret Survey

A small number of prairie dogs inhabited Savage Coal Terminal at the time of the original permit. Therefore, a qualified consultant was hired to determine the potential occurrence of Black-footed Ferrets.

The Black-footed Ferret (Mustela nigripes), an endangered species, is a member of the weasel family whose original range was closely correlated to that of the prairie dog (Cynomys spp.). This range extended over the Great Plains area from southern Canada to west Texas, and from east of the one hundredth meridian to Utah and Arizona (Fortenbery 1972). The current distribution of this species is not known but is believed to be considerably reduced from its original range (Linder et al. 1978). Black-footed ferrets have a close relationship with prairie dogs (Henderson et al. 1969), the latter being a major dietary component of ferrets. Due to decades of prairie dog reduction and eradication programs throughout the west and mid-west, habitat loss is the likely cause for the Black-footed ferret's decline (Clark 1978).

The status of the Black-footed ferret in Utah is unknown at the present time. A dead animal was found in 1952 approximately two miles south of Blanding, in San Juan County (Hinckley 1970) and there have since been numerous unconfirmed sightings reported in Carbon County, the most recent off which was an observation by a Utah State Division of Wildlife Resources conservation officer in February, 1980 (Dalton 1980).

The nocturnal habits of the ferret, along with its penchant for living underground, render this animal an extremely difficult one to observe or study.

As previously stated, ferrets exist in close association with prairie dogs. The white-tailed prairie dog (C. leucurus) is a colonial animal and the sole prairie dog species inhabiting the Carbon County, Utah, area (Sparks 1973).

Survey Methods

Upon initial inspection, the area was divided into nine workable units and thoroughly searched on foot for evidence of prairie dog activity and black-footed ferret sign. Transects approximately fifteen yards apart were walked within each unit while visually surveying areas in between. When a burrow greater than five centimeters (two inches) in diameter was encountered it was inspected to determine its current activity status and the presence or absence of black-footed ferret sign. Such sign includes:

> Trenches or stringers of soil, characteristically fifteen to twenty centimeters wide, five to weight centimeters deep and thirty centimeters to three and one-half meters in length, with a groove in the center.
>
> Burrows plugged with soil, particularly fresh plugged burrows in active prairie dogs areas.
>
> Skeletal material, either of black-footed ferret or of prairie dogs, the latter displaying chewing marks at the base.
>
> Fecal droppings from mustelids, usually marked by segmentation and twisting when composed of hair, varying form dark brown to black in color, approximately six millimeters in diameter and twenty five to one hundred millimeters in length.

A burrow was defined as active if evidence of fresh digging was seen. (A heavy rain had occurred about one week prior to the survey and aided in recent activity determinations).

In addition to the property itself, all surrounding areas within one-sixteenth to on-eighth mile of the property boundary were surveyed, excepting agricultural field currently under cultivation. Areas of extensive disturbance, such as coal and waste storage piles, were not surveyed. Areas of active prairie dog evidence were scanned regularly with binoculars in order to observe prairie dog behavior. The survey was conducted primarily during daylight hours in the third week of September, 1980, and comprised twenty five man hours on site.

Prairie Dog Status

A total of twenty nine active burrows and one active mound with multiple burrows was encountered during the survey (Table 3-13). Sixty five currently inactive open burrows and two inactive mounds with multiple burrows were also surveyed.

The majority of both active and inactive burrows consisted of a single entrance, usually surrounded by a slightly raised area of dirt (Table 3-14). Two active and ten inactive burrows were in flat ground with no apparent mounding. Two active and eight inactive burrows were constructed in man-made disturbance, such as in a trench, and therefore were not classified as to the appearance of mounding. Average diameter of all open burrows, active and inactive, was 11.2 centimeters (4.4 inches).

The most active prairie dog area appeared to be on the east side of the property, as evidenced by the majority of active burrows, signs of fresh digging (not necessarily connected with excavation of burrow sites) and numerous prairie dog tracks. One inactive burrow on the eastern portion of the property was constructed entirely (on the surface) in coal waste while another burrow, currently active was constructed in soil immediately underneath a thin layer coal waste. Vegetation throughout active areas showed signs of having been utilized by prairie digs, such as the stripping of most green matter from rubber rabbitbrush and the cropping of grasses.

Widespread evidence of past prairie dog activity was seen in the form of numerous old plugged burrows within the surrounding currently active areas. White-tailed prairie dogs are known to plug their own burrows, for example before hibernating (Clark 1978) or when predators such as rattlesnakes, badgers, coyotes and ferrets use their burrows (Fortenbery 1972).

Observations of prairie dogs during the survey were extremely limited. Five animals were observed displaying the upright or upright extended alert positions (Clark 1973) during the morning of September 17 on or around the single active mound in the western part of the property. Another prairie dog was observed in the evening of the same day displaying an upright alert posture in the same vicinity. No alarm chattering calls were heard during the course of the survey. Sex and age of the individual animals observed was not determined.

The paucity of prairie dog observations may be due to a variety of contributing factors, such as industrial and/or human disturbance, presence of the observer or onset of inactive periods, i.e. hibernation. Prairie dogs on the Savage Coal Terminal property exist among a wide array of potentially disturbing activities associated with a coal preparation facility which may modify their behavior patterns.

Also, "target practicing" on prairie dogs is a common local practice, through it can not be stated with any certainty that the animals are the objects of such practice on the property itself. Smith (1958) reported that two weeks were needed before prairie dogs acclimated to the observer during a study in Kansas and, prior to that time, the animals would quickly disappear at the approach of a vehicle or person on foot. In addition, many animals may not have been active above ground during the time the survey was conducted. Clark (1973) reported that, in Wyoming, some prairie dogs disappeared for several days consecutively during September and the activity of juveniles was sporadic. Adult prairie dogs of both sexes usually become inactive by late August and juveniles remained active, though sporadically, through late October-early November during that study. It is likely that many of the prairie dogs on the Savage Coal Terminal were already inactive at the time this survey was conducted. Therefore, no attempts were made to determined prairie dog densities.

Black-footed Ferret Status

No definitive evidence, current or recent, of black-footed ferret use of the Savage Coal Terminal prairie dog community was found during the course of this study.

A single trench was encountered in an active prairie dog area on the west side of the property, but this phenomenon was undoubtedly caused by erosion and was not the result of past ferret activity. Trenching caused by ferrets is characterized by tailings of loose dirt on top of the ground and such trenches or stringers of soil are usually fifteen to twenty centimeters wide, five to eight centimeters deep and thirty centimeters to thee and one half meters long, with a groove in the center. The aforementioned trench did not have such an appearance, being about fifty centimeters deep, one and one quarter meters long and having no loose soil. The trench was associated with a large inactive burrow.

As was previously mentioned, many old plugged holes were seen throughout active and inactive prairie dog areas. Prairie dogs will plug their own holes for various reasons other than use of their burrows by ferrets. Several freshly covered holes in a small "dog" town, especially where something has dug out from the inside and left an opening the size of a silver dollar, are an indication that ferrets may be active in the area (Fortenbery 1972). No freshly plugged burrows, with or without small openings dug from inside out, were encountered during the survey.

The only skeletal material found was the skull of a white-tailed prairie dog at the opening of an active burrow on the southeast portion of the property. This skull did not display chewing marks at the base. Prairie digs clean their burrows in the spring, removing material collected over winter to the outside of the burrow (Tileston and Lechleitner 1966) and this was the probable origin of the skull found on the property. Several small vertebrae were seen scattered around active prairie dog areas. These bones were probably those of white-tailed prairie dogs

that were removed from burrows during spring maintenance.

No black-footed ferret or mustelid-like tracks were seen in the Savage Coal Terminal area during this survey.

Summary and Conclusions

Due to the lack of evidence found during this study, it is extremely improbable that black-footed ferrets are or have recently been active in the Savage Coal Terminal vicinity. If more conclusive data are sought to substantiate the absence of black-footed ferrets, further research could be undertaken during spring, when prairie dogs emerge from hibernation, and/or during August, when black-footed ferrets are most likely to be seen above ground.

Raptors

Routine observations for raptors at the Savage Coal Terminal by company environmental personnel have not indicated occurrences of raptors on the site. Due to the amount of activity at the Savage Coal Terminal it is highly unlikely that any raptors would use the site. Occasional raptors have been seen on the Mancos Shale bluffs to the west and south of the property.

A raptor powerline hazard survey was conducted by wildlife consultants in May, 1981. At that time it was discovered the poles at the site were armless types which are relatively safe. However, some of the poles closer to the coal preparation plant may have phase wires too close to the poles to be raptor proof. Based on the location of the site, the wildlife consultants do not feel that the powerline poles present any raptor hazards. A letter from USFW to DOGM confirmed these findings on 11/10/82.

In 1984 some additional poles were added to facilitate lighting in the preparation plant yard. Do to their close proximity to the plant no raptor use has ever been observed. In July of 1989 Mr. Larry Dalton of the UDWR was requested to evaluate all poles on the property and make recommendations to up-grade or further safeguard use by raptors. Mr. Dalton concurred in part with the 1981 findings, however, he did recommend that raptor protection would be advantages on the property. These poles could be hazardous in the event they were utilized by raptors. Those safeguards were implemented by the company in 1989.

Safeguards were triangular perch guards with cross-arms to prevent birds from landing.

Windy Gap Process

Water usage at the Savage Coal Terminal for 2008 was 29.91 acre feet. This water was used for coal washing, road watering and washdown of facilities. Based on the above figures, water usage at the site amounts to approximately 1.365 gallons per ton of coal shipped from the site.

Since the make-up water for the loadout site is supplied by an alluvial well adjacent to the Price River, all of the 29.91 ac.ft. is considered a direct depletion to streamflow. It should be noted that water from sediment ponds, groundwater and recirculated plant water amounts to approximately 50% of the water used; however, since each of these sources would eventually reach the Price River, the actual maximum depletion would be the same. All water usage is from water shares owned by the company.

No water depletion is considered for moisture loss from the coal, since this is a transloading facility and coal moisture loss has been charged to the respective producers.

322.220. As indicated in Section 322.210, there are no habitats of unusually high value for fish and wildlife at the Savage Coal Terminal.

322.230. See Section 322.210 for discussions of protected species.

322.300. Fish and Wildlife Service review.

Upon request, the Division will provide the resource information required under R645-301-322 and the protection and enhancement plan required under R645-301-333 to the U.S. Fish and Wildlife Service Regional or Field Office for their review. This information will be provided within 10 days of receipt of the request from the Service.

323. Maps and Aerial Photographs.

Maps or aerial photographs of the permit area and adjacent areas will be provided which delineate:

323.100. Vegetation reference areas are shown on Plate 3-1.

323.200. See Section 322.210 for information relative to wildlife studies.

323.300. Raptor protection is discussed under Section 322.210.

323.400. See Plate 3-1.

330. Operation Plan

331. As discussed under Section 321.100, the disturbed area at the Savage Coal Terminal is approximately 137.79 acres (including the river pumps and pipeline). It is the intent of the operator to minimize disturbance and perform contemporaneous reclamation where possible; however, the existing disturbance is necessary to provide adequate facility space, coal storage area, sediment control and refuse area.

Surface erosion of the topsoil stockpile areas is controlled by vegetation and roughening to reduce runoff.

The reclamation plan discussed under Section 340 will provide details on revegetation at this site.

332. N/A - This is a surface operation only.

333. Expected Impacts of Mining Operations on Fish and Wildlife

The wildlife species that do occur on the site consist mainly of small mammals and some songbirds. These species appear to be capable of existing on the site in spite of on-going mining operations unlike larger mammals and raptors. Therefore, little if any impact to wildlife is expected on the Savage Coal Terminal site.

Mitigation and Management Plans

The proposed post-mining land use for the Savage Coal Terminal is "Light Industrial", since the area is presently zoned for industrial use. However, since the pre-disturbance land use was primarily song bird and small mammal habitat, Savage Services Corporation will reclaim toward this goal to maximize usable area for wildlife in the event local economics preclude continued industrial use of the site.

Even though the Savage Coal Terminal site provides minimal habitat for wildlife, every effort is being made to temporarily reclaim areas the have been disturbed but are no longer needed for operations at the site. In this manner, the company is capable of restoring the limited habitat that does exist for small mammals and songbirds.

The company also has made the employees aware that harassment or hunting of wildlife on the site is not permitted. Sensitive periods (e.g. nesting seasons, snake dens, etc.) have also been discussed with company personnel.

The long-term management plan for the Savage Coal Terminal site is to continue the above mitigation measures throughout the life of operations. Upon cessation of operations, the company will direct its efforts towards reclaiming the site compatible with the post-mining land use which is small mammal and songbird habitat.

333.100. See Sections 322 and 333.

333.200. See Sections 322 and 333.

333.300. See Sections 322 and 333.

340. Reclamation Plan.

Complete reclamation plans for the Savage Coal Terminal are presented in Section 540 of this permit application. (Sections 341. through 342.400 are addressed in that section.)

341. Revegetation.

See Section 540.

342. Fish and Wildlife.

See Section 540.

350. Performance Standards

351. General Requirements.

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

352. Contemporaneous Reclamation.

As previously discussed, the vast majority of presently disturbed areas at Savage Coal Terminal are necessary to maintain adequate space for facilities, coal stockpiles, sediment controls and refuse areas. Disturbed areas that are no longer necessary have been, and will continue to be, reclaimed and/or reseeded with an approved temporary seed mix. (See Section 540).

353. Revegetaion: General Requirements.

Revegetation is discussed in detail under Section 540.

354. Revegetation: Timing.

See Section 540.

355. Revegetation: Mulching and Other Soil Stabilizing Practices.

See Section 540.

356. Revegetation: Standards for Success.

See Section 540.

357. Revegetation: Extended Responsibility Period.

See Section 540.

358. Protection of Fish, Wildlife, and Related Environmental Values.

Protection of Fish, Wildlife and Related Environmental Values is discussed under Section 333 of this permit.

TABLE 3-1
AREAL EXTENT OF VEGETATION AND DISTURBED AREAS

Area	Acres	Percent
Salt Desert		
Shadscale Phase	7.8	5.1%
Greasewood Phase	0.0*	0.0%
Matbush Phase	0.3	0.2%
Saltgrass Phase	0.2	0.1%
Sub-Total	8.3	5.4%
Abandoned Agricultural and Grazing Land	13.2*	8.6%
Industrial, Refuse and Processing Areas	132.5	86.0%
Totals	154.5	100.0%

* Disturbed in 2002/2006.

TABLE 3-2
SUMMARY OF COVER AND FREQUENCY DATA IN THE SHADSCALE COMMUNITY

Species	% Frequency	% Cover
Grasses		
Hilaria jamesii	23.6	1.9
Oryzopis hymenoides	8.8	0.4
Sitanion hystrix	8.8	0.4
Sporobolus airodes	5.2	0.4
Total % Grasses		
Shrubs		
Atriplex cuneata	4.8	1.5
Atriplex confertifolia	19.2	5.2
Atriplex corrugata	2.4	0.3
Atriplex graciliflora[b]	0.4	0.2
Chrysothamnus nauseosus	16.8	4.8
Ceratoides lanata	1.2	0.2
Gutierrezia sarothrae	3.6	0.3
Sarcobatus vermiculatus	2.0	0.5
Eriogonum umbellatum	0.8	0.1
Leptodacactylon pungens	5.6	0.4
Unknown shrub 3	0.4	0.1
Total % Shrubs		13.4[a]
Forbs		
Chenopodium sp.	0.4	0.4
Descurainia pinnata	1.2	0.1
Eriogonum inflatum	0.4	0.1

Species	% Frequency	% Cover
Iva axillaris	16.4	0.7
Oenothera caespitosa	0.8	0.1
Penstemon sp.	0.8	0.1
Phlox hoodii	2.0	0.1
Sphaeralcea sp.	5.6	0.3
Unknown Compositae	10.8	0.3
Unknown forb 1	0.8	0.1
Unknown forb 2	0.4	0.2
Unknown forb 3	1.6	0.1
Total % forbs		2.3[a]
Total % Vegetation		18.8[a]

[a] Based on individual transect summaries.
[b] Probable herb included under shrub designation.

TABLE 3-2A SHADSCALE AFFECTED TRANSECT 1		
	% Frequency	% Cover
Grasses		
Hilaria jamesii	46	3.2
Oryzopsis hymenoides	10	0.3
Sitanion hystrix	12	0.3
Total % Grasses		
Shrubs		
Atriplex confertifolia	28	7.1
Atriplex corrugata	4	0.2
Atriplex cuneata	22	6.7
Atriplex graciliflora[a]	2	1.0
Eriogonum umbellatum	4	0.2
Ceratoides lunata	4	1.0
Gutierrezia sarthrae	6	0.4
Leptadactylon pungens	10	0.7
Total % Shrubs		
Forbs		
Chenopodium sp.	2	1.3
Phlox hoodii	4	0.1
Sphaeralcea sp.	10	0.6
Unknown Compositae	30	0.6
Unknown forb 1	2	0.1
Total % Forbs		2.6
Total % Vegetation		23.7

[a] Probable herb included under shrub designation.

TABLE 3-2B SHADSCALE AFFECTED TRANSECT 2		
	% Frequency	% Cover
Grasses		
Hilaria jamesii	48	4.7
Oryzopsis hymenoides	14	0.6
Sitanion hystrix	8	0.2
Total % Grasses		5.5
Shrubs		
Atriplex confertifolia	36	14.0
Atriplex cuneata	2	0.7
Ceratoides lunata	2	0.1
Leptadactylon pungens	18	0.2
Unknown shrub 3	2	
Total % Shrubs		16.9
Forbs		
Oenothera caespitosa	4	0.4
Penstemon sp.	4	0.1
Phlox hoodi	6	0.2
Sphaeralcea sp.	2	0.1
Unknown Compositae	24	1.1
Unknown forb 1	2	0.1
Unknown forb 2	2	0.9
Total % Forbs		2.8[a]
Total % Vegetation		25.2

[a] Added 0.1 to Total % Forbs since column contained two less than 0.1 figures.

TABLE 3-2C SHADSCALE AFFECTED TRANSECT 3		
	% Frequency	% Cover
Grasses		
Hilaria jamesii	2	0.3
Sitanion hystrix	4	0.1
Sporobolus airoides	2	0.1
Total % Grasses		0.4
Shrubs		
Atriplex confertifolia	2	0.5
Chrysothanmus nauseosus	34	14.3
Sarcobatus vermiculatus	2	0.7
Total % Shrubs		15.5
Forbs		
Chenopodium sp.	2	0.1
Descurainia pinnata	6	0.1
Iva axillaris	36	1.0
Sphaeralcea sp.	2	0.1
Total % Forbs		1.2
Total % Vegetation		17.2[a]

[a] Added 0.1 to Total % Vegetation since column contained two less than 0.1 figures.

TABLE 3-2D SHADSCALE AFFECTED TRANSECT 4		
	% Frequency	% Cover
Grasses		
Hilaria jamesii	22	1.2
Oryzopsis hymenoides	10	0.5
Sitanion hystrix	4	0.3
Sporobolus airoides	22	1.8
Total % Grasses		3.8
Shrubs		
Atriplex confertifolia	20	2.3
Atriplex corrugata	2	0.1
Chrysothamnus nauseosus	10	1.2
Gutierrezia sarothrai	2	0.1
Sarcobatus vermiculatus	8	1.9
Total % Shrubs		5.6
Forbs		
Chenopodium sp.	8	0.5
Iva axillaris	38	2.3
Unknown forb 3	8	0.3
Total % Forbs		3.1
Total % Vegetation		12.5

TABLE 3-2E SHADSCALE AFFECTED TRANSECT 5		
	% Frequency	% Cover
Grasses		
Oryzopsis hymenoides	10	0.7
Sitanion hystrix	16	1.2
Sporobolus airoides	2	0.1
Total % Grasses		1.9
Shrubs		
Atriplex confertifolia	10	2.0
Atriplex corrugata	6	1.1
Chrysothamnus nauseosus	40	8.3
Gutierrezia sarothrae	2	0.5
Total % Shrubs		11.9
Forbs		
Chenopodium sp.	2	0.1
Eriogonum inflatum	2	0.5
Iva axillaris	8	0.1
Sphaeralcea sp.	14	0.8
Total % Forbs		1.4
Total % Vegetation		15.3[a]

[a] Added 0.1 to Total % Vegetation since column contained two less than 0.1 figures.

TABLE 3-3
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	1	2	3	4	5	6	7	8	9	10	11	12	13
Grasses													
Hilaria jamesii		38.4	4.4	3.6	20.8		44.8	6.0					
Oryzopsis hymneoides	3.2									62.4			
Sitanion hystrix							1.2		20.4	6.0	5.6		
Sporobolus airoides													
Total Grass Production	3.2	38.4	4.4	3.6	20.8		46.0	6.0	20.4	68.4	5.6		
Shrubs													
Atriplex confertifolia	71.6		11.2	58.4	84.0		131.6				725.6	39.6	
Atriplex corrugata													
Atriplex graciliflora													
Chrysothamnus nauseosus						284.8				77.2			
Eriogonum umbellatum										5.6			
Ceratoides lunata					32.8								
Gutierrezia sarothrae								39.2				149.2	
Leptodactylon pungens	34.4												
Sarcobatus vermiculatus													
Tetradymia spinosa													
Unknown Compositae													
Total Shrub Production	106.0		11.2	58.4	116.8	284.8	131.6	39.2		82.8	725.6	188.8	

TABLE 3-3
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	1	2	3	4	5	6	7	8	9	10	11	12	13
Forbs													
Aster leucelene													
Eriogonum inflatum	13.2								16.8				11.2
Iva axillaris													
Penstemon sp.													
Phlox hoodii													
Sphaeralcea sp.													
Total Forb Production	13.2								16.8				11.2
Total Production	122.4	38.4	15.6	62.0	137.6	284.8	45.2	151.1	37.2	151.1	731.2	188.8	11.2

TABLE 3-3A
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
Grasses													
Hilaria jamesii	2.3		4.6		166.8								
Oryzopsis hymneoides													
Sitanion hystrix										6.4		2.0	
Sporobolus airoides									67.7	360.4			
Total Grass Production	2.3		4.6		166.8				67.7	366.8		2.0	
Shrubs													
Atriplex confertifolia	3.6	25.6	2.4	25.6									42.0
Atriplex corrugata												292.4	
Atriplex graciliflora													
Chrysothamnus nauseosus				206.0				152.0					
Eriogonum umbellatum						26.0							
Ceratoides lunata													
Gutierrezia sarothrae												91.6	
Leptodactylon pungens													
Sarcobatus vermiculatus											703.2		
Tetradymia spinosa													
Unknown Compositae													
Total Shrub Production	3.6	25.6	2.4	231.6		26.0		152.0			703.2	384.0	42.0

TABLE 3-3A
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
Forbs													
Aster leucelene													
Eriogonum inflatum													
Iva axillaris								6.0		5.2			
Penstemon sp.													
Phlox hoodii													17.2
Sphaeralcea sp.							31.2			4.4		8.4	
Total Forb Production							31.2	6.0		9.6		8.4	17.2
Total Production	5.9	25.6	7.0	231.6	166.8	26.0	31.2	158.0	67.6	376.4	703.2	394.4	59.2

TABLE 3-3B
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0
Grasses													
Hilaria jamesii	7.2		0.4	4.0	2.4			8.4	2.8	7.6		10.0	21.6
Oryzopsis hymneoides											13.6		
Sitanion hystrix													
Sporobolus airoides													
Total Grass Production	7.2		0.4	4.0	2.4			8.4	2.8	7.6	13.6	10.0	21.6
Shrubs													
Atriplex confertifolia							4.8						
Atriplex corrugata													
Atriplex graciliflora													
Chrysothamnus nauseosus						231.2							
Eriogonum umbellatum													
Ceratoides lunata											115.6		
Gutierrezia sarothrae													
Leptodactylon pungens													
Sarcobatus vermiculatus	388.8												
Tetradymia spinosa													
Unknown Compositae													
Total Shrub Production	388.8					231.2	4.8				115.6		

TABLE 3-3B
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0
Forbs													
Aster leucelene													
Eriogonum inflatum													
Iva axillaris													
Penstemon sp.													
Phlox hoodii			10.0	0.8	2.4					30.4	0.8		
Sphaeralcea sp.												3.5	
Total Forb Production			10.0	0.8	2.4					30.4	0.8	3.5	
Total Production	7.2	388.8	10.4	4.8	4.8	231.2	4.8	8.4	2.8	38.0	130.0	13.5	21.6

TABLE 3-3C
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	40.0	41.0	42.0	43.0	44.0	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0
Grasses													
Hilaria jamesii		4.8	11.6	18.8		9.2	29.2		27.6				
Oryzopsis hymneoides													
Sitanion hystrix						0.4							
Sporobolus airoides													
Total Grass Production		4.8	11.6	18.8		9.6	29.2		27.6				
Shrubs													
Atriplex confertifolia	198.4					127.2				259.2	115.2		
Atriplex corrugata													
Atriplex graciliflora			30.4										
Chrysothamnus nauseosus													
Eriogonum umbellatum													
Ceratoides lunata		3.2	15.6										
Gutierrezia sarothrae					52.8								
Leptodactylon pungens													
Sarcobatus vermiculatus								368.8					26.4
Tetradymia spinosa													
Unknown Compositae						8.4							
Total Shrub Production	198.4	3.2	46.0		52.8	135.6		368.8		259.2	115.2		26.4

TABLE 3-3C
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	40.0	41.0	42.0	43.0	44.0	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0
Forbs													
Aster leucelene		4.0											
Eriogonum inflatum													
Iva axillaris													
Penstemon sp.							0.4						
Phlox hoodii													
Sphaeralcea sp.												8.8	
Total Forb Production		4.0					0.4					8.8	
Total Production	198.4	12.0	57.6	18.8	52.8	145.2	29.6	368.8	27.6	259.2	115.2	8.8	26.4

TABLE 3-3D
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	53.0	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	63.0	64.0	65.0	X
Grasses														
Hilaria jamesii	3.2				30.8	22.4	2.8		23.2		2.0		20.4	8.6
Oryzopsis hymneoides		16.4	7.2				2.8							1.6
Sitanion hystrix														0.6
Sporobolus airoides														~~6.6~~
Total Grass Production	3.2	16.4	7.2		30.8	22.4	5.6		23.2		2.0		20.4	17.4
Shrubs														
Atriplex confertifolia1	94.8		12.8	35.2	127.6	63.2		81.6		6.8				36.1
Atriplex corrugata														4.5
Atriplex graciliflora														0.5
Chrysothamnus nauseosus														14.6
Eriogonum umbellatum														
Ceratoides lunata											104.8		95.6	5.7
Gutierrezia sarothrae														5.1
Leptodactylon pungens														0.5
Sarcobatus vermiculatus														22.5
Tetradymia spinosa														0.4
Unknown Compositae	1.6				0.4							6.8	0.4	0.3
Total Shrub Production	96.4		12.8	35.2	128.0	63.2		81.6		6.8	104.8	6.8	96.0	90.7

TABLE 3-3D
PRODUCTION DATA (G/M^2), AFFECTED AREA - SHADSCALE, COMMUNITY

Species	53.0	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	63.0	64.0	65.0	X
Forbs														
Aster leucelene														0.1
Eriogonum inflatum														0.2
Iva axillaris														0.6
Penstemon sp.	2.8											1.6		0.1
Phlox hoodii														0.9
Sphaeralcea sp.					0.8									0.8
Total Forb Production	2.8				0.8							1.6		2.8
Total Production	102.4	16.4	20.0	35.2	159.6	85.6	81.6	23.2	6.8	106.8	8.4	106.8	116.4	110.9

TABLE 3-4
SAMPLE ADEQUACY: SHADSCALE COMMUNITY AFFECTED AND REFERENCE AREAS

	Production (g/m²)					Cover (%)				
	(z,d)[1]	x	S.D.	N	^{n}min	(t,d,)[2]	x	S.D.	n	^{n}min
Affected	(0.84, 0.2)	110.9	150.4	65	65	(1.282, 0.1)	18.8	5.51	5	15
Reference	(0.84, 0.2)	85.8	76.7	35	28	(1.282, 0.1)	17.5	3.18	2	6

n = number of quadrants (production) or transects (cover) sampled

x = mean value

d = amount of difference desired to detect

z = value of the z-statistics

t = value of the t-statistics

[1] Sample adequacy equation and specific values derived from Wyoming DEQ guideline 2 (March 1979).
[2] Sample adequacy and specific values derived from Utah DOGM guideline for vegetation.

TABLE 3-5
PLANTS OBSERVED AT SAVAGE COAL TERMINAL

Family	Scientific Name	Common Name	Growth-Form
Chenopodiaceae	Chenopodium sp.[2]	Lambsquarter	herb
	Atriplex gardneri[1]	Gardner's Saltbush	shrub
	Atriplex confertifolia [1,2]	Shadscale	shrub
	Atriplex corrugata [1,2]	Matbush	shrub
	Atriplex cuneata [1,2]	Saltbush	shrub
	Atriplex graciliflora [1,2]	-	herb
	Atriplex powellii	-	herb
	Ceratoides lanata [1,2]	Winterfat	shrub
	Halogeton glomeratus [1]	Halogeton	herb
	Kochia americana [1]	Burning Bush	herb
	Kochia scoparia	Summer Cypress	herb
	Salsola Kali	Russian Thistle	herb
	Sarcobatus vermiculatus [2]	Greasewood	shrub
	Grindelia sp.	Gumweed	shrub
Compositae	Chrysothamnus viscidiflorus [1]	Rabbitbush	shrub
	Artemisia spinescens [1]	Bud Sagewood	shrub
	Chrysothamnus nauseosus [1,2]	Rabbitbush	shrub
	Gutierrezia sarothrae [1,2]	Snakeweed	shrub
	Helianthus annuus [1]	Sunflower	herb
	Iva Axillaris	Poverty Sumpweed	herb
	Tetradymia spinosa [1]	Spiny Horsebrush	shrub
Convolvulaceae	Convolulus arvensis	Field Bindweed	herb
Cruciferae	Descurainia pinnata [2]	Tansy Mustard	herb
Cyperaceae	Scirpus maritimus	Bulrush	grass-like
Gramineae	Agropyron trachyculum	Slender Wheatgrass	grass
	Distichlis stricta	Inland Saltgrass	grass
	Hilaria jamesii [1,2]	Galleta	grass
	Hordeum jubatum	Foxtail Barley	grass

TABLE 3-5
PLANTS OBSERVED AT SAVAGE COAL TERMINAL

Family	Scientific Name	Common Name	Growth-Form
	Oryzopsis hymenoides [1,2]	Indian Ricegrass	grass
	Polypogon monspeliensis	Rabbitfoot	grass
	Puccinellia airoides	Alkali Grass	grass
	Sitanion hystrix [1,2]	Squirrel-tail	grass
	Sporobolus airoides [1]	Alkali Sacaton	grass
Juncaginaceae	Triglochin maritimum	Arrowgrass	grass-like
Leguminosae	Medicago sativa	Alfalfa	herb
	Melilotus alba	White Sweet Clover	herb
	Melilotus officinalis	Yellow Sweet Clover	herb
Liliaceae	Asparagus officinalis	Asparagus	herb
Malvaceae	Sphaeralcea sp. [1,2]	Globemallow	herb
Onagraceae	Oenothera caespitosa [1,2]	Stemless Evening Primrose	herb
Polemoniaceae	Leptodactylon pungens [1,2]	Granite gilia	herb
	Phlox hoodii [1,2]	Phlox	herb
	Eriogonum bicolor	-	shrub
	Eriogonum gordonii	-	herb
	Eriogonum inflatum [1,2]	Desert Trumpet	herb
	Eriogonum umbellatum [2]	-	shrub
Salicaceae	Salixi sp.	Willow	shrub
Scrophulariaceae	Penstemon sp. [1,2]	Beardstongue	herb
Tamaricaceae	Tamarix pentandra	Tamarisk	shrub
Ulmaceae	Ulmus pumila	Siberian Elm	tree
Total Observed			
tree			45
shrub			1
herb			32

[1] Observed or sampled within reference area.
[2] Sampled within affected area.

TABLE 3-6
SUMMARY OF FREQUENCY AND COVER DATA, REFERENCE AREA, SHADSCALE COMMUNITY

	% Frequency	% Cover
Grasses		
Hilaria jamesii	44.0	4.1
Oryzopsis hymenoides	29.0	2.2
Sitanion hystrix	4.0	0.1
Total % Grasses		6.4 [a]
Shrubs		
Atriplex confertifolia	28.0	6.4
Atriplex corrugata	7.0	1.3
Atriplex graciliflora [b]	1.0	0.2
Ceratoides lanata	10.0	1.5
Gutierrezia sarothrae	-	-
Chrysothamnus nauseosus	2.0	0.1
Unknown Composite shrub	10.0	1.0
Tetradymia spinosa	5.0	0.8
Grindelia sp.	1.0	-
Total % Shrubs		11.1 [a]
Forbs		
Penstemon sp.	3.0	0.1
Sphaeralcea sp.	1.0	-
Total % Forbs		0.1 [a]
Total % Vegetation		17.6 [a]

[a] Based on individual transect summaries.
[b] Probable herb included under shrub designation.

TABLE 3-6A
SHADSCALE REFERENCE TRANSECT 1

	% Frequency	% Cover
Grasses		
Hilaria jamesii	46	3.7
Oryzopsis hymenoides	34	3.2
Sitanion hystrix	4	0.1
Total % Grasses		7.0
Shrubs		
Atriplex confertifolia	20	3.5
Atriplex corrugata	8	1.1
Atriplex graciliflora	-	-
Ceratoides lanata	12	2.5
Gutierrezia sarothrae	2	0.1
Chrysothamnus nauseosus	4	0.2
Unknown Composite shrub	6	0.8
Tetradymia spinosa	2	0.1
Total % Shrubs		8.2
Forbs		
Penstemon sp.	4	0.1
Total % Forbs		0.1
Total % Vegetation		15.3

TABLE 3-6B
SHADSCALE REFERENCE TRANSECT 2

	% Frequency	% Cover
Grasses		
Hilaria jamesii	42	4.5
Oryzopsis hymenoides	24	1.1
Sitanion hystrix	4	0.1
Total % Grasses		5.7
Shrubs		
Atriplex confertifolia	36	9.2
Atriplex corrugata	6	1.4
Atriplex graciliflora	2	0.3
Ceratoides lanata	8	0.4
Tetradymia spinosa	8	1.6
Grindelia sp.	2	0.1
Unknown Composite Shrub	14	1.1
Total % Shrubs		14.0
Forbs		
Sphaeralcea coccinea	2	0.1
Penstemon sp.	2	0.1
Total % Forbs		0.1 [a]
Total % Vegetation		19.8

[a] Added 0.1 to Total % Forbes since column contained two less than 0.1 figures.

TABLE 3-7
PRODUCTION DATA (G/M^2), AFFECTED AREA, SHADSCALE COMMUNITY

Species	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
Grasses													
Hilaria jamesii	18.0		28.4	13.6		14.8	47.2		35.6			15.6	50.8
Oryzopsis hymenoides						29.2		0.4		3.2	1.2		
Sitanion hystrix											1.2		
Total Grass Production	18.0		28.4	13.6		44.0	47.2	0.4	35.6	3.2	2.4	15.6	50.8
Shrubs													
Atriplex confertifolia						232.4		69.6		17.6	26.8	134.8	
Atriplex corrugata							17.6	9.6					
Tetradymia spinosa													
Unknown Composite Shrub													
Unknown shrub											4.0		
Total Shrub Production						232.4	17.6	79.2		17.6	30.8	134.8	6.8
Forbs													
Oenothera caespitose		21.6											
Penstemon sp.	1.6		0.8								5.6		
Phlox hoodii													
Sphaeralcea sp.					3.6						5.2		
Total Forb Production	1.6	21.6	0.8		3.6						10.8		
Total Production	19.6	21.6	29.2	13.6	3.6	276.4	64.8	79.6	35.6	20.8	44.0	150.4	57.6

TABLE 3-7 (Continued)
PRODUCTION DATA (G/M^2), AFFECTED AREA, SHADSCALE COMMUNITY

Species	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
Grasses													
Hilaria jamesii			27.2		36.8	63.2				43.2	24.4	48.4	17.2
Oryzopsis hymenoides	81.2	4.4		8.4			7.6	2.0	35.6				
Sitanion hystrix													7.2
Total Grass Production	81.2	4.4	27.2	8.4	36.8	63.2	7.6	2.0	35.6	43.2	24.4	48.4	24.4
Shrubs													
Atriplex confertifolia	64.4	11.6	106.0	65.6	82.8		190.0		6.0		0.8		289.2
Atriplex corrugata													
Tetradymia spinosa													
Unknown Composite Shrub	6.8					23.6						0.4	
Unknown shrub									68.0				
Total Shrub Production	71.2	11.6	106.0	65.6	82.8	23.6	190.0		74.0		0.8	0.4	289.2
Forbs													
Oenothera caespitose													
Penstemon sp.					2.8								
Phlox hoodii						12.8							
Sphaeralcea sp.													
Total Forb Production					2.8	12.8							
Total Production	152.4	16.0	133.2	74.0	122.4	99.6	197.6	2.0	109.6	43.2	25.2	48.8	313.6

TABLE 3-7 (Continued)
PRODUCTION DATA (G/M^2), AFFECTED AREA, SHADSCALE COMMUNITY

Species	27	28	29	30	31	32	33	34	35	X
Grasses										
Hilaria jamesii	6.4		0.8			39.2		29.2		16.0
Oryzopsis hymenoides							57.2			6.6
Sitanion hystrix		0.4								0.2
Total Grass Production	6.4	0.4	0.8			39.2	57.2	29.2		22.8
Shrubs										
Atriplex confertifolia	19.2	161.2		39.2	38.0		21.6		206.4	50.9
Atriplex corrugata					12.0	17.6				0.8
Tetradymia spinosa					26.0			86.0		4.0
Unknown Composite Shrub				82.8	4.8					3.2
Unknown shrub										2.2
Total Shrub Production	19.2	161.2		122.0	80.8	17.6	21.6	86.0	206.4	61.4
Forbs										
Oenothera caespitose										0.6
Penstemon sp.										0.3
Phlox hoodii										0.4
Sphaeralcea sp.										0.2
Total Forb Production										1.5
Total Production	25.6	161.6	0.8	122.0	80.8	56.8	78.8	115.2	206.4	85.8

TABLE 3-8
REFERENCE AREA
FREQUENCY AND DENSITY SUMMARIES FOR SHRUB SPECIES

Species	Height Class*	Frequency (%)	Density +/- S.D.** (No. per hectare)	
Artemisia Spinosa	Total	50.0		625
	I		125	
	II		500	
Atriplex Confertifolia	Total	100.0		10,828
	I		7,563	
	II		3,266	
Atriplex Gardneri	Total	25.0		156
	I		156	
Ceratoides Lanata	Total	81.3		3,063
	I		391	
	II		2,672	
Chrysothamnus Nauseosus	Total	43.6		156
	I		141	
	II		16	
Chrysothamnus Viscidiflorus	Total	18.8		219
	I		47	
	II		172	
Tetradymia Spinosa	Total	68.8		469
	I		31	
	II		438	
Total				15,516 +/- 3,513

Based on data from 16 2m x 20m line-strip transects. (1982 data)

TABLE 3-9
EVALUATION OF SHRUB DENSITY SAMPLE ADEQUACY FOR THE REFERENCE AREA

	Sample Size	Mean +/- Standard Deviation	Degrees of Freedom (n-1)	Alpha	Value of t (two-tailed)	Computed Adequate Sample Size (n^aade)
Shrub Density (No. Ind./ha)	16	15,516 +/- 3,513	15	0.2	1.341	10

[a] Based on Utah DOGM guideline formula for adequate samples.

TABLE 3-10
AFFECTED AREA, FREQUENCY AND DENSITY SUMMARIES FOR SHRUB SPECIES.

Species	Height Class**	Frequency (%)	Density +/- S.D.** (No. per hectare)	
Artemisia Spinosa	Total	27.8		417
	I		306	
	II		111	
Atriplex Confertifolia	Total	94.4		4,806
	I		3,056	
	II		1,750	
Atriplex Gardneri	Total	44.4		1,598
	I		1,528	
	II		70	
Atriplex Cuneata	Total	5.6		14
	I		14	
	II		0	
Ceratoides Lanata	Total	72.2		736
	I		514	
	II		222	
Chrysothamnus Nauseosus	Total	61.1		820
	I		542	
	II		273	
Chrysothamnus Viscidiflorus	Total	94.4		5,403
	I		3,820	
	II		1,583	
Sarcobatus Vermiculatus	Total	5.6		14
	I		0	
	II		14	
Tetradymia Spinosa	Total	33.3		181
	I		56	
	II		125	
Total				13,989 +/- 4,485

TABLE 3-11
EVALUATION OF SHRUB DENSITY SAMPLE ADEQUACY FOR THE AFFECTED AREA

	Sample Size	Mean +/- Standard Deviation	Degrees of Freedom (n-1)	Alpha	Value of t (two-tailed)	Computed Adequate Sample Size (n_{ade})
Shrub Density (No. Ind./ha)	18	13,986 +/- 4,485	17	0.2	1.282	17

Based on data from 18 2m x 20m line-strip transects. (1983 data).

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Family Cyprinidae Carp (Cyprinus carpio)	C-P		Lakes-littoral areas; quiet water areas in rivers, ponds, sloughs, creeks, and irrigation ditches.
AMPHIBIANS			
Family Ambystomatidae Tiger Salamander (Ambystoma tigrinum)	C-P	Unknown	Quiet water of ponds, reservoirs, lakes, temporary rain pools and streams from arid sagebrush plains to rolling grasslands, mountain meadows and forests.
Family Pelobatidae Great Basin Spadefoot Toad (Scaphiopus intermontanus)	C-N	Unknown	Sagebrush flats, pinion-juniper woodlands to high elevations in spruce-fir communities.
Family Bufonidae Woodhouse's Toad (Bufo woodhouse)	C-N	Unknown	Grassland, sagebrush flats, woods, desert streams, valleys, flood plains, farms, and city backyards.
Great Plains Toad	C-N	Unknown	Prairies, deserts, quiet water of streams, grasslands, and sagebrush plains.
REPTILES			
Family Iguanidae Collared Lizard (Crotaphytus collaris)	C-N	Unknown	Arid and semi-arid plains with bunchgrass, sagebrush or other low desert shrub communities; avoids dense vegetation.
Desert Spiny Lizard (Sceloporus magister)	C-N	Unknown	Shadscale deserts, pinion-juniper woodland, willows and cottonwoods.
Sagebrush Lizard	C-N	Unknown	Variety of habitat types; sagebrush, pinion-juniper, low desert shrub and rocklands.
Side-blotched Lizard (Uta stansburiana)	C-N	Unknown	Inhabits a variety of habitat types, sandy washes with scattered rocks ad low growing sagebrush.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Short-horned Lizard (Phrynosoma douglassi)	C-N	Unknown	Desert grassland, sagebrush, pinion-juniper, pine-spruce and spruce-fir associations, extending from desert shrub to mountain habitats.
Family Teiidae Western Whiptail (Cnemidophorus velox)	C-N	Unknown	Desert shrub communities where plants are sparse and there are open areas for running.
Family Colubridae Striped Whipsnake (Masticophis taeniatus)	C-N	Unknown	Brushlands, grasslands, sagebrush flats, pinion-juniper woodlands and open pine forests.
Night Snake (Hypsiglena torquata)	C-N	Unknown	Plains, sagebrush flats, desert and woodlands; often found under rocks and surface litter.
BIRDS			
Order Ciconiiformes Family Ardeidae Great Blue Heron (Ardea herodias)	C-P resident	STABLE	Marshes, shallow reservations, rivers, streams, shores and irrigation ditches.
Order Falconiformes Family Cathartidae Turkey Vulture (Cathartes aura)	C-P summer resident	STABLE	Usually seen in sky or perched on dead trees, posts, carrion or on ground.
Family Accipitridae Red-tailed Hawk (Buteo jamaicensis)	U-P summer resident	STABLE	Open country, woodlands, mountains and deserts.
Swainson's Hawk (Buteo swainsoni)	U-P summer resident	STABLE	Dry plains and rangeland with hills; open forest or alpine meadows with sparse trees.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Rough-legged Hawk (Buteo lagopus)	C-P winter resident	STABLE	Open country, woodlands, deserts and marshes.
Ferruginous Hawk (Buteo regalis)	U-P summer resident	STABLE	Open desert; infrequently marshes and farmlands are utilized.
Golden Eagle (Aquila chrysaetos)	C-P resident	STABLE	Open mountains, foothills, canyons and desert.
Marsh Hawk (Circus cyaneus)	C-P resident	STABLE	Marshes, fields and prairies.
Family Falconidae Prairie Falcon (Falco mexicanus)	C-P resident	STABLE	Canyons, open habitat in mountains, plains and deserts.
Peregrine Falcon (Falco peregrinus)	E-P resident	Unknown	Canyons, high cliffs, rivers, marshlands and deserts.
American Kestrel (Falco sparverius)	C-P summer resident	STABLE	Open country, prairies, deserts, wooded streams, farmland and cities.
Order Gallifonmes Family Phasianidae Ring-necked Pheasant (Phasianus colchicus)	C-P resident	Decreasing	Irrigated cropland, pastureland, wetlands and desert washes.
Order Charadriiformes Family Charadriidae Snowy Plover (Charadrius alexandrinus)	U-P transient	STABLE	Alkali and sand flats.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Killdeer (Charadrius vociferus)	C-P summer resident and transient	STABLE	Fields and pastures, lawns, riverbanks, irrigated land, shores, plowed fields, alkali flats and gravel roads.
Family Scolopacidae Least Sandpipe (Calidris minutilla)	C-P transient	STABLE	Grassy marshes, rain pools, shores and alkali mudflats.
Order Columbiformes Family Columbidae Mourning Dove (Zenaida macroura)	C-P summer resident and transient	STABLE	Farmlands, towns, open woods, grassland deserts.
Order Strigiformes Family Strigidae Screech Owl (Otus asio)	U-P resident	STABLE	Riparian communities and wooded canyons.
Great Horned Owl (Bubo viginianus)	C-P resident	STABLE	Ubiquitous
Burrowing Owl (Speotyto cunicularia)	L-P resident	Declining	Open grassland, prairies, dikes, desert, farms and prairie dog colonies.
Short Eared Owl (Asio flammeus)	C-P resident	STABLE	Marshes, prairies, irrigated land and open country with short vegetation.
Order Caprimulgiformes Family Caprimulgidae Poor-will (Phalaenoptilus nuttallii)	C-P summer resident	STABLE	Arid uplands with open pinion-juniper and sparse brush; riparian areas.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Family Corvidae Black-billed Magpie (Pica pica)	C-P resident	Unknown	Foothills, ranches, sagebrush, river thickets, shelterbelts and prairie brush.
Common Raven (Corvus corax)	C-P resident	Unknown	Mountains, deserts, canyons and cliffs.
Common Crow (Corvus corax)	C-P resident	Unknown	Deciduous, mixed and open coniferous woodlands, farmlands and river grove.
Pinion Jay (Gymnorhinus cyanocephala)	C-P resident	Unknown	Pinion-juniper woodlands, but ranges into sagebrush.
Family Troglodytidae Rock Wren (Salpinctes obsoletus)	C-P resident	Unknown	Desert to high mountain areas with talus slopes and cliffs.
Family Mimidae Mockingbird (Mimus polyglottos)	U-P transient and summer resident	Unknown	Towns, farms, ranches, roadsides, brush and desert streamsides.
Bendire's Thrasher (Toxostoma bendirei)	R-P resident	Unknown	Desert scrub and farmlands.
Sage Thrasher (Oreoscoptes montanus)	C-P	Unknown	Sagebrush, rabbitbrush, brushy slopes and mesas.
Order Apodiformes Family Trochilidae Broad-tailed Hummingbird (Selasphorus platycercus)	C-P	Unknown	Ubiquitous

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Order Passeriformes Family Tyrannidae Eastern Kingbird (Tyrannus tyrannus)	C-P summer resident	Unknown	Wood edges, parklands, riparian areas, farms, shelter birds, orchards and roadsides.
Ash-throated Flycatcher (Myriarchus cinerascens)	C-P summer resident	STABLE	Semi-arid country, deserts, brush, pinion-juniper and open woods.
Says Phoebe (Sayornis saya)	C-P resident	Unknown	Open arid country, deserts, bushy plains, prairie farms, canyon mouths and buttes.
Gray Flycatcher (Empidonax wrightii)	K-P summer resident	Unknown	Breeds in sagebrush and pinion-juniper woodlands.
Family Alaudidae Horned Lark (Eremophila alpestris)	C-P resident	Unknown	Plains, desert, prairies, fields, sparse sagebrush flats, dirt roads, shores, alpine meadows, alkali flats and areas of sparse vegetation.
Family Hirundinidae Cliff Swallow (Petrochedidon pyrrhonota)	C-P summer resident	Unknown	Open to semi-wooded country, neat farms, cliffs, canyons, rivers or lakes.
Family Laniidae Logger Shrike (Lanius ludovicianus)	C-P resident	Unknown	Deserts and other open country with lookout posts, wires, scattered trees and low scrub.
Family Sturnidae Starling (Sturnus vulgaris)	C-P resident	Unknown	Cities, fields, orchards and woodlands.
Family Ploceidae House Sparrow (Passer domesticus)	C-P resident	Unknown	Cities, farms and houses.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Family Icteridae Western Meadowlark (Sturnella neglecta)	C-P resident	Unknown	Open fields, meadows and plains.
Yellow-headed Blackbird (Xanthocephalus xanthocephalus)	C-P summer resident	Unknown	Marshes with cattail and bulrushes; forages in fields and open country.
Brewer's Blackbird (Euphagus cyanocephalus)	C-P resident	Unknown	Varied open country, lakeshores, irrigated pastures, feed lots, parks and cities.
Family Icteridae Common Grackie (Quiscalus quiscula)	A-P transient	Unknown	Farms, fields, streamsides and wet woodlands.
Brown-headed Cowbird (Molothrus ater)	C-P resident	Unknown	Farms, fields, barnyards wood edges riparian woodlands.
Family Emberizidae Black-headed Grosbeak (Pheucticus melanocephalus)	C-P summer resident	Unknown	Edges of second growth deciduous woods, pinion, riparian areas, orchards and parks.
Blue Grosbeak (Guiraca caerulea)	C-P summer resident	Unknown	Brushy and weedy places, willows and river thicket and other riparian areas.
Lapland Longspur (Calcarius lapponicus)	R-P winter resident	Unknown	Fields, grasslands, saline flats, desert shrub; often seen with horned larks.
Lark Bunting (Calamospiza melancorys)	O-P transient	Unknown	Plains, prairies, desert shrub and sagebrush.
Savannah Sparrow (Passercules sandwichensis)	C-P summer resident	Unknown	Grasslands, fields, saltgrass meadows and open country.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Vesper Sparrow (Pooecetes gramineus)	C-P summer resident	Unknown	Alfalfa and grain fields, meadows, sagebrush and desert shrub.
Family Emberizidae Lark Sparrow (Chondestes grammacus)	C-P summer resident	Unknown	Open country in sagebrush and desert shrub with available perch sites.
Sage Sparrow (Ammphispiza belli)	U-P summer resident	Unknown	Sagebrush, greasewood and other desert desert shrubs.
Dark-eyed Junco (Junco hyemalis	C-P resident	Unknown	In summer openings and edges of coniferous and mixed woodlands; in winter greasewood and undergrowth.
Tree Sparrow (Spizella arborea)	U-P winter resident	Unknown	Willow thickets and brushy areas.
Brewer's Sparrow	C-P summer resident	Unknown	Sagebrush, greasewood and other desert shrubs or brushy areas.
White-crowned Sparrow (Zonotrichia leucophrys)	C-P resident	Unknown	In summer forest edges and clearings, low brush and mountain thickets; in winter widespread in the valleys, along fence row willows, brushy areas, corn and greasewood.
Song Sparrow (Zonotrichia melodia)	C-P resident	Unknown	Woodland edges, grasslands, cattail marshes, thickets and brushy fence rows.
Black-throated Sparrow (Ammphispiza bilineata)	U-P summer resident	Unknown	Pinion-juniper, mountain brush and sagebrush.
Family Fringillidae House Finch (Carpodacus mexicanus)	C-P resident	Unknown	Varied habitats; towns, ranches, open woods, mountain scrub, canyons, deserts and riparian area.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
American Goldfinch (Carduelis tristis)	C-P resident	Unknown	Riparian woodlands, willows, cottonwoods, orchards, roadsides, and sunflowers.
MAMMALS - 103 species in southeastern Utah.			
Order Insectivora Family Soricidae Merriam Shrew (Sorex merriami)	U-N	Unknown	Arid sagebrush or grassland areas, mountain mahogany, coniferous forests, aspen and cottonwoods.
Order Chiroptera Family Vespertilionidae Little Brown Myotis (Myotis lucifugus)	C-N	Unknown	Caves, mine tunnels, hollow trees or buildings usually near water.
Fringed Myotis (Myotis thysanodes)	U-N	Unknown	Caves, old buildings, rock crevices, pinion-juniper and desert shrub.
Yuma Myotis (Myotis yumanensis)	U-N	Unknown	Caves, tunnels, and buildings in arid areas.
California Myotis (Myotis californicus)	C-N	Unknown	Mine tunnels, hollow trees, loose rocks, buildings, bridges; chiefly a crevice dweller (up to 6,000 feet in elevation).
Small-footed Myotis (Myotis leibii)	U-N	Unknown	Caves, mine tunnels, crevices in rocks and in buildings.
Western Pipistrelle (Pipistrellus hesperus)	C-N	Unknown	Caves, under loose rocks, crevices, in cliffs, buildings; arid areas near water courses.
Western Big-eared Bat (Plecotus townsendii)	C-N	Unknown	Caves, mine tunnels and buildings utilized for roosting; inhabits arid western desert shrub, pinion-juniper and pine forests.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Order Lagomorpha Family Leporidae White-tailed Jackrabbit (Lepus townsendii)	C-N	STABLE	Open, grassy or sagebrush areas at medium elevation.
Black-tailed Jackrabbit (Lepus californicus)	C-N	STABLE	Open grassland, sagebrush and desert shrub areas at low to medium elevations.
Desert Cottontail (Sylvilagus audubonii)	C-P	STABLE	Open plains, foothills and low valleys with grass, sagebrush or scattered pinion-juniper.
Order Rodentia Family Sciuridae White-tailed Prairie Dog (Cynomys leucurus)	C-N	STABLE	Valleys and flatlands where vegetation is sparse.
Whitetail Antelope Squirrel (Ammosperhmophilus leucurus)	C-N	STABLE	Arid areas of low desert and foothills with sparse vegetation.
Least Chipmunk (Eutaniums minimus)	C-N	STABLE	Variety of habitat types including sagebrush, desert shrub, mountain bush, coniferous and mixed forest areas.
Family Geomyidae Ord Kangaroo Rat (Dipodomys ordii)	C-N	Unknown	Desert shrub, pinion-juniper and tamarisk communities; sandy soils preferred but found on hard soils.
Great Basin Pocket Mouse	C-N	Unknown	Sagebrush or greasewood and other desert (Perognathus parvus) shrub communities and pinion-juniper.
Family Cricetidae Western Harvest Mouse (Reithrodontomys megalotis)	C-N	Unknown	Grasslands, open desert, wetlands, irrigated farmland of dense vegetation near water.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Deer Mouse (Peromyscus maniculatus)	C-N	Unknown	All dry-land habitat and irrigated farmland within its range.
Brush Mouse (Peromyscus boylei)	C-N	Unknown	Brushy areas of arid and semi-arid regions; prefers rocky sites.
Desert Wood Rat (Neotoma lepida)	C-N	Unknown	Desert floors and rocky slopes with low desert vegetation or arid mountain brush.
Mountain Vole (Microtus montanus)	C-N	Unknown	Dense vegetation in sagebrush-grass communities.
Family Muridae Black Rat (Rattus rattus)	C-N	Unknown	Buildings and dumps.
Norway Rat (Rattus norvegicus)	C-N	Unknown	Burrows along building foundations and beneath rubbish piles.
House Mouse (Mus musculus)	C-N	Unknown	Buildings and occasionally in fields.
Order Carnivora Family Canidae Coyote (Canis latrans)	C-N	STABLE	Ubiquitous.
Family Mustelidae Black-footed Ferret (Mustela nigripes)	E-P	Unknown	Prairie dog towns.
Striped Skunk (Mephitis mephitis)	C-P	Increasing	Semi-open country of prairie, brushlands or mixed woodlands within two miles of water.

TABLE 3-12
POTENTIAL VERTEBRATE WILDLIFE

Species	Status*	Population Trend	Habitat Use Area
Order Artiodactyla Family Cervidae Mule Deer (Odocoileus hemionus)	C-P	Increasing	Coniferous forests, desert shrub, mountain brush, grassland with shrubs and other habitats where browse species are present.
Family Antilocapridae Pronghorn Antelope (Antilocapra americana)	L-P	STABLE	Open prairies and sagebrush or desert shrub plains.

STATUS CODE	
K	Status Unknown - It is believed that these species are present, but little is known of their population dynamics.
C	Common - These species are widespread and abundant.
U	Uncommon - These species are widespread, but not abundant.
R	Rare - These species are seldom identified during any one year.
O	Occasional - These species are periodically identified during a long term period - 10-50 years.
A	Accidental - Distribution for these species does not normally include this area. Sightings are as far between as 50 to 100 years.
E	Endangered - These species are endangered with extinction or extirpation form wildland in Utah.
T	Threatened - These species are threatened with becoming endangered in Utah.
L	Limited - These species are common but restricted to a particular use area or habitat type in Utah.
X	Extirpated - These species have disappeared from wildland habitats in Utah.
P	Protected - These species are protected by state or federal laws in Utah.
N	Nonprotected - These species are not protected by any laws in Utah.

TABLE 3-13
STATUS OF WHITE-TAILED PRAIRIE DOG (CYNOMYS LEUCURUS) BURROWS ON THE SAVAGE COAL TERMINAL STUDY AREA

	Single Burrows	Multiple Burrows (true mound)	Total
Active	29	(1) 5	34
Inactive	65	(2) 8	73

TABLE 3-14
CONSTRUCTION OF WHITE-TAILED PRAIRIE DOG (CYNOMYS LEUCURUS) BURROWS ON THE SAVAGE COAL TERMINAL STUDY AREA

	Active Burrows	Inactive Burrows
Flat Ground	2	10
Slightly Mounded	25	47
True Mound (Multiple Burrows)	1 (5)	2 (8)
Unclassified*	2	8

* Unclassified due to construction in man-caused disturbance, for example, in a man-made trench.

TABLE 3-15
FEDERALLY LISTED
Threatened (T), Endangered (E), and Candidate (C)
FOR CARBON COUNTY UTAH

Common Name	Scientific Name	Status
Uinta Basin Hookless Cactus	*Sclerocactus glaucus*	T
Graham Beardtongue	*Penstemon grahamii*	T Proposed
Humpback Chub	*Gila cypha*	E
Bonytail	*Gila elegans*	E
Colorado Pikeminnow	*Ptychocheilus lucius*	E
Razorback Sucker	*Xyrauchen texanus*	E
Bald Eagle	*Haliaeetus leucocephalus*	T
Yellow-billed Cuckoo - Possibly	*Coccyzus americanus*	C
Mexican Spotted Owl - Possibly	*Strix occidentalis lucida*	T
Black-footed Ferret - Unconfirmed	*Mustela nigripes*	E Extirpated

Vegetation Bibliography

Campbell, R.D. 1980. Personal Communication. Prior landowner, Spur Coal Processing Facilities, Price, Utah.

Cochran, W.G. 1977. Sampling Techniques, 3rd Edition. John Wiley and Sons, New York.

Cronquist, A., A.H. Holmgren, N.H. Holmgren, and J.L. Reveal. 1972. Intermountain flora. Halner Publishing Co., Inc., New York.

Daubenmire, R.F. 1959. Canopy coverage method of vegetation analysis. Northwest Science 33:43-64.

Oosting, H.J. 1956. The study of plant communities. W.H. Freeman and Co., San Francisco.

Sorensen, T. 1948. A Method of Establishing Groups of Equal Amplitude in Plant Sociology Based on Similarity of Species Content. Det. Zong, Danske Vidensk. Selsk, Boil, Skr. (Copenhagen) 5:1-34.

U.S. Fish and Wildlife Services. 1980 Republication of lists of endangered and threatened species and correction of technical errors in final rules. Fed. Reg. 45:33768-33781.

Welsh, S.L. and G. Moore. 1973. Utah Plants-Trache ophyta. Third Edition. Brigham Young University Press, Provo, Utah.

Wildlife Bibliography

Behle, W.H., and M.L. Perry. 1975. Utah birds: guide, checklist, and occurrence charts. Utah Mus. Nat. Hist., Univ. Utah, Salt Lake City. 142 pp.

Clark, T.W. 1973. A field study of the ecology and ethology of the white-tailed prairie dog (Cynomys leucurus): with a model of Cynomys evolution. Unpublished PhD. thesis, University of Wisconsin, Madison. 215 pp.

Clark, T.W. 1978. Current status of the black-footed ferret in Wyoming. 'Jour. Wildl. Mgt. 42(1): 128-133.

Dalton, L.B. 1980. Resource analyst, Utah State Division of Wildlife Resources. In a personal communication to M. Boucek, SAI. February, 1980.

Durrant, S.D. 1952. Mammals of Utah. Univ. Kansas Publ. Mus. Nat. Hist. 6:1-549.

Fortenbury, D.K. 1972. Characteristics of the black-footed ferret. U.S. Dept. of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Resource Publication 109. 8 pp.

Henderson, F.R., P.F. Springer, and R. Adrian. 1969. The black-footed ferret in South Dakota. South Dakota Dept. of Game, Fish and Parks Bulletin, Pierre. 37 pp.

Hinckley, D.K. 1970. A progress report on attempts to located black-footed ferrets (Mustela nigripes) in Utah. U.S. Dept. of the Interior, Fish and Wildlife Services, Division of Wildlife Services progress report, June 12, 1970. 10 pp.

Linder, R.L., M.E. Anderson, E.M. Brigham, C.N. Hillman, D.L. Lengkeek, A.L. Lovaas, J.K. McDowell and W.W. Painter. 1978. Black-footed ferret recovery plan. U.S. Fish and Wildlife Service. 150 pp.

Schroeder, M.H. 1980. U.S. Fish and Wildlife Service, Denver, Wildlife Research Center, Field Station, H. Collins, Colorado. In a personal communication to M. Boucek, SAI. September 25, 1980.

Smith, R.E. 1958. Natural history of the prairie dog in Kansas. Univ. Kans. Mus. Natur. Hist. State. Biol. Surv. Misc. Publ. No, 16. 36 pp.

Sparks, E.A. 1973. Prairie dogs and black-footed ferrets in Utah. In Proceedings of the black-footed ferret and prairie dog workshop. South Dakota State University, Brookings. 102-104 pp.

Stebbins, R.C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 pp.

Tileson, J.V. and R.R. Lechleitner. 1966. Some comparisons of the black-tailed and white-tailed prairie dogs in north-central Colorado. Amer. Midl. Natur. 75(2): 292-316.

U.S. Fish and Wildlife Service, 1978. Rehabilitation of western wildlife habitat: a review. Prepared by: Staff of the Institute for Land Rehabilitation, Utah State Univ., Logan. FWS/OBS-78/86. 238 pp.

Utah Division of Wildlife Resources, 1978. Vertebrate species of south-eastern Utah. Prepared by: Staff of the Institute for Land Rehabilitation, Utah State Univ., Logan. Pub. 78-16. 68 pp.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 2890
Washington, D.C. 20013

August 8, 2002

Mt. Nebo Scientific
Patrick D.Collins, Ph.D.
330 E. 400 S., Suite 6
Springville, UT 84663

Dear Patrick,

The vegetative reference site located just east of the Savage Load out turnoff is a desert loamy clay D-34 site. It is in high good condition. The potential production ranges from 350 to 400 lb. per acre on a favorable year 100 to 150 lbs. per acre on an unfavorable year. This year the site will produce about 240 lbs. per acre.

The reference site located west of the coal pile is an alkali flat D-34 site. This site is in high fair condition. The potential production ranges from 950 to 1000 lbs. per acre on a favorable year to 500 to 550 lbs. per acre on an unfavorable year. This year the site will produce about 560 lbs. per acre.

Attached is the data collection sheet for the latter range site. There was a mistake on my part on the last data sheet I sent for the second site. Therefore I am sending a corrected data sheet for the site. Please let me know if you have any questions.

Kari Christman
Soil Conservationist
Natural Resources Conservation Service

FIGURE 3-1

United States
Department of
Agriculture

Soil
Conservation
Service

350 North 4th East
Price, Utah 84501

September 29, 1983

Mr. Dan Guy
Beaver Creek Coal Company
P. O. Box AU
Price, Utah 84501

Dear Dan,

This letter is in reference to the inspection we made at the Castle Valley Spur on September 29, 1983. We visited one reference area that was identified as a desert loam range site.

The method used in obtaining herbage production and site condition was an ocular estimate.

The production and condition for this site is as follows:

> The desert loam vegetation site is producing about 450 lbs. per acre air dry. The site is in good condition.

The production figures are based on air dry herbage per acre.

Don M. Andrews

Don M. Andrews
Range Conservationist

FIGURE 3-2

Appendix 3-1

Vegetation Test Plots

Savage Services Corporation
Savage Coal Terminal

FINAL RESULTS
OF THE C.V. SPUR NO.1
REVEGETATION TEST PLOTS

Prepared by

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

for

BLACKHAWK ENGINEERING
Route 1, Box 146-H5
Helper, Utah 84526

by

Patrick Collins, Ph.D.

March 2001

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FINAL RESULTS OF THE C.V. SPUR NO. 1 REVEGETATION TEST PLOTS

SUMMARY

A test plot was constructed in 1987 that compared revegetation techniques including soil cover, coal refuse cover, wood fiber mulch, straw mulch and strip planting methods. Living cover data suggests the subplots that had more coal refuse performed better. Although the trend is not as evident for woody species density, data also suggests that density was greater in those plots with more coal refuse.

INTRODUCTION

Objectives

The purpose of this report is to summarize the final results of the Revegetation Test Plots at the C.V. Spur. No. 1 site. Although the plots have been monitored since their construction in 1987, the information herein was based on the most recent intensive quantitative vegetation sampling which was conducted in 1997.

Because this report is intended to be a 'summary' of the final results, all data tables, sampling methodologies, color photographs, and raw data *have not been included in the report*. A more complete set of this information can be found in the report called: VEGETATION MONITORING OF THE C.V. SPUR TEST PLOTS: 1997.

Location

The C.V. Spur area is located approximately 4 miles southeast of the city of Price, Utah. The area is comprised of nearly 120 acres of disturbed land associated with coal cleaning and loading activities. The disturbed area lies within a salt desert community on soils derived from Mancos Shale.

Design

Revegetation test plots investigating different treatments were established in the fall of 1987 by the former owner, Beaver Creek Coal Company. The entire research plot size is approximately 120 ft by 140 ft. This area was divided into sixteen 25 ft by 25 ft plots or "subplots" to test and compare different reclamation treatments. The treatments consisted of controls, topsoil depths, coarse refuse mixtures and mulches. More specifically, the treatments investigated with their respective subplot numbers are listed below on Table 1.

TABLE 1: CV SPUR NO. 1 TEST PLOT DESIGN

SUBPLOT NUMBERS	TREATMENT
1, 9	6 in. soil, seed, (control)
2, 6	6 in. soil, seed, wood fiber mulch
3, 7	4 in. soil, 2 in. coal refuse, seed, wood fiber mulch
4, 8	3 in. soil, 3 in. coal refuse, seed, wood fiber mulch
5	6 in. soil, wood fiber mulch, (strip planting)
10, 14	6 in. soil, seed, hay mulch
11, 15	4 in. soil, 2 in. coal refuse, seed, hay mulch
12, 16	3 in. soil, 3 in. coal refuse, seed, hay mulch
13	6 in. soil, hay mulch, (strip planting)

RESULTS & DISCUSSION

Rather than providing all data summary tables with their respective data sets, graphs have been included in this report that facilitates comparisons of the final results. The graphs provided show results of all subplots for living cover, composition and woody species density.

Cover

The living cover for each subplot has been illustrated in two ways. First, the data were summarized and comprised all species, including the exotic annuals or "weedy" species. However, because weeds are not considered to be desirable species for final revegetation success, the data also were summarized by means that excluded these species.

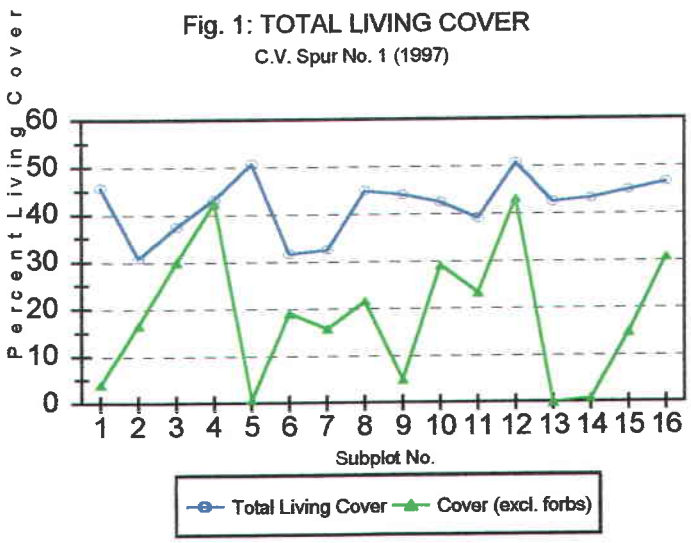


Figure 1 graphically illustrates the total cover – with and without the weedy species.

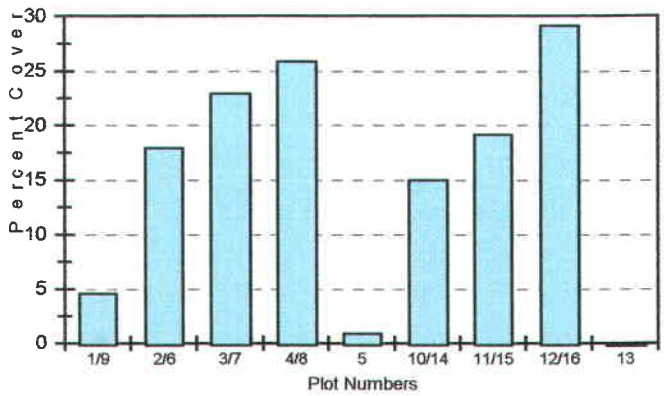
Another way to represent and simplify the data was to combine the subplots that had identical treatments. This was done by averaging their values, thus deriving one value for each treatment instead of two (each treatment was replicated two times). For example, Subplot numbers 2 and 6

were the same treatment (6" in. soil, seed, wood fiber). Their cover values excluding weeds were 16.67% and 19.17%, respectively. The mean cover for this treatment would then be 17.92%. The mean cover values of each treatment is shown on Figure 2.

Interestingly, the two highest cover values (Subplots 12/16 & 4/8) had the same seedbed medium (3" soil, 3" coal refuse). The next highest cover also had similar growth medium (4" soil, 2" coal refuse). Conversely, the subplots that performed with the least success for living cover were the subplots that had 6 inches of soil with no coal refuse added (Subplots 1/9, 5 & 13).

Fig. 2: MEAN COVER OF EACH TREATMENT

C.V. Spur No 1 (1997)

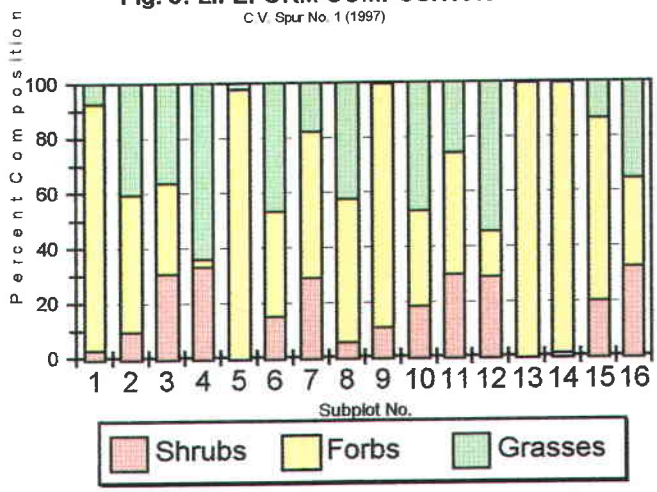


Composition

Lifeform or species composition has also been graphically shown for each subplot for comparison. This provides the reviewer with information about the relative

Fig. 3: LIFEFORM COMPOSITION

C.V. Spur No. 1 (1997)

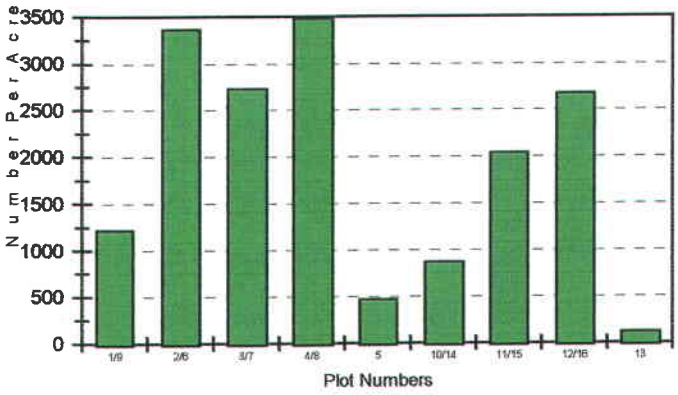


cover proportion of shrubs, forbs and grasses. The graph is shown on Figure 3, but weedy species were included with the forbs.

Density

Like the cover data described above, woody species density was also combined by treatments and shown on Figure 4. Woody species density also revealed interesting results and patterns. If one considers the subplots with the wood fiber mulch, for example, most subplots had high density values, especially those that also had coal refuse cover (Subplots 2/6, 3/7, & 4/8). The trend for the hay mulch is that density increased as coal refuse cover increased (Subplots 10/14, 11/15 & 12/16).

Fig. 4: MEAN DENSITY OF EACH TREATMENT
C.V. Spur No. 1 (1997)



Like the cover data, the subplots that performed poorest were those with the most soil cover (Subplots 5, 13, & 1/9).

VEGETATION TEST PLOTS

C.V. SPUR

Scope:

Beaver Creek C.V. Spur is located approximately 4 miles southeast of Price, Utah in Carbon County. The area comprises approximately 120 acres of potential disturbance associated with the washing, cleaning and loading of coal. The land lies in an agricultural region but is not classified a prime farm ground due to the rolling topography with saline soils derived from mancos shale. The predominant vegetative cover prior to disturbance is outlined in the C.V. Spur MRP. Total vegetative cover is less than 18% comprised predominantly of species which are of marginal importance to wildlife or domestic grazing. This, in combination with very low productivity, less than 300# per acre renders this area ideal to attempt to enhance the region in its ability to support a more diversified population of wildlife while providing increased forage and cover over what existed prior to disturbance.

Attempts to perform contemporaneous revegetation at the site in the past have met with little success. The purpose of the test plots is to evaluate different soil treatment and planting medium. In addition, a standard control test plot will be used to allow evaluation of individual plant species within the seed mix. The test plots will be placed on the west end of the refuse pile and will remain undisturbed throughout the life of the study.

The following report outlines the design and implementation of the test plots.

C.V. Spur Test Plots

Scope:

On October 18, 1988, the vegetation test plots located in Carbon County, Utah at Beaver Creek Coal Company, CV Spur site were examined to determine success of revegetation methodologies. The plots were implemented in the fall of 1987 under the direction of Mr. Dan Guy of Beaver Creek Coal Company.

Three soil treatments and two mulches were tested as to their effectiveness in facilitating the establishment of 17 species of vegetation (see Attachment 1 - Species List). The test plot was established approximately in the south central portion of the property (Plate 3-1) on an existing coal refuse pile. An area of approximately 140' by 120' was dedicated to the test plots. Soil was hauled from an adjacent top soil pile and placed in 25' strips, 120' in length at a rate of 6", 6", 4", and 3". After the soil was in place, 2" refuse was overlaid on the 4" soil strip, and 3" of coal refuse was overlaid on the 3" soil strip. A John Deere 750 Farm tractor was then utilized to thoroughly tile (mix) the refuse and soil areas into a uniform consistency of 33% coal soil and 50% coal soil respectively. The 6" soil area was also tilled in order to minimize surface compaction associated with the transport and spreading of materials. Soil analysis was conducted and is attached as Attachment 2. Two control blocks 25' by 25' were then marked off on the 6" soil area and the balance of the site was drill seeded utilizing a John Deere grain drill set at 3/8" depth. The two control plots were hand seeded with each species separated in stripe approximately 10' by 18" and hand raked in order to partially cover the seed (see Exhibit 1).

After seeding, the south half of the test area was hydromulched utilizing a Bowie Hydromulcher. "Spraya Mulch", a wood fiber mulch was oversprayed at a rate of 2,000 lbs. per acre and 60 lbs. per acre Terra Tac AR on all but 1 control plot. Incorporated into the mulch slurry was 100 lbs. per acre of 16-16-8 fertilizer (see Exhibit 2 - Test Plot Layout). A 20' buffer zone between the hydromulched area was established to preclude overspray onto the hay mulch area.

The north half of the area was then mulched utilizing a "Finn" 2000 straw blower. Third cut alfalfa hay was applied at a rate of 2,000 lbs. per acre and crimped in on all but 1 control plot. Incorporated with the hay was 100 lbs. per acre of 16-16-8 fertilizer (see Exhibit 2 - Test Plot Layout). One hundred, (100) lbs. per acre of 16-16-8 fertilizer was then hand broadcast over the two control plots. The entire site was then fenced to preclude equipment or livestock trespass.

In May of 1988, the plots were examined to determine general condition. It was noted that the area was being heavily utilized by the indigenous wild hare or rabbit population in the area. This was noted by the number of scat sites as well as employee observation and tracks. Mr. Guy had the site re-fenced utilizing 48" x 1" x 1" chicken wire buried to a depth of 10" to 12" and tied to the top strain of barbed wire, approximately 36" above ground line. This appears to have actively precluded rabbit use since. The site was monitored for success in October of 1988.

Monitoring Methodology:

On October 11, 1988, the plots were monitored utilizing a 1.6% sample randomly located in each of the test plots. Ocular estimates of percent vegetative cover was made based on canopy coverage of the actual area. Where feasible, each species was identified (due to the emergent nature of the grass species, positive identification was almost impossible), each sprig within the monitoring plot was counted and apparent vigor was indicated of the overall plot. On a number of plots, large Russian thistles dominated the site. In order to gain an accurate count of sprigs, these thistle plants ere removed. The monitoring plots wee laid out north to south with the southwest corner located as the origination point. This corner was located on the ground and its approximate position is indicated with an "X" on Exhibit 2. No estimates of productivity were made due to the nature (emergent) of the vegetative cover.

It is important to note that the viability of a number of the species was in question due to the extreme drought experienced during the 1988 growing season. The 1989 monitoring should be more indicative of actual establishment.

The results of the survey are as follows:

	Plot Description	% Veg. Cover	Vigor
1.	Control - 6" soil	8%	Poor
2.	6" soil, wood mulch, fertilizer	22%	Average
3.	4" soil, 2" refuse, wood mulch, fert.	15%	Average
4.	3" soil, 3" refuse, wood mulch, fert.	21%	Good
5.	6" soil, hay mulch, fertilizer	7%	Poor
6.	4" soil, 2" refuse, hay mulch, fert.	10%	Poor
7.	3" soil, 3" refuse, hay mulch, fert.	<3%	Poor

Strip Planting

Species	% Ground Cover %	Vigor Wood Mulch V	% Ground Cover %	Vigor Hay Mulch V
Atriplex currugata	0		0	
Agropyron trichophorum	25	G	30	A
Atriplex confertifolia	0		0	
Atriplex canescens	5	G	25	A
Agropyron dasystachyum	50	A	25	G
Oryzopsis hymenoides	30	A	75	G
Hilaria jamesii	0		0	
Melilotus officinalis	5	P	5	P
Agropyron cristatum ephraim	80	VG	50	P
Sporobolus airoides	5	P	0	
Penstemen palmeri	0		0	
Helianthus annuus	15	A	5	P
Agropyron cristatum fairway	80	P	20	P
Sphaeralcea graossulariae folia	<2	P	0	
Eurotia lanta	40	G	15	G
Chrysothamnus nauseosus	0	P	<2	P
Agropyron smithii	<2	P	<2	P

VG = Very Good Vigor (seed heads present)

G = Good Vigor

A = Average Vigor

P = Poor Vigor

Average Number of Plants Per Plot (1.6% of area)

Plot Description	Halogeton	Russian Thistle	Winterf at	Yellow Clover	Rabbit Brush	Rag Weed	Sun Flower	Grasses
Wood Mulch								
6" soil Wood Mulch Fertilizer	5	3	12	2	2	0	0	23
4" soil Wood mulch Fertilizer	5	7	1	0	0	0	0	135
3" soil 3" refuse Wood Mulch Fertilizer	5	30	1	0	0	8	0	68
Hay Mulch								
6" soil Hay Mulch Fertilizer	19	3	1	2	0	3	2	60
4" soil 2" refuse Hay Mulch Fertilizer	7	21	1	1	0	15	0	52
3" soil 3" refuse Hay Mulch Fertilizer	11	9	0	2	0	6	0	0

Conclusions and Recommendations:

Based on the first year monitoring results, it appears that:

1. Wood fiber mulch offers a 50% increase in vegetation establishment over both hay mulch or no mulch.

2. Coal refuse (up to 50%) is not a significant deterent to vegetation establishment.

3. Crested wheatgrasses and Indian rice grass offer the greatest potential for vegetation establishment in combination with Winter fat.

4. Third cut alfalfa hay may be an attractant to indigenous wildlife (rabbits) and as such, be detrimental to vegetation establishment.

A general observation of the site indicates that the test plot was severely impacted by the 1988 drought experienced in Carbon County. In conducting the monitoring, all emergent vegetation was inventoried at the time monitoring was conducted (October). It was impossible to determine whether the individual plats ere dormant or dead. The 1989 monitoring should yield more significant data as to long term establishment.

It was interesting to note that the wood fiber mulch was largely in place with 90% + ground cover while the hay mulch was sparce and accounted for less than 50% ground cover. It was impossible to determine whether the loss of hay mulch was due to rodent activity or wind dispersal.

Continued monitoring appears to be essential to substantiate the above referenced conclusions.

Beaver Creek - CV Spur

Vegetation Test Plot

Control 6" Soil Seed Only X	6" Soil Seed & Mulch X Wood Fiber 2000#/acre	4" Soil 2" Coal Refuse Seed & Mulch X Wood Fiber 2000#/acre	3" Soil 3" Coal Refuse Seed & Mulch X Wood Fiber 2000#/acre
Strip Planting of species Wood Fiber Mulch	X "	X "	" X

20' Buffer Area

Control 6" Soil Seed Only X	6" Soil Seed & Hay Mulch X 2000#/acre	X 4" Soil 2" Coal Refuse Seed & Hay Mulch 2000#/acre	3" Soil 3" Coal Refuse Seed & Hay X Mulch 2000#/acre
Strip Planting 6" Soil 2000#/acre Hay Mulch	X	" X	X "

1" = 20'

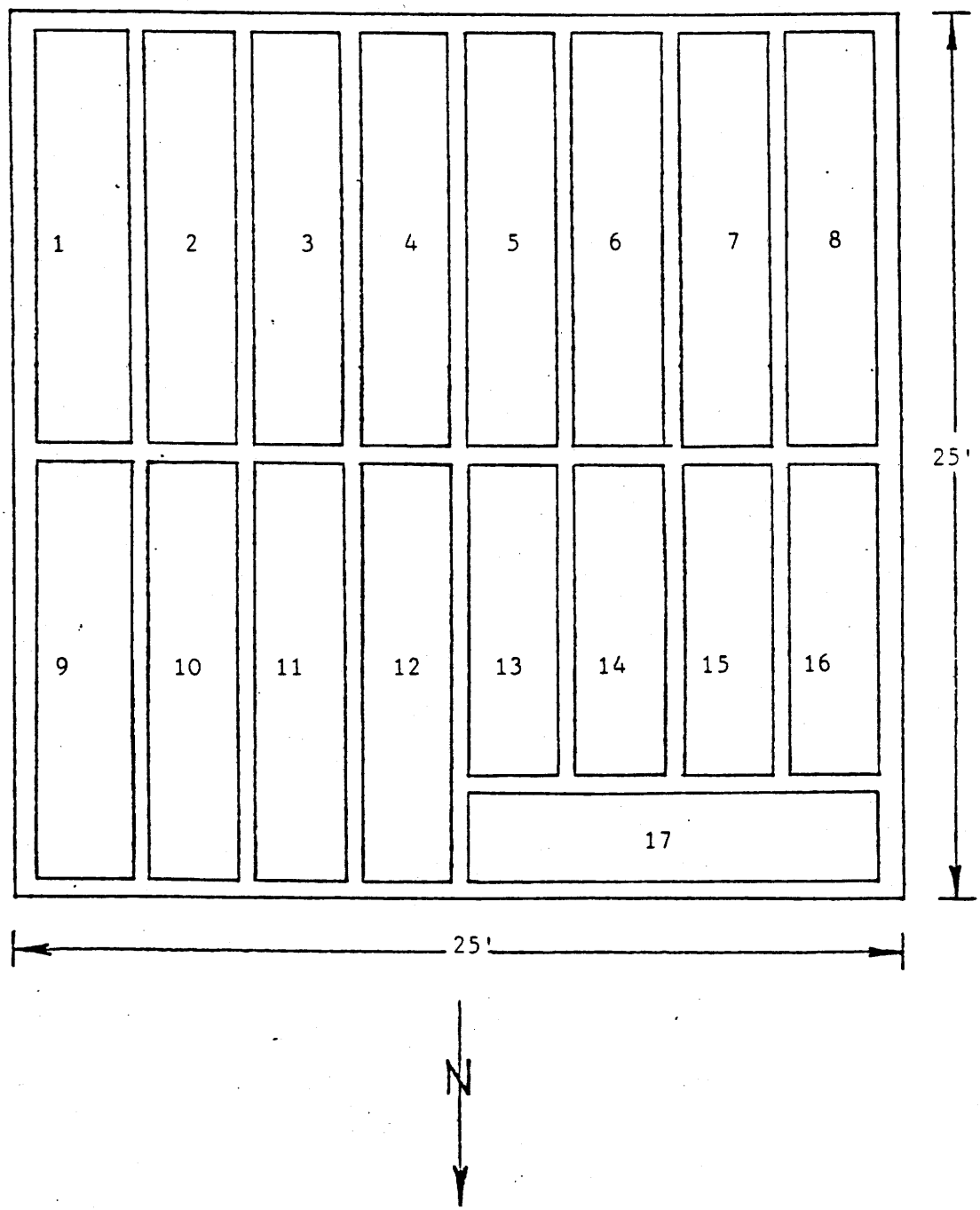
N

C.V. SPUR
TEST PLOTS

STRIP PLANTING
CONTROL PLOT

1- Atriplex corrugata
2- Agro trichophorum
3- Atriplex confertifolia
4- Atriplex canescens
5- Agro dasystachyum
6- Oryzopsis hymenoides
7- Hilaria jamesii
8- Melilotus officinalis
9- Agro Cristatum ephraim
10- Sporobolus airoides
11- Penstemen palmeri
12- Helianthus annuus
13- Agro cristatum fairway
14- Sphaeralcea graossulariae folia
15- Eurotia lanta
16- Chrysothamnus nauseosus
17- Agro Smithii

Scale: 1" = 5'



Attachment 1

PERMANENT RECLAMATION SEED MIXTURE

Name	Rate (Pounds PLS/AC)	Price Per Pound	Total
Grasses			
Galleta (Hilaria jamesii)	2	$26.25	$52.50
Thickspike wheatgrass (Agropyron dasystachyum)	4	$3.90	$15.60
Indian Ricegrass (Oryzopsis hymenoides)	3	$8.15	$24.45
Alkali scaton (Sporobolus airoides)	.75	$3.30	$2.48
Indian saltgrass (Distichlis spicata)	1	NA	NA
			$95.03
Forbs			
Globemallow (Sphaeralcea grossulariaefolia)	.5	$45.00	$27.50
Sunflower (Helianthus annuus)	4	$8.95	$35.80
Palmer Penstemon (Penstemon palmeri)	.5	$35.00	$17.50
Yellow sweetclover (Melilotus officinalis)	2	$0.68	$1.36
			$82.16

Shrubs			
Winterfat (Ceratoides lanata)	3	$18.50	$55.50
Shadscale (Atriplex confertifolia)	4	$8.00	$32.00

Matbush (Atriplex corrugata)	4	$15.00	$60.00
Whitestem rubber rabbitbrush (Chrysothamnus nauseosus var. albicanlis)			
Four-wing saltbrush (Atriplex canescens)	1.5	$68.00	$102.00
	3	$6.00	$18.00
			$267.50
Total (for broadcast or hydrosseding	33.25		$444.69

(½ Rate for drill seeding.)

ATTACHMENT II

SOILS TEST

"Interm" Wildlife Enhancement Revegetation - C.V. Spur

Over the preceding 5 years, Beaver Creek Coal Co. in cooperation with the U.D.W.R. have attempted to enhance two small areas in an effort to increase upland game habitat.

Area "A" Plate 3.1-A, Northeast Perimeter of Property - was drill seeded in the spring of 1987. The area was deeded utilizing a JD 9 ft. grain drill pulled by a JD 750 wheeled tractor. The seed mix was a combination of:

50# Hard Barley/acre
25# Adt. Oats/acre
35# Millet/acre

The planting was implemented in late May - good germination was recorded after 4 days of moderate rain in mid June. Unfortunately the majority of the cerial crop species failed to mature and produce viable seed heads by fall. While some enhancement was accomplished, it was temporary in nature with no natural reseeding occurring the following year.

The conclusion reached was that the area would not support a viable grain species without annual re-application of seed and that the area would need to be irrigated most years to produce a mature head prior to fall freezing.

The second area "B" Plate 3.1-A is a small area of reclaimed refuse South of the Silo and adjacent to the rail line and Pond #6. This area was drill seeded in October of 1987. A small portion of seed utilized on the test plots was drilled in combination with 50#/oats/acre utilizing the same equipment as in area "A". Good germination was in evidence spring of 1988. Unfortunately, a prolonged drought during the 1988 and 1989 growing season has all but eliminated establishment. A small area, inslope of Pond #6, was also hydro-mulched at a rate of approximately 1500@/acre. This application was to use the balance of the material left over from the test plot implementation.

Conclusion:

Both areas "A" and "B" were in large failures, relative to establishment of enhanced wildlife habitat. The reasons for the lack of success is most likely to do (in part) to abnormally dry summers following each application. It is important to note that in each case the goal was a short term increase in forage for upland game in combination with a proposed pheasant stocking program; and not the long term establishment of a diverse vegetation cover.

Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

March 28, 1988

Mr. Dan Guy
Beaver Creek Coal Company
P.O. Box 1378
Price, Utah 84501

Dear Dan:

On March 07, 1988, our laboratory received two (2) soil samples for analysis. These samples were analyzed for the parameters requested by the State of Utah, Dept. of Oil, Gas & Mining.

Enclosed are the results of the analysis performed. If you have any questions or if we can be of further service, please call.

Sincerely,

Ron R. Richardson

Ron R. Richardson
Lab Director

Enclosures

Inter-Mountain Laboratories, Inc.

2506 West Main Street

Farmington, New Mexico 87401

Tel. (505) 326-4737

BEAVER CREEK COAL Co.
PRICE, UTAH
Mine:
CV-SPUR TEST PLOT

te Reported: March 25, 1988

.b No.	Location	Depths	pH	EC mmhos/cm @ 25C	Satur-ation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR
45	COMP-SOIL	0.0-0.0	7.6	1.96	53.8	9.49	2.72	11.1	4.49
46	COMP-RUFUSE	0.0-0.0	7.3	2.71	43.3	23.1	5.99	7.78	2.04

'scellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

Inter-Mountain Laboratories, Inc.
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

BEAVER CREEK COAL Co.
PRICE, UTAH
Mine:
CV-SPUR TEST PLOT

ıte Reported: March 25, 1989

ɔ No.	Location	Depths	Sand %	Silt %	Clay %	Texture	Organic Matter %	T.S. ABP t/1000t	Pyritic Sulfur %	Organic Sulfur %	Boron ppm	Selenium ppm	H2O Sol Selenium ppm
)45	COMP-SOIL	0.0-0.0	22.7	42.8	34.5	CLAY LOAM	7.1	127.	0.01	0.04	0.30	<0.02	<0.01
)46	COMP-RUFUSE	0.0-0.0	80.0	12.7	7.3	LOAMY SAND	14.3	10.3	0.10	0.39	0.98	<0.02	<0.01

A9-1-18

ɔbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble,ABPTA= Ammonium Bicarbonate-DPTA, AAO= Acid Ammonium Oxalate
ɔbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, PyrtOrg= Pyritic Sulfur + Organic Sulfur,
Neut. Pot.= Neutralization Potential

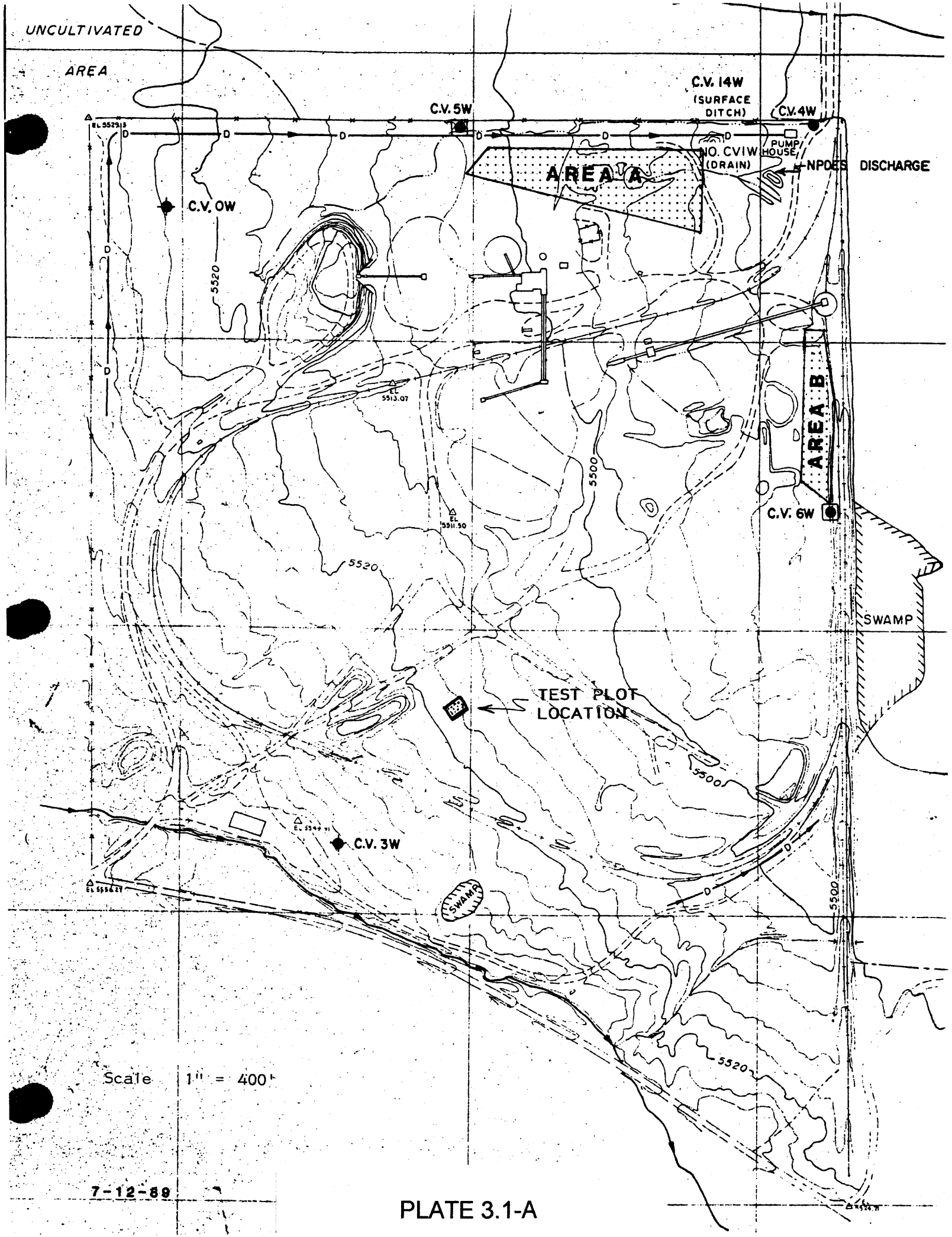

UNCULTIVATED
AREA
C.V. 14W
(SURFACE
DITCH)
C.V. 5W
C.V. 4W
PUMP
HOUSE
NO. CV1W
(DRAIN)
NPDES DISCHARGE
AREA A
C.V. 0W
5520
5500
AREA B
C.V. 6W
SWAMP
TEST PLOT
LOCATION
C.V. 3W
SWAMP
Scale 1" = 400'
7-12-89

PLATE 3.1-A

Appendix 3-2

Reclamation Test Plot

Savage Services Corporation
Savage Coal Terminal

C. V. SPUR

VEGETATIVE TEST PLOT NO. 2

VEGETATIVE TEST PLOT #2

CV Spur

SCOPE:

Beaver Creek CV Spur is located approximately 4 miles Southeast of Price, Utah in Carbon County. The area comprises approximately 120 acres of potential disturbance associated with the washing, cleaning and loading of coal. The land lies in an agricultural region but is not classified a prime farm ground due to the rolling topography with saline soils derived from mancos shale. The predominant vegetative cover prior to disturbance is outlined in CV Spur MRP, Chapter 9. Total vegetative cover is less than 18% comprised predominantly of species which are of marginal importance to wildlife or domestic grazing. This in combination with very low productivity, less than 300# per acre renders this area ideal to attempt to enhance the region in its ability to support a more diversified population of wildlife while providing increased forage and cover over what existed prior to disturbance.

In 1987 Beaver Creek Coal implemented a test plot in cooperation with the Utah Division of Wildlife Resources. It is proposed to reclaim the area to enhance upland game habitat. To facilitate this end, Dr. J. Jurnack, Utah State University, was consulted to offer suggestions relative to soil treatments; Richard Stevenson, UDWR Experimental Station, was requested to recommend a seed mix suited for upland game habitat which was

adaptable to the site specific conditions relative to soil and climate; Mr. Larry Dalton, Resource Analyst UDWR, was consulted in regard to methodologies to establish vegetation which have been successfully utilized in similar areas. This test plot experienced two consecutive draught growing seasons, and the results of monitoring indicated a success ratio of less than desired.

In 1989, a second test plot was designed on a pre-law disturbed site adjacent to the existing pump house. (See exhibit #1 Location Map). This test plot was designed in cooperation with UDOGM utilizing the methodologies that appeared to be most successful on the original test plot with additional soil treatment and minor modification in the seed mix and fertilizer application.

METHODOLOGIES

On September 24, 1989, a JD450 Crawler in combination with a crimper disk was utilized to scarify an area of approximately 200' X 40'. A slurry of Super Phosphate was applied in conjunction with the seed bed preparation to incorporate the phosphate into the top 6" of the soil. On approximately one half of the area, 100' X 40', green alfalfa hay was tilled into the upper 6" of soil. The entire area was then fenced, utilizing 39" field fence and 2 strains of barbed wire (see Attachment #2 Plot Design).

On October 16, 1989, the entire area was hand broadcast utilizing the approved seed mix at twice the drill seed rate (see Attachment 3 Seed Mix). In the center of the plot encompassing approximately half hay treated soil and half non-hay treated soil, strip planting was implemented. Each strip utilized a separate species (thirteen in all). The strips were approximately 2 meters X 1 meter. Seed was hand broadcast and lightly raked in. The entire area was then hydromulched at a rate of 2,000 lbs. per acre. Incorporated in the mulch was Agro Tac at a rate of 100 lbs. per acre.

In early spring of 1990, Urea fertilizer will be sprayed over the area at a rate of 100 lbs. per acre. Monitoring of the plot will begin in 1990 as outlined in Appendix 9-2 and in Chapter 3 Section 3.5.5.2 page 3-62b.

EXHIBIT 1

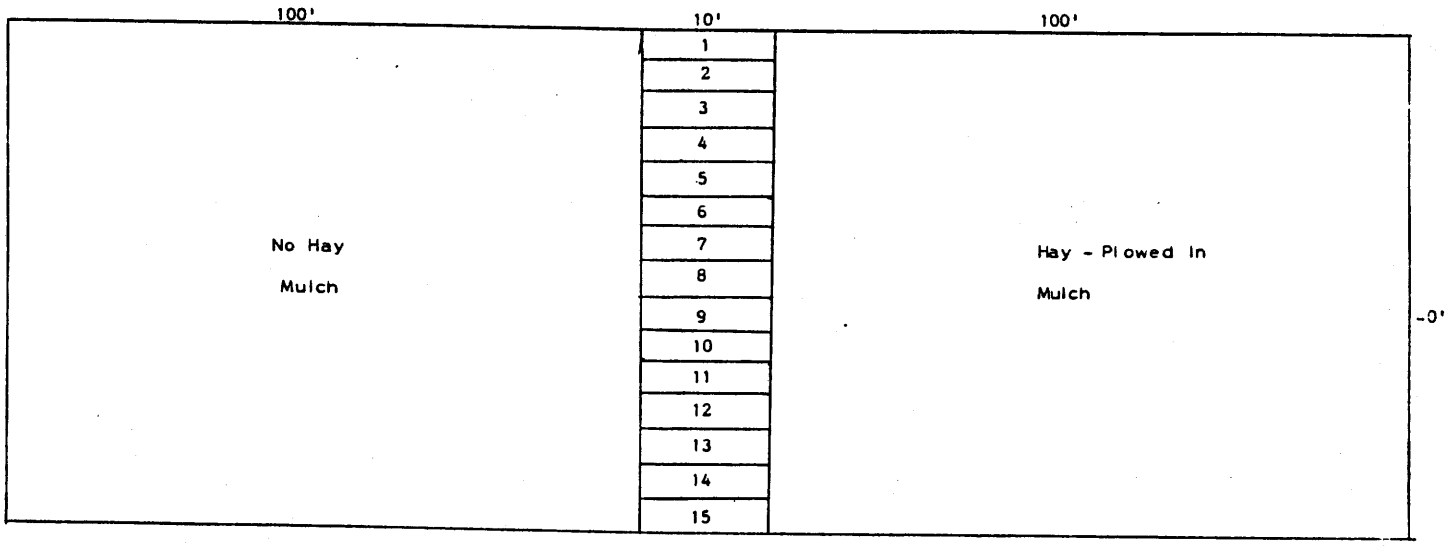
LOCATION MAP
1" =100'

ATTACHMENT #2

VEGETATIVE TEST PLOT #2

CV SPUR

(AS CONSTRUCTED)



1. Open
2. Open
3. Clover
4. Winterfat
5. Globemallow
6. Shadscale
7. Sun flower
8. Kochia sp. (Prostrata
9. Russian wildrye
10. Crested wheat (Fairway
11. Squirreltail
12. Thickspike
13. Crested wheat (Ephraim
14. Palmer penstemon
15. Indian ricegrass

ATTACHMENT #3

C.V. SPUR TEST PLOT NO. 2

SEED MIX

Table 3-2
PERMANENT RECLAMATION SEED MIXTURE

(117 Acres)

Name	Rate/#/Acre PLS	# Seeds/Pound	Cost Per Pound	Total
Grasses				
*Crested Wheat Grass (Agro pyron cristatum ephraim)	2	319,660	1.20	2.40
Thickspike wheatgrass (Agropyron dasystachyum)	2	137,000	3.50	7.00
Indian ricegrass (Oryzopsis hymenoides)	4	188,295	4.50	18.00
Fairway crested wheatgrass *(Agro pyron cristatum fairway)	2	319,000	1.20	2.40
Squirreltail grass (Sithanyn hystrics)	.5	191,585	14.00	7.00
*Russian wildrye (Elymus juncus)	1	210,000	3.50	3.50
Forbs				
Globemallow (Sphaeralcea grossulariaefolia)	.25	500,660	35.00	8.75
Sunflower (Helianthus annuus)	3		2.50	7.50
Palmer Penstemon (Penstemon palmeri)	.5	609,675	.11	5.50
Yellow sweetclover (Melitoltus officinalis)	1	258,560	.40	.40
*Kochia (Kochia prostrate)	1	520,000	20.00	20.00
Shrubs				
Winterfat (Eurotia) Lanata	1	112,275	11.00	11.00
Shadscale (Atriplex confertifolia)	2	64,920	5.00	10.00

KIND: Indian Ricegrass

ORIGIN: Nevada

LOT NO: IRG-2-DX

PURITY: 98.11%
INERT: 1.85%
CROP: 0.00%
WEEDS: 0.04%
NOXIOUS: NONE

TOTAL GERMINATION: 84%

TEST DATE: 9/88

NET WEIGHT: ~~2.42~~ 4.5 LBS.

2

KIND: PENSTEMON
VARIETY: PALMER

LOT NO: 1026
ORIGIN: UT

PURITY: 96.00%
INERT: 3.92%
CROP: 0.05%
WEEDS: 0.03%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 75%

TEST DATE: 08/88

NET WEIGHT 0.70 LBS.

3

KIND: CRESTED WHEATGRASS
VARIETY: EPHRAIM (CERT)

LOT NO: 0486
ORIGIN: UTAH

PURITY: 95.71%
INERT: 4.27%
CROP: 0.02%
WEEDS: 0.00%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 88%

TEST DATE: 11/88

NET WEIGHT 2.40 LBS.

KIND: THICKSPIKE
VARIETY: CRITANA

PURITY: 99.17%
INERT: 3.01%
CROP: 0.13%
WEEDS: 1.69%
NOXIOUS: NONE FOUND

LOT NO: 704
ORIGIN: WYOMING

TOTAL GERMINATION: 96%

TEST DATE: 11/88

NET WEIGHT 2.10 LBS.

5

KIND: SQUIRRELTAIL,
VARIETY: BOTTLEBRUSH

PURITY: 83.21%
INERT: 15.02%
CROP: 0.07%
WEEDS: 1.70%
NOXIOUS: NONE FOUND

LOT NO: 118
ORIGIN: NE

TOTAL GERMINATION: 91%

TEST DATE: 08/88

NET WEIGHT 0.66 LBS.

6

KIND: CRESTED WHEATGRASS
VARIETY: FAIRWAY

PURITY: 93.00%
INERT: 5.34%
CROP: 0.00%
WEEDS: 0.00%
NOXIOUS: NONE FOUND

LOT NO: 7-624-8
ORIGIN: UTAH

TOTAL GERMINATION: 87%

TEST DATE: 01/88

NET WEIGHT 2.50 LBS.

7

KIND: RUSSIAN WILD RYE
VARIETY:

LOT NO: CH-15-14
ORIGIN: MONTANA

PURITY: 94.11%
INERT: 5.73%
CROP: 0.16%
WEEDS: 0.00%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 87%

TEST DATE: 08/89

NET WEIGHT 1.22 LBS.

8

KIND: KOCHIA PROSTRATA

LOT NO: 1024
ORIGIN: UTAH

PURITY: 50.00%
INERT: 47.50%
CROP: 2.00%
WEEDS: 0.50%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 50%

TEST DATE: 10/89

NET WEIGHT 4.0 LBS.

9

KIND: SUNFLOWER
VARIETY: WILD

LOT NO: JB-88
ORIGIN: UTAH

PURITY: 92.00%
INERT: 7.83%
CROP: 0.15%
WEEDS: 0.02%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 80%

TEST DATE: 12/88

NET WEIGHT 4.10 LBS.

KIND: SHADSCALE

LOT NO: 1038
ORIGIN: UT

PURITY: 95.00%
INERT: 4.00%
CROP: 0.70%
WEEDS: 0.30%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 55%

TEST DATE: 02/89

NET WEIGHT 3.80 LBS.

11

KIND: GLOBE MALLOW
VARIETY:

LOT NO: GM1010
ORIGIN: IDAHO

PURITY: 96.00%
INERT: 3.85%
CROP: 0.10%
WEEDS: 0.05%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 85%

TEST DATE: 10/88

NET WEIGHT 0.31 LBS.

12

KIND: WINTERFAT

LOT NO: 1062
ORIGIN: UTAH

PURITY: 92.00%
INERT: 7.50%
CROP: 0.20%
WEEDS: 0.30%
NOXIOUS: NONE FOUND

TOTAL GERMINATION: 56%

TEST DATE: 10/88

NET WEIGHT 2.00 LBS.

13

KIND: Yelow Sweet Clover

ORIGIN: Canada

LOT NO: 2

PURITY:	99.56%
INERT:	.44%
CROP:	.00%
WEEDS:	0.00%
NOXIOUS:	NONE

TOTAL GERMINATION: 93%

TEST DATE: 8/88

NET WEIGHT: 1.10 LBS.

Appendix 3-3

Wetland Delineation
(Submitted to U.S. Army Corps of Engineers)

Savage Services Corporation
Savage Coal Terminal

COMPLIANCE CERTIFICATION

Verification Number: 200350060

Nationwide Permit Number: 21

Name of Permittee: James Jensen
6340 South 3000 East, Suite 600
Salt Lake City, UT 84121-

Date of Issuance: April 18, 2003

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked.

* * * * * * * * *

I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.

Savage Services Corp.
James T. Jensen 5/3/03
Signature of Permittee EX VP Date

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO ATTENTION OF

April 18, 2003

Regulatory Branch (200350060)

James Jensen
Savage Services Corporation
6340 South 3000 East, Suite 600
Salt Lake City, Utah 84121

Dear Mr. Jensen:

I am responding to your request for a Department of the Army permit for the Savage Coal Stockpile project. This project is located in Section 11, Township 15 South, Range 10 East, Carbon County, Utah.

Based on the information you have provided, the proposed discharge of dredged or fill material into 0.05 acres of wetlands is authorized by Nationwide Permit Number 21. However, the work must meet the terms and conditions listed on the enclosed nationwide permit information sheets. **Upon completion of the work authorized by this permit, the permittee must sign and return the enclosed compliance certification as required by General Condition 14.**

This verification is valid for a period of two years from the date of this letter or until the nationwide permit is modified or expires, whichever comes first. This nationwide permit is currently scheduled to expire on March 18, 2007.

We have issued identification number 200350060 to this action. Please refer to this number in any further correspondence concerning this project. If you have any questions, please contact me at our Utah Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010, or email Amy.Defreese@usace.army.mil, or telephone 801-295-8380, extension 13.

Sincerely,

Amy S Defreese

Amy Defreese
Biologist, Utah Regulatory Office

Enclosures

Copies furnished without enclosures:

Dan Guy, Blackhawk Engineering, 1056 W. 2060 N., Helper, Utah 84526
Melvin Coonrod, Environmental Industrial Services, 31 North Main Street, Helper, Utah 84526
Pam Grubaugh-Littig, Utah Division of Oil, Gas and Mining, P.O. Box 145801, Salt Lake City, Utah 84114

SAVAGE SERVICES CORPORATION
6340 SOUTH 3000 EAST, SUITE 600
SALT LAKE CITY, UT 84121
PHONE (801) 944-6600 FAX (801) 944-6554

FACSIMILE TRANSMITTAL SHEET

TO: Dan Guy

FROM: Jo Sanders

DATE: 4-22-03

TIME: 10:45 Am.

COMPANY: Blackhawk Eng.

TOTAL NUMBER OF PAGES: (INCLUDING COVER) 13

FAX NUMBER: 435-637-2431

PHONE NUMBER:

NOTES & COMMENTS:
Dan: Attached please find enclosures to April 18, 2003 letter to Jim Jensen from the Dept. of the Army.

CONFIDENTIALITY NOTICE: The information contained in this fax transmittal is privileged and confidential. It is intended for the addressee only. If you are neither the intended recipient nor the employee or agent responsible for delivering this to the intended recipient, any disclosure of this information in any way or taking of any action in reliance on this information is strictly prohibited. If you have received this fax transmittal in error, please notify the party transmitting the information immediately.

SAVAGE

COMPLIANCE CERTIFICATION

Verification Number: 200350060

Nationwide Permit Number: 21

Name of Permittee: James Jensen
6340 South 3000 East, Suite 600
Salt Lake City, UT 84121-

Date of Issuance: April 18, 2003

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked.

* * * * * * * * *

I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.

Signature of Permittee Date

U S Army Corps of Engineers
Sacramento District

Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide Permits – January 15, 2002, including Correction – February 13, 2002

21. **Surface Coal Mining Activities**. Discharges of dredged or fill material into waters of the US associated with surface coal mining and reclamation operations provided the coal mining activities are authorized by the DOI, Office of Surface Mining (OSM), or by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977 and provided the permittee notifies the District Engineer in accordance with the "*Notification*" General Condition. In addition, to be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing. The Corps, at the discretion of the District Engineer, may require a bond to ensure success of the mitigation, if no other Federal or state agency has required one. For discharges in special aquatic sites, including wetlands, and stream riffle and pool complexes, the *notification* must also include a delineation of affected special aquatic sites, including wetlands. (also, see 33 CFR 330.1(e))

Mitigation: In determining the need for as well as the level and type of mitigation, the District Engineer will ensure no more than minimal adverse effects to the aquatic environment occur. As such, District Engineers will determine on a case-by-case basis the requirement for adequate mitigation to ensure the effects to aquatic systems are minimal. In cases where OSM or the state has required mitigation for the loss of aquatic habitat, the Corps may consider this in determining appropriate mitigation under Section 404. (Sections 10 and 404)

A. <u>General Conditions</u>. The following general conditions must be followed in order for any authorization by an NWP to be valid:

☐ 1. **Navigation**. No activity may cause more than a minimal adverse effect on navigation.

☐ 2. **Proper Maintenance**. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

☐ 3. **Soil Erosion and Sediment Controls**. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

☐ 4. **Aquatic Life Movements**. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

☐ 5. **Equipment**. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

☐ 6. **Regional and Case-By-Case Conditions**. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

☐ 7. **Wild and Scenic Rivers**. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

☐ 8. **Tribal Rights**. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ 9. **Water Quality**.

☐ (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

☐ (b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system,

including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

☐ **10. Coastal Zone Management.** In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

☐ **11. Endangered Species.**

☐ (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

☐ (b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

☐ **12. Historic Properties.** No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ **13. Notification.**

☐ (a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

☐ (1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

☐ (2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

☐ (3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Notification: The notification must be in writing and include the following information:

☐ (1) Name, address and telephone numbers of the prospective permittee;

☐ (2) Location of the proposed project;

☐ (3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided result in a quicker decision.);

☐ (4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

☐ (5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

☐ (6) For NWP 14 (Linear Transportation Projects), The PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

☐ (7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

☐ (8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

☐ (9) For NWP 29 (Single-Family Housing), the PCN must also include:

☐ (i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

☐ (ii) A statement that the single-family housing activity is for a personal residence of the permittee;

☐ (iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ¼-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ¼-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

☐ (iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

☐ (10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

☐ (i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

☐ (ii) A delineation of any affected special aquatic sites, including wetlands; and,

☐ (iii) Location of the dredged material disposal site;

☐ (11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

☐ (12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

☐ (13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

☐ (14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

☐ (15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

☐ (16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

☐ (17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

☐ (18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ (c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(18) of General Condition 13. A letter containing the requisite information may also be used.

☐ (d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

☐ If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either:

☐ (1) that the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit;

☐ (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or

☐ (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.

☐ (e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

☐ For activities requiring notification to the District Engineer that result in the loss of greater than ½-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

☐ (f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than ¼-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

☐ **14. Compliance Certification.** Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

☐ (a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

☐ (b) A statement that any required mitigation was completed in accordance with the permit conditions; and (c) The signature of the permittee certifying the completion of the work and mitigation.

☐ **15. Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

☐ **16. Water Supply Intakes.** No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

☐ **17. Shellfish Beds.** No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

☐ **18. Suitable Material.** No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the CWA).

☐ **19. Mitigation.** The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

☐ (a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

☐ (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

☐ (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

☐ (d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, ¼-acre of wetlands cannot be created to change a ¾-acre loss of wetlands to a ½-acre loss associated with NWP 39 verification. However, ½-acre of created wetlands can be used to reduce the impacts of a ½-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

☐ (e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

☐ (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

☐ (g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

☐ (h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

☐ **20. Spawning Areas.** Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

☐ **21. Management of Water Flows.** To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

☐ 22 **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

☐ 23. **Waterfowl Breeding Areas.** Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

☐ 24. **Removal of Temporary Fills.** Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

☐ 25. **Designated Critical Resource Waters.** Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

☐ (a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

☐ (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

☐ 26 **Fills Within 100-Year Floodplains.** For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

☐ (a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

☐ (b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

☐ (c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

☐ 27. **Construction Period.** For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

☐ For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps.

☐ For projects that have been verified by the Corps, an extension of a Corps approved completion date may requested. This request must be submitted at least one month before the previously approved completion date.

B. <u>Further Information</u>

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

C. <u>Regional Conditions for Nationwide Permits – Sacramento District</u>

I. Regional Conditions to be applied across the entire Sacramento District:

☐ 1. Nationwide Permits 14, 29, 39, 40, 41, 42, and 44 are withdrawn from used in histosols, including fens. For the used of all other nationwide permits in fens, project proponents are required to notify the Corps using the notification or PCN procedures of the nationwide permit program (General Condition 13). This will be a "Corps only" notification.

☐ 2. For all activities using any existing and proposed nationwide permits, mitigation that is required by special condition must be completed before or concurrent with project construction. Where project mitigation involves the use of a mitigation bank or in-lieu fee, payment must be made to the bank or fee-in-lieu program before commencing construction of the permitted activity.

☐ 3. For all nationwide permits requiring notification, except 27, the applicant must provide a written statement to the district engineer explaining how avoidance and minimization of loses of waters of the United States were achieved on the project site.

II. Regional conditions to be applied in California and Nevada.

☐ All existing and proposed nationwide permits are suspended in the Lake Tahoe basin in favor of using General Permit 16.

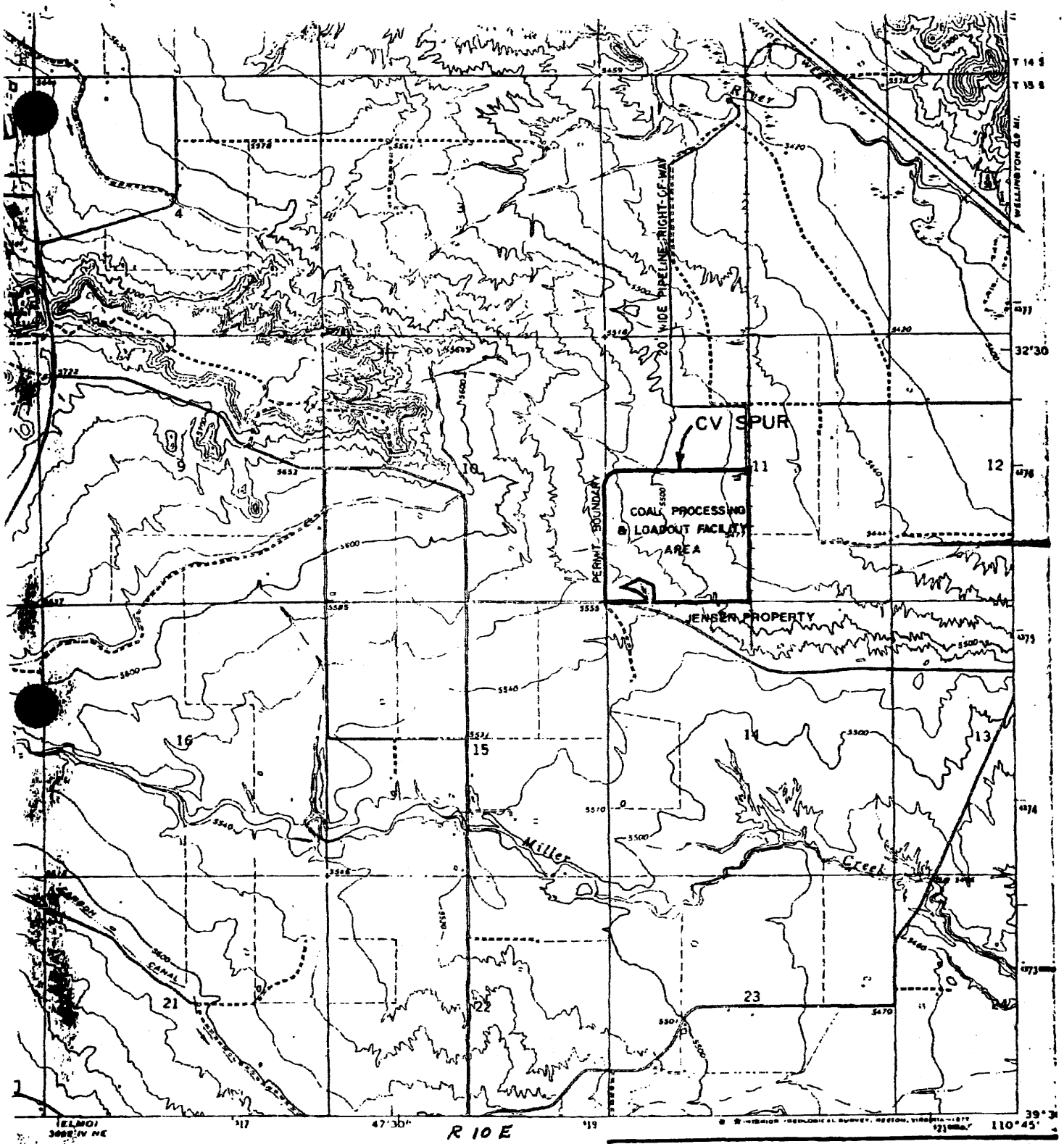
III. Regional conditions to be applied in Utah

☐ For use of any nationwide permit with the following attributes, notification of the Corps of Engineers' Utah Regulatory Office, using the "Notification" procedures of the Nationwide Permit Program (General Condition 13), is required, except where certain nationwide permits are restricted and can not be used as indicated in each category. This will be a "Corps only" notification.

☐ 1. All activities that will affect waters of the U.S. below the elevation 4217 feet msl adjacent to the Great Salt Lake and below 4500 feet msl adjacent to Utah Lake.

☐ 2. Bank stabilization in a perennial stream that would affect more than 100 feet of stream length as measured from the upstream portion of the affected bank to the downstream section, narrow the cross-section of the stream, substantially reduce the riparian vegetation, or increase velocities.

☐ 3. All activities that will affect springs. A spring is an aquatic feature caused by ground water being discharged to the surface, creating wetland and/or stream characteristics. Nationwide Permits 14, 16, 18, 29, 33, 36, 40, 42, 43, and 44 can not be used in spring areas.



Beaver Creek Coal Company

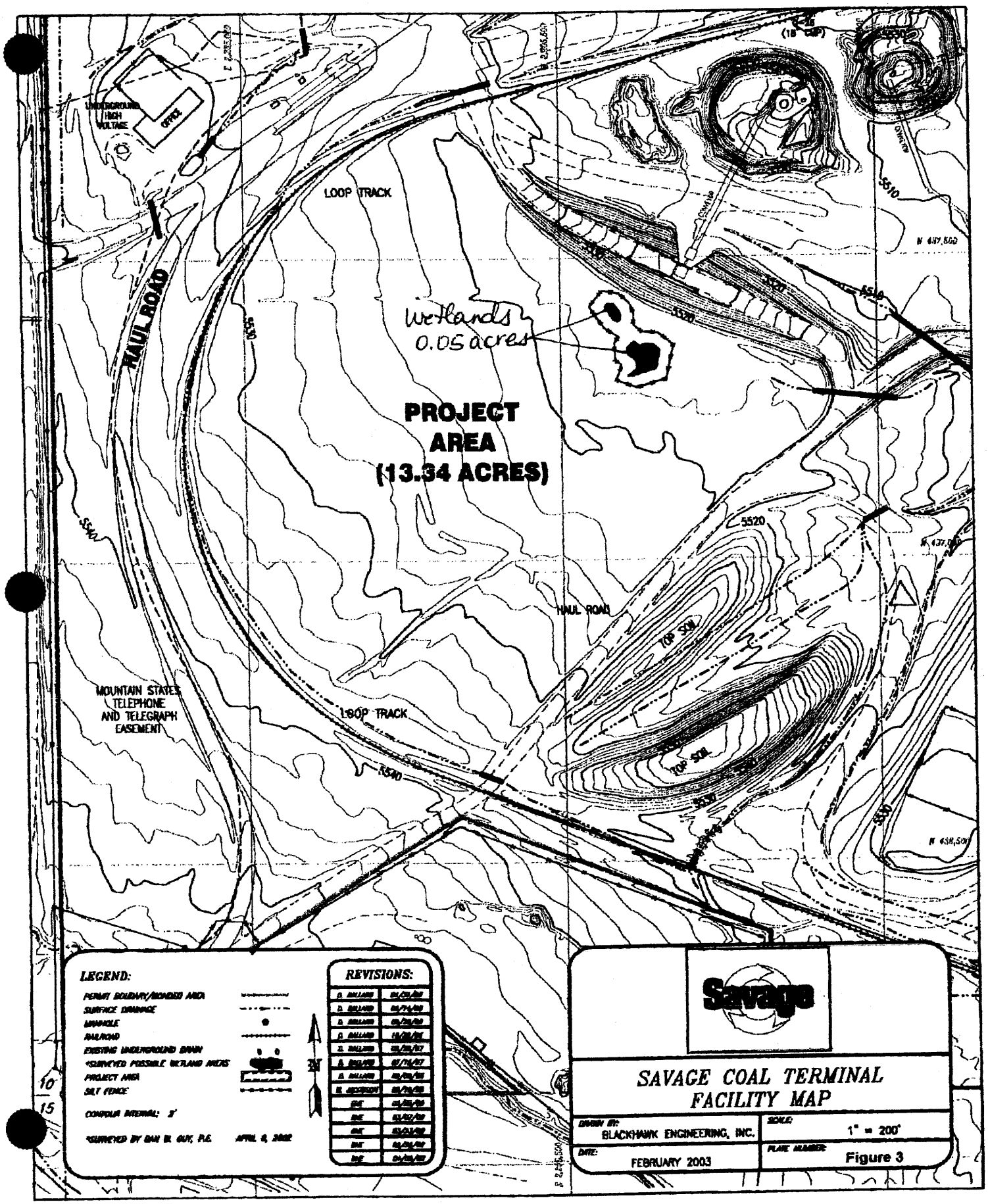
PERMIT AREA MAP

C.V. SPUR

(U.S.G.S. TOPO)

Prepared by: D GUY	Scale: 1" = 2000'
Department: ENGINEERING	Date: JULY, 1980
Drawn by: D GILMORE	REV. 01-17-83

FIGURE 1


UNDERGROUND HIGH VOLTAGE
OFFICE
LOOP TRACK
HAUL ROAD
Wetlands 0.05 acres
PROJECT AREA (13.34 ACRES)
5510
5520
5530
5540
HAUL ROAD
TOP SOIL
MOUNTAIN STATES TELEPHONE AND TELEGRAPH EASEMENT
LEGEND:
PERMIT BOUNDARY/BONDED AREA
SURFACE DRAINAGE
MANHOLE
RAILROAD
EXISTING UNDERGROUND DRAIN
*SURVEYED POSSIBLE WETLAND AREAS
PROJECT AREA
SILT FENCE
CONTOUR INTERVAL: 2'
*SURVEYED BY DAN W. GUY, P.E. APRIL 4, 2002
REVISIONS:
Savage
SAVAGE COAL TERMINAL
FACILITY MAP
DRAWN BY: BLACKHAWK ENGINEERING, INC.
SCALE: 1" = 200'
DATE: FEBRUARY 2003
PLATE NUMBER: Figure 3

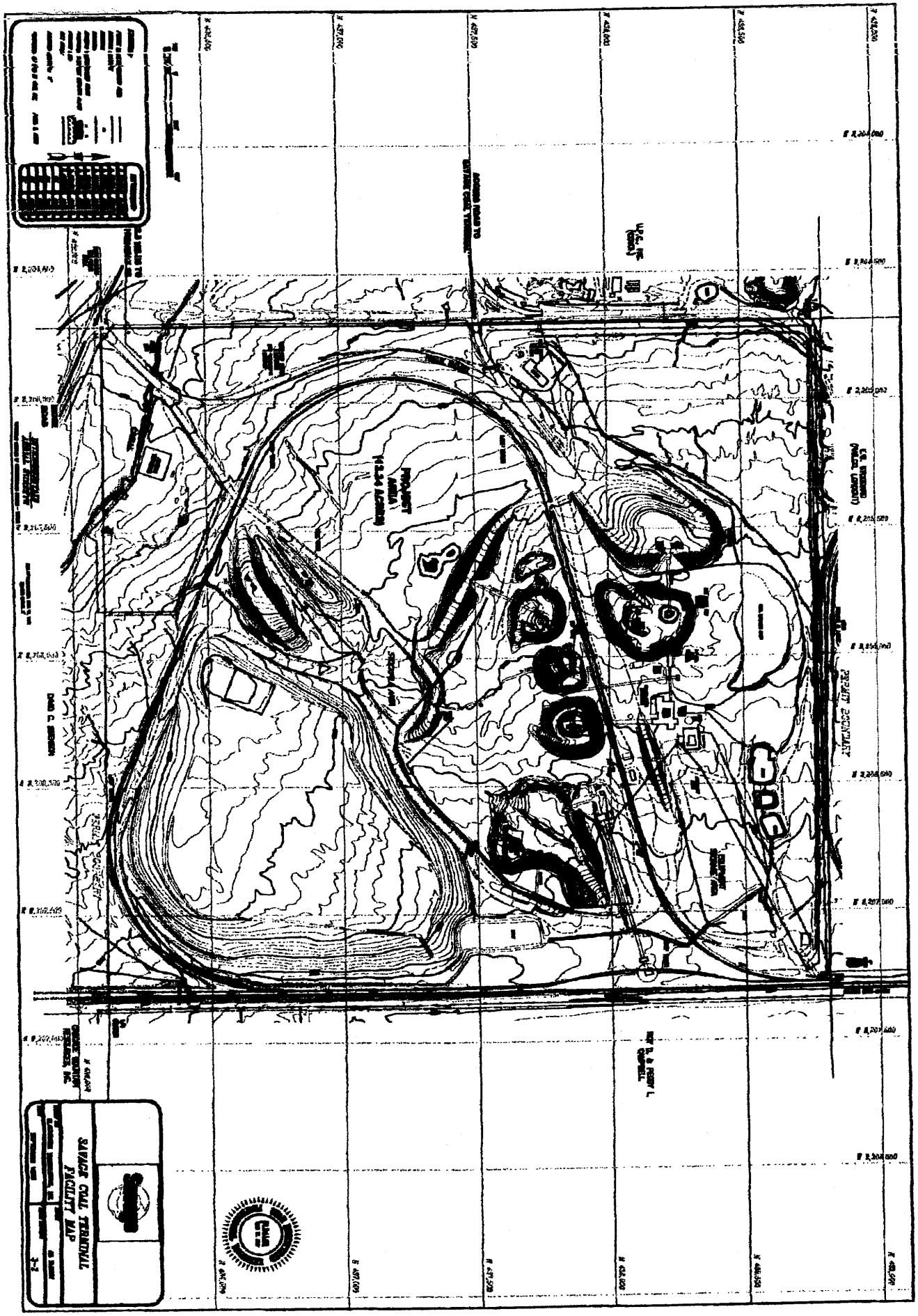


FIGURE 2

ENVIRONMENTAL INDUSTRIAL SERVICES
435-472-3814 • 800-641-2927 • FAX 435-472-8780 • eisec@sisna.com • 31 NORTH MAIN STREET HELPER, UTAH 84526

November 27, 2002

Amy Defreese, Project Manager
U.S. Army Corp of Engineers
Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010

RE: Amendment to Wetland Delineation – CV Spur Savage Industries Coal Loadout Area

Dear Ms. Defreese:

Please find attached a copy of the amended wetland delineation our firm performed for the CV Spur Coal Loadout (Submitted 4/11/02, resubmitted with changes 9/17/02). As previously shown, we have delineated 0.05 acres of potential jurisdictional salt flat/wet meadow wetland within the 13.34 acres slated for disturbance using the atypical situation methodology for a man-made induced issue. This amendment includes discussion in atypical methodology, and a better description as to groundwater hydrology present.

If you have any questions regarding this report, or the references to geology, soils and hydrology from the MFP please contact Mel Coonrod of our firm. A site visit will answer your questions to the degree of delineation accuracy, wetland size, and would facilitate the UDOGM permit process (currently on hold due to this issue). Also, please contact Mr. Dan Guy at (435) 637-2431 for questions regarding the actions to be taken, UDOGM concerns, and the company involved.

Sincerely,

David Steed
Project Manager

WETLAND DELINEATION
FOR THE
SAVAGE INDUSTRIES
CV SPUR COAL PROCESSING FACILITY
WELLINGTON, UTAH
CARBON COUNTY

Conducted By

DAVID STEED
EIS ENVIRONMENTAL & ENGINEERING CONSULTING
31 NORTH MAIN
HELPER, UTAH
(435) 472-3814

Introduction

Proposed Action Savage Industries (Savage) is proposing to expand their existing CV Spur Coal Loading Facility near Wellington, Utah in Carbon County (Plate I). Access to the site is via U.S. Highway 10 to Ridge Road approximately nine miles south of Price, Utah. Approximately 13.34 acres currently maintained as an undisturbed area would be incorporated into the existing surface facility to allow for the expansion of coal processing, storage and unit train coal loading.

Background The 13.34 acre undisturbed area identified for expansion is located within the Utah Division of Oil, Gas and Mining (UDOGM) permitted CV Spur Facility. Vegetation at the site was described in 1980 prior to the development of the CV Spur to facilitate the UDOGM permitting process. This area is generally made up of salt desert shrub species (*Atriplex confertifolia*, *Atriplex cuneta*, *Sarcobatus vermiculatus*) on moderately deep Mancos Shale clay derived soil types. Small, shallow runoff channels transect the site from the west to the east.

To the immediate west of the disturbed area boundary of the CV Spur Facility, an area within one of these shallow channels is briefly described in the 1980 report within the CV Spur Mine Reclamation Plan (MRP) as a sedge meadow. This site, though unsupported with any data (no vegetation species list, description of hydrologic function, or hydric soil identification), is identified on current MRP maps as a wetland. Since the original permit was written and the CV Spur Facility developed, the operators of the facility have maintained the area designated as sedge meadow/wetland as part of the undisturbed area. No surface activities have occurred within the site since this designation by the operator and UDOGM in the early 1980's.

As shown on Plate I, a historic open seasonal irrigation canal runs along the western edge of this site

(to be piped in 2003-2005), as does a county highway (referred to as Ridge Road), and a portion of railroad track developed for the CV Spur Facility in early 1980's. A paved entrance road parallels the tracks to allow coal haul trucks access to the facility. To the immediate east of the site is the edge of the disturbed coal loading facility and the raised terrace of the coal pile storage site. Also located within the immediate area are indications of past agricultural actions (i.e. ditches and terracing). These disturbances are shown clearly within the MRP aerial photomaps (See Attached). A historical review of the site indicated that farming actions were attempted within the site in the early and mid-1900's, but were abandoned by the farm owner at the time due to lack of production resulting from the high clay and salt content of the Mancos Shale soil substrate. At some time prior to development of the site facility, fill material (road base) was added to the northern end of the area (along and adjacent to the terraced coal stacking facility).

Need for Delineation Since the area was 1) identified as sedge meadow within the 1980 vegetation survey for the original UDOGM permit and 2) is currently shown on aerial photomaps within the MRP as a wetland, UDOGM has required that Savage, as the current operator of the CV Spur Facility, determine if the sedge meadow/wetland identified in the 1980 report and MRP maps is present, and if so, prepare a wetland delineation of the site prior to their approval of the facility expansion. EIS Environmental & Engineering Consulting (EIS) of Helper, Utah, a U.S. Army Corp Of Engineers (COE) approved wetland delineator, was contacted in April 2002 by Dan Guy, Environmental Coordinator for Savage to evaluate and inventory the 13.34 acre area proposed for facility expansion to determine if any area within it meets current wetland delineation standards.

Methodology

Atypical Situation Determination Utilizing procedures and protocol from the 1987 Corp of Engineers (COE) Wetland Delineation Manual (As amended), an atypical situation determination for man-induced wetlands was conducted. A routine site determination was ruled out due to the degree of pre-law development within the project area. A comprehensive determination was ruled out due to the size of the site and lack of complex functional values within the site (hydrological conditions, vegetation communities, etc.). The site was inventoried in April using the routine site forms. Atypical situation site forms were later prepared using the data from the routine site data sheets.

Data Review Review of data resources conducted prior to on-site analysis revealed the past use of the site for the activities previously described. The construction of the access road and rail line in the early 1980's was conducted prior to development of the COE 1987 manual (as amended). These transportation corridors were constructed across a wet area (as shown on the MRP aerial photomaps) located immediately below the existing irrigation canal that parallels the Ridge Road. The fill previously described was most likely added to the site during the pre-facility use as farmland and agriculture. Discussions with staff associated with the Savage facility indicated that these previous action were completed prior to their association with the site and ownership of the parcel in question.

Groundwater hydrology within the area was monitored through a series of monitoring wells between 1980 and 1988. This discussion is included within the resource discussion of the UDOGM MFP. Geological and hydrological evaluations conducted during the operation of this facility indicate that no regional groundwater table is present, though a perched water table exists at some locations

within the site. The perched, highly saline water table is located above the impermeable Bluegate Shale within alluvium, weathered shale, and gravelly pods. The nearest springs or wells are located near Wellington, Utah on the other side of the Price River; some 2.5 miles down gradient and to the east of the site in a separate drainage. During the period of monitoring, seasonal fluctuations in water levels within some of the monitoring wells near the project site was observed. This seasonal fluctuation in water levels corresponded to the seasonal use of the adjacent canal, upland from the wells. When in full use in mid to late summer, water levels within nearby wells rose as much as a foot. In low to no use periods in the fall and winter, water levels dropped or were non-existent. Seepage from the adjacent canal, moving downslope was determined to be the factor in the rise and fall of the subsurface aquifer present. The canal is scheduled for piping sometime in 2003 to 2005.

Dan Larsen, Soil Scientist with EIS conducted a review of available soils information and an on-site inventory of the 13.34 acre site in March of 2002. Information included that presented by James P. Walsh and Associates, July 1980, in the MRP; information given by the Natural Resources Conservation Service (NRCS) in the Soil Survey of the Carbon County Area, Utah, 1988; and direct communication with Leland Sasser, soil scientist, NRCS. A small area identified as a possible wetland was mapped as having soils of the Saltair series (poorly drained). Another area was mapped as having Killpack, high water table variant soils, and was included in field evaluation of wetlands. All of the soils in the project area have formed from materials of the Mancos shale and range from shallow to moderately deep. Soil drainage characteristics were noted as being influenced by irrigation water.

On-Site Inventory Following the protocol within the 1987 Corp of Engineers (COE) Wetland Delineation Manual, David Steed, Biologist and Dan Larsen, Soil Scientist for EIS conducted an on-site inventory of the 13.34 acre site on April 8, 2002. Four observation points were selected within the parcel. A dominant woody overstory is not present, though a woody understory of salt desert shrub species is predominant within the site. The herbaceous understory was characterized and noted as to their indicator status (upland vs. wetland). The relative community structure was noted, photographed (Exhibit 1 - 4) and mapped (PLATE I). Where dominant wetland species community cover was in excess of 50 percent, the presence of hydrophytic vegetation was noted. Likewise, hydrological function and presence was noted at each of these points. Presence of flooding, saturated soils, drainage patterns and historic actions (fill and grading) was noted. A soil pit was excavated for each site and soil profile examined. Where hydrophytic vegetation was dominant and hydrological function was present (indications of previous inundated surface condition) soils were evaluated for hydric qualities. Using a Munsell soil guide, color, chroma, and contrast were noted on soils thought to potentially exhibit hydric properties.

Attachment A contains the routine site and atypical field sheets for the four sites reviewed for wetland characteristics. Plate I includes the location of each of these sites.

Results

Site Findings The following table summarizes the wetland character results of the on-site inventory of the 13.34 acre parcel.

Site	Vegetation*	Hydrology	Soils	Community
1	No (5%)	No	No	Salt Desert Shrub
2	No (0%)	No	No	Salt Desert Shrub
3	Yes (60%)	Yes	Yes	Salt Flat-Wet Meadow
4	Yes (90%)	Yes	Yes	Salt Flat-Wet Meadow

* Included is percent of dominant hydrophytic vegetation present at each site

Areas that were obviously identifiable as upland or fill were noted and eliminated from wetland consideration. Overall, vegetation within these areas consists of salt desert shrub species, including *Atriplex confertifolia* , *Atriplex cuneta*, *Sarcobatus vermiculatus*, and *Chrysothamnus nauseosus*. Wetland hydrology on these sites is absent and the predominant clay loam soils lack hydric characteristics.

The observation points selected for the delineation and described on the field sheets in Attachment A, were chosen due to the questionable wetland characteristics inherent to each of their locations. Points 1 and 2 (Exhibit 1 and Exhibit 2), are located with the area previously described as a sedge meadow/wetland within the MRP. This area did contain some hydrophytic vegetation (*Tamarix pentandra*) and indication of hydric conditions present at one time within the soils (presence of weak reducing and oxidation condition). However, since these sites 1) did not display the sedge meadow identified in 1980 (no sedge species were identified anywhere within the 13.34 acre area), 2) lacked dominance of hydrophytic vegetation (< 50 percent), 3) lacked supportive hydrological conditions (past hydrologic source eliminated due to rail line and road construction) and 4) contained minimal hydric soil characteristics, this area was eliminated from consideration as a jurisdictional wetland for this delineation. This area was considered as now to be part of the upland-salt desert shrub community. Point 3 (Exhibit 3), located along the northern edge of the site and adjacent to the terraced coal facility and along the area of road base fill, included a mix of hydrophytic vegetation (*Distichlis stricta*) and facultative upland shrub species, noticeable hydrological conditions associated with drainage and ponding, and exhibited slightly stronger reducing conditions-hydric soil characteristics within the shallow clay loam Libbings-Killpack transition present. This 0.01 acre portion of the parcel along the northern boundary and adjacent to the disturbed area was determined to be a salt flat-wet meadow wetland. Point 4 (Exhibit 4) contained predominant hydrophytic vegetation (*Distichlis stricta*), exhibited saturated and reducing soils and noticeable hydric characteristics (drift lines on vegetation and drainage patterns) and was determined to be part a salt flat-wet meadow wetland. This 0.04 acre site, though separated by a portion of upland and by pre-law fill is interconnected, thus forming a 0.05 acre jurisdictional site. This area is most likely the remnant of the pre-transportation corridor disturbed drainage channel associated with shallow sub-surface flows from the historic irrigation canal approximately 0.33 miles from the site.

Wetland-Nonwetland Boundary Approximately 0.05 acres of the 13.34 acre parcel would be considered a wetland as defined by the COE. A wetland-nonwetland (upland/fill) boundary was determined using the qualitative on-site observations of the overall site and presence of hydric conditions surrounding the identified jurisdictional wetlands. Though salt grass was located outside of the 0.05 acre site, lack of hydrologic condition or hydric soils eliminated these areas from consideration. This separation was determined by the location and drainage from the upland areas discussed, presence of historic fill, and proximity to the adjacent disturbed area terrace (which acts to

impound water draining towards the identified wetland).

Hydric flow to the site from its historic source is limited due to the development of the transportation corridors. Terracing from the disturbed area, past pre-law fill, and any surface flow on the heavy clay resulting from precipitation are all the appear to be currently creating and supporting this 0.05 acre site. Subsurface water most likely does not support the site due to the shallow depth to weathered shale and heavy clay constituents of the substrate. The site appears to be reducing in size and appears to be non-functional. At Points 3 and 4, the soils show evidence of periodic saturated conditions. Field interpretation suggests that most of these soil features developed under a wetter environment that what is currently present. It was noted that the soils did not fit the Saltair soil series concept and are more like the Libbings soils as described by the NRCS. The soils are moderately deep over shale bedrock rather than being deep and they are not as wet as the Saltair soils. The weak indication of past hydric action within soil surrounding the site identified in 1980 as a sedge meadow indicates that the potential for a wetland in the past was possible, with the site most likely being supported by seepage from the irrigation canal to the south. Field inspection of the site indicates a changed condition over the previous soils mapping. Although there is some local accumulation of runoff water, the main supply of water from irrigation canals is no longer present.

References

EIS. 2002. Soil Survey of CV Spur Undisturbed Area

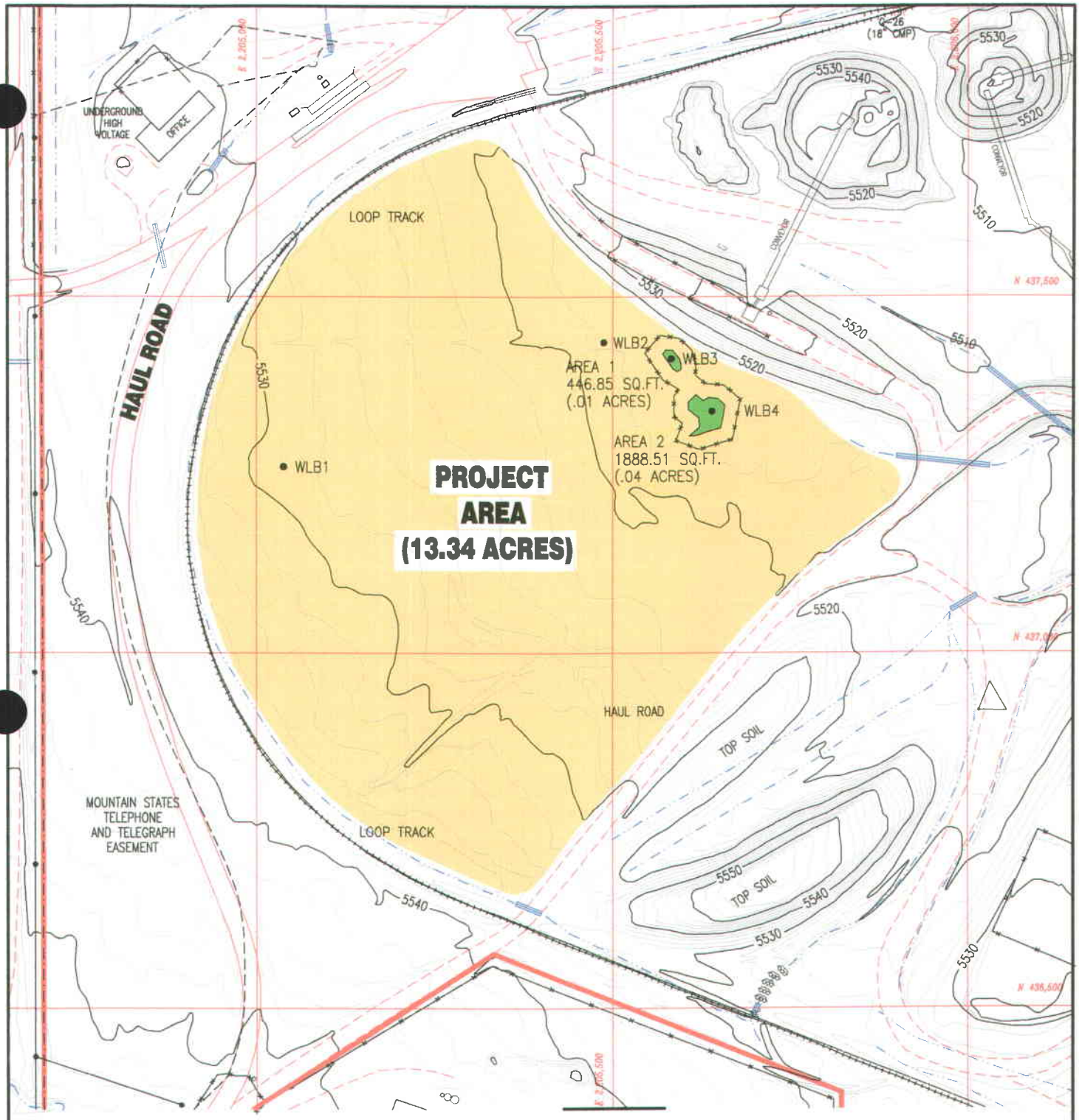
Environmental Laboratory. 1987, (As amended). Corp of Engineers Wetland Delineation Manual, Technical Report Y-87-1m U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

UDOGM and Savage Industries. 2002 Mine and Reclamation Plan Permit for the CV Spur Loadout.

U.S. Department of the Interior. 1988. National List of Plant Species that Occur in Wetlands: Utah, U.S. Fish and Wildlife Service Biological Report, St. Petersburg, Florida.

PLATE I

LOCATION MAP WITH IDENTIFIED WETLANDS



LEGEND:

- PERMIT BOUDARY/BONDED AREA
- SURFACE DRAINAGE
- MANHOLE
- RAILROAD
- EXISTING UNDERGROUND DRAIN
- *SURVEYED POSSIBLE WETLAND AREAS
- PROJECT AREA
- SILT FENCE

CONTOUR INTERVAL: 2'

*SURVEYED BY DAN W. GUY, P.E. APRIL 9, 2002

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY

Savage

SAVAGE COAL TERMINAL
FACILITY MAP

SCALE: 1" = 200'	DRAWN BY: BLACKHAWK ENGINEERING
DATE: FEBRUARY 2003	PLATE: PLATE 1

EXHIBITS

EXHIBITS

Exhibit 1
Within old drainage area

Exhibit 2
At base of old drainage

Exhibit 3
Near coal storage terrace.

Exhibit 4
View looking towards identified wetlands.

COE DELINEATION FIELD SHEETS

ATYPICAL SITUATION DETERMINATION – SITES 1-4
ROUTINE, SMALL AREA DETERMINATION – SITES 1-4

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: CV Spur - Savage Lagoons Applicant/Owner: Savage Industries Investigator: D. Steed w/ O. Lunsen	Date: 4/8/02 County: Box Elder State: Utah
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? Yes (No) Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: #1 Transect ID: Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Sarcobatus vermiculatus	W.S	FACW	9.		
2. Chrysothamnus nauseosus	W.S	FACU	10.		
3. Sisymbrium altissimum	HF	FACU-	11.		
4. Rocky American	HF	FACU	12.		
5. Tamarix	W.S	FACW	13.		
6. Halogeton glomeratus	HF	FACU	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 5-10%

Remarks: No carex species evident
plants still dormant - no greening yet

HYDROLOGY

X Recorded Data (Describe in Remarks): __ Stream, Lake, or Tide Gauge X Aerial Photographs __ Other __ No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: __ Inundated __ Saturated in Upper 12 Inches __ Water Marks __ Drift Lines __ Sediment Deposits WEAK X Drainage Patterns ~~in Wetlands~~ Secondary Indicators (2 or more required): __ Oxidized Root Channels in Upper 12 Inches __ Water-Stained Leaves __ Local Soil Survey Data __ FAC-Neutral Test __ Other (Explain in Remarks)
Field Observations: Depth of Surface Water: 0 (in.) Depth to Free Water in Pit: 0 (in.) Depth to Saturated Soil: 0 (in.)	

Remarks: Weak drainage pattern - old and not consistent

SOILS

Map Unit Name (Series and Phase): KmB2 (Kingdoc, High Water Table Variant)

Drainage Class: Somewhat poor to well drained

Field Observations Confirm Mapped Type? Yes No

Taxonomy (Subgroup): Typic Fragiudept

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A	2.5Y 3/2	—	—	SICL, WGR, WTHPL
4-8	B_2	2.5Y 4/2	7.5YR 4/6	FEW, FINE DISTINCT	SICL, MMSBK, WTHPL
8-22	C_{2y}	2.5Y 4/2	white pockets 2.5Y 7/2.	—	SICL-SIL, MASSIVE, very hard breaks to MMSBK

Profile is dry

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- X Reducing Conditions and oxidizing
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: 4-8" layer has some light spots (carbonates, salt), strong effervescence w/ 10% HCl, some evidence of past wet condition, but now dry environment, no apparent water source indicated

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:
Area mapped as sedge meadow in 1980
<> Not apparent now, area is drained out, w/ receeding hydrophytic vegetation (dying out)

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: CV Spur - Savage Cornout Applicant/Owner: Savage Investigator: D. Steen w/ O. Conner	Date: 4/8/02 County: Carbon State: Utah
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? Yes (No) Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: #2 Transect ID: Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. S. vermiculatus	HS	FACW	9.		
2. Atriplex confertifolia	HS	FACU	10.		
3. S. occidentalis	HS	FACW-	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: Typical Salt Desert Shrub Upland

HYDROLOGY

(X) Recorded Data (Describe in Remarks): __ Stream, Lake, or Tide Gauge (X) Aerial Photographs __ Other __ No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: __ Inundated __ Saturated in Upper 12 Inches __ Water Marks __ Drift Lines __ Sediment Deposits __ Drainage Patterns in Wetlands Secondary Indicators (2 or more required): __ Oxidized Root Channels in Upper 12 Inches __ Water-Stained Leaves __ Local Soil Survey Data __ FAC-Neutral Test __ Other (Explain in Remarks)
Field Observations: Depth of Surface Water: 0 (in.) Depth to Free Water in Pit: 0 (in.) Depth to Saturated Soil: 0 (in.)	

Remarks: Weak, old drainage - no surface water flow indications in some time (+5 yrs).

SOILS

Map Unit Name (Series and Phase): Km Bg (Killpack)

Drainage Class: somewhat poor

Field Observations Confirm Mapped Type? Yes No

Taxonomy (Subgroup): Typic Torriorthents

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	A_1	10YR 2/2			SIL
1-4	A_2	2.5Y 4/3			SICL, WFGR
4-9	B_2	10YR 4/3-2.5Y 4/3	10YR 5/4 *	few, fine, faint	SICL, WMSBK
9-16	C_{2y}	2.5Y 4/3 -4/3	**		SICL, WMSBK
16-20	C_{r1}	2.5Y 4/2			≈ 80% soft shale frag
20+	C_{r2}	≈ 100% shale			

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: * common 2.5Y 7/2
** abundant 2.5Y 7/2
may be a Libbings soil

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes **No** (Circle)	(Circle)
Wetland Hydrology Present?	Yes **No**	Is this Sampling Point Within a Wetland? Yes **No**
Hydric Soils Present?	Yes **No**	

Remarks: See Point #1 Comments

Receeding old drainage w/ no surface support

Approved by HQUSACE 2/92

DATA FORM 3

ATYPICAL SITUATIONS

Applicant Name: SAVAGE INDUSTRIES

Application Number: _____

Project Name: CV SPUR - SAVAGE LOADOUT

Location: Carbon County, UT

Plot Numbers: 1-2

Date: 4/8/02

A. VEGETATION:

1. Type of Alteration: ROAD CONSTRUCTION AND RAILLINE BUILT IN 1980, ALSO NEAR COAL STORAGE FACILITY EMBANKMENT BUILT AT SAME TIME

2. Effect on Vegetation: VEGETATION PRESENT THAT IS FACW, BUT MOSTLY OBLIGATORY SPECIES

3. Previous Vegetation: VEGETATION IN PLACE IS TYPICAL ALPINE
(Attach documentation) SEE MFP AND AERIAL PHOTOS

4. Hydrophytic Vegetation? Yes _____ No X

B. SOILS:

1. Type of Alteration: SAME AS VEGETATION - NO AFFECT TO SOILS FROM FILL

2. Effect on Soils: PRESENCE OF DRAINAGE PATTERNS, WITH DRYING CONDITIONS OVER TIME

3. Previous Soils: SEE WETLAND DETERMINATION AND MFP.
(Attach documentation)

4. Hydric Soils? Yes _____ No X

C. HYDROLOGY:

1. Type of Alteration: CONSTRUCTION OF ROAD, RAILLINE AND COAL FACILITY WITHIN OLD SURFACE EPHEMERAL DRAINAGE

2. Effect on Hydrology: AREA IS DRYING OUT, FLOWS FROM SURFACE IRRIGATION AND CHANNEL PROHIBITED BY ALTERATIONS

3. Previous Hydrology: NEVER INUNDATED, BUT RECEIVED
(Attach documentation) FLOWS FROM IRRIGATION CANAL

4. Wetland Hydrology? Yes _____ No X

Characterized By: O. SEED

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: CV Spur - Savage Coolant Applicant/Owner: Investigator:	Date: 4/8/02 County: Carbon State: Utah
Do Normal Circumstances exist on the site? **Yes** No Is the site significantly disturbed (Atypical Situation)? Yes **No** Is the area a potential Problem Area? Yes **No** (If needed, explain on reverse.)	Community ID: #3 Transect ID: Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Distichlis stricata	HF-6	FACW+	9.		
2. C. nauseosus	WS	FACU	10.		
3. S. vermiculatus	WS	FACU	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60%

Remarks: ✓ Good mosaic of saltgrass and salt desert shrub upland species
✓ Fill/Road base along N. edge

HYDROLOGY

X Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 0 (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- X Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Apparent drift lines/pumping in recent past (last year?)

SOILS

Map Unit Name (Series and Phase): Libbings / Kilpack Transition

Drainage Class: Somewhat poor

Field Observations Confirm Mapped Type? Yes No

Taxonomy (Subgroup): Typic Sarcothid / Typic Tonic.

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	Ad	2.5Y 2.5/1			SICL ES
2-8	AB	2.5Y 3/2 + 3/3			SICL-SIC, MFSBK EF
8-14	σ_2	2.5Y 4/2	2.5Y 5/4	Few, med, faint	SIC, MFBSK, HARD EV
14-18	C_2 y	2.5Y 4/2	*		SIC V. Hard

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- X Reducing Conditions – marginal
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: * common white spots – carbonates and salt crystals
dry profile, slightly moist below 4"

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: CV Spur - Savage Landout Applicant/Owner: Savage Investigator: D. Steed w/ D. Lansen	Date: 4/8/02 County: Bamberg State: Utah
Do Normal Circumstances exist on the site? **Yes** No Is the site significantly disturbed (Atypical Situation)? Yes **No** Is the area a potential Problem Area? Yes **No** (If needed, explain on reverse.)	Community ID: #4 Transect ID: Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. O. stricata	HF-6	FACW+	9.		
2. Agropyron cristatum	6	FACU+	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 90%

Remarks: mix of upland shrubs mark border (area of drier soils, higher in drainage

HYDROLOGY

✓ Recorded Data (Describe in Remarks): __ Stream, Lake, or Tide Gauge ✓ Aerial Photographs __ Other __ No Recorded Data Available Field Observations: Depth of Surface Water: 0 (in.) Depth to Free Water in Pit: 0 (in.) Depth to Saturated Soil: 0 (in.)	Wetland Hydrology Indicators: Primary Indicators: __ Inundated __ Saturated in Upper 12 Inches ✓ Water Marks ✓ Drift Lines __ Sediment Deposits ✓ Drainage Patterns in Wetlands Secondary Indicators (2 or more required): __ Oxidized Root Channels in Upper 12 Inches __ Water-Stained Leaves __ Local Soil Survey Data __ FAC-Neutral Test __ Other (Explain in Remarks)

Remarks: presence of a basin, wetted area

SOILS

Map Unit Name (Series and Phase): Li (Libbings)

Drainage Class: Poor - somewhat poor

Field Observations Confirm Mapped Type? Yes No

Taxonomy (Subgroup): Typic Sandorthids

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	A	2.5Y 3/2	2.5Y 4/3	FEW, med, faint	SICL, SFGR
6-14	B2	2.5Y 4/2	10YR 5/8	FEW, FINE, distinct	SICL, MMGR-SBK
14-20	C2	2.5Y 5/3	7.5YR 5/6	common, med, distinct	SICL-SIL-massive

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- X Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Drainage has changed (? due to fill to N.) 1980 survey identified area as Sandair series - not now, disturbance influence - coal dust/chunks on surface, fill

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

Strong boundary w/ upland based on soil character

Approved by HQUSACE 2/92

DATA FORM 3

ATYPICAL SITUATIONS

Applicant Name: Savage Industries

Application Number: _____

Project Name: CV Spur - Savage Landout

Location: Carbon County, Ut

Plot Number: 3-4

Date: 4/8/02

A. VEGETATION:

1. Type of Alteration: Same as Plots 1 and 2 pre low road, railline and embankment vegetation is 60-90% FACW.

2. Effect on Vegetation: Area still maintains enough seasonal moisture due to embankment in low drainage to maintain FACW spp.

3. Previous Vegetation: Same. Little change

(Attach documentation) _____

4. Hydrophytic Vegetation? Yes X No _____.

B. SOILS:

1. Type of Alteration: Same as Points 1 and 2

2. Effect on Soils: Little change within boundary area

3. Previous Soils: Same

(Attach documentation) See MFP and routine determination

4. Hydric Soils? Yes X No _____.

C. HYDROLOGY:

1. Type of Alteration: Road and railline closed irrigation for drainage, embankment holds moisture in drainage.

2. Effect on Hydrology: Change drainage pattern

3. Previous Hydrology: See MFP and maps

(Attach documentation) _____

4. Wetland Hydrology? Yes X No _____.

Characterized By: D. Steed

Savage Services Corporation
Savage Coal Terminal
C/007/022

Chapter 4

Land Use

R645-301-400

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Savage Coal Terminal
Chapter 4 - Land Use

R645-301-400.	Land Use and Air Quality
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Appendix 4-1	Property Agreement
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Plate 4-1	Archeological Map (In Confidential Binder)

R645. Natural Resources; Oil, Gas and Mining; Coal.

R645-301. Coal Mine Permitting: Permit Application Requirements.

R645-301-400. Land Use and Air Quality.

The rules in R645-301-400 present the requirements for information related to Land Use and Air Quality which are to be included in each permit application.

410. Land Use.

The Savage Coal Terminal proposed permit area is presently being used as a coal preparation and loadout facility. Plate 5-2 Surface Facilities Layout, shows the existing surface use.

Prior to establishment of coal processing facilities on the land currently known as Savage Coal Terminal, the land was capable of supporting very limited cattle grazing and attempts to establish cultivated crops were not feasible (personal communication, R.D. Campbell).

The prior owner of the land estimated 120 acres would be needed for every animal unit grazed. Approximately 41 acres of this land contained cultivated crops during the 1940's until it became economically unfeasible to continue the operation. The prior cultivated area is currently influenced by weed invasion and holds little, if any, value for grazing.

411. Environmental Description.

Range Characteristics.

Two range sites existed on the Savage Coal Terminal property prior to disturbance. They are the Desert Shallow Shale and Desert Loamy Shale ranges sites. Due to the amount of disturbance that has occurred on this area, a very limited acreage of these range sites is now present (U.S. Department of Agriculture, 1975).

The Desert Shallow Shale range site is characterized by nearly level to steep sloping shale hills and elevations range from 4000 to 6500 feet. Native vegetation at climax stage is approximately 25% grasses, 5% forbes, and 70% shrubs. Total annual production is 200 pounds per acre air-dry in favorable years, 150 pounds in average years, and 100 pounds in unfavorable years. (See Chapter 3 for a more detailed discussion of vegetation).

Approximately 75 to 80% of the plants supply some forage for livestock. Plant species are few in number but of enough variety to provide good nutrition for cattle and sheep. The site is grazed to best advantage during the winter.

The soils on this site are very shallow, fine, and moderately fine textured. They are unstable and puddle easily. In places, the underlying soft decomposing shale is exposed. Moisture holding capacity is 1 to 2 inches and water supplying capacity is 1 to 2.5 inches.

This site is poor for camping, picnicking, hiking, and hunting. Wildlife habitat is poor to very poor. Only small mammals and birds are known to use this site.

The Desert Loamy Shale range site is characterized by nearly level to moderately steep slopes, and elevations are from 4000 to 5000 feet. Native vegetation and climax stage is 40% grasses, 5% forbes, and 55% shrubs. Total annual production is 400 pounds per acre air-dry favorable years, 275 pounds per acre air-dry average years, and 150 pounds per air-dry unfavorable years. (See Chapter 3 for a more detailed discussion of vegetation).

Approximately 90 to 95% of the plants supply some forage for livestock. Plant species are extremely limited in yield and number of species. Enough variety exists to provide excellent nutrition for sheep and cattle. The site is grazed to its best advantage during the winter.

The soils on this site are shallow and very shallow in depth, medium, moderately fine, and fine textured underlain by shale. These soils are moderately erodible. Moisture holding capacity is 2.5 to 3.5 inches and water supplying capacity is 1.5 to 3.0 inches.

Zoning.

Savage Coal Terminal is currently zoned for industrial use by Carbon County; prior to December 17, 1973, it was zoned agricultural use (personal communication, Joe Delpha, Carbon County Courthouse). Adjacent areas are zoned for either agricultural or industrial use.

411.100. Premining land use information is described under Section 411 above.

411.110. Plate 5-2 depicts the use of the land at the time of this application. The use is described in Section 411 above. There has been no change in the land use over the past 5 years.

411.120. Land capacity in conjunction with other environmental resource information is described in Section 411. above.

411.130. Existing land use and zoning is described under Section 411. above.

411.140. Cultural Resources

Scope

Studies have been completed to ensure that historical and cultural information that might exist on the permit area would not be irretrievably affected by the proposed operations. Literature and field surveys were conducted to determine the presence and/or significance of sites which could warrant inclusion in the National Register of Historic Places. (Refer to Confidential Binder for further information).

411.141. Cultural and historic resources are shown on Plate 4-1. (See Confidential Binder).

411.141.1 There are no known archaeological sites, public parks or other cultural or historical resources listed or eligible for listing in the National Register of Historic Places within the permit or adjacent areas.

411.141.2 N/A - There are no cemeteries located in or within 100 feet of the permit area (See Plate 4-1).

411.141.3. N/A - There is no land within the permit area which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System, including study rivers designated under section 5(a) of the Wild and Scenic Rivers Act.

411.142. Complete information on studies and coordination efforts are described in Section 411.140 above. As indicated in Section 411.141.1, there are no publicly owned parks or places listed on the National Register of Historic Places that may be adversely affected by the proposed coal mining and reclamation operations.

411.142.1. N/A - None listed.

411.142.2. N/A - None Listed.

411.143. The Division may require the applicant to identify and evaluate important historic and archeological resources that may be eligible for listing on the national Register of Historic Places through:

411.143.1. Collection of additional information;

411.143.2. Conducting field investigations; or

411.143.3. Other appropriate analyses.

411.144. This site was disturbed prior to SMCRA, and has been in continuous operation since 1977. The studies conducted on the permit and adjacent areas have indicated only one historic site within 1000 feet of the study area. As indicated in Section 411.140, the site is outside the permit area and removed from any activity associated with the coal terminal, and there will be no impact to the site as a result of the operation.

411.200. The permit area was previously used for limited agricultural purposes. In 1973, the site was re-zoned for industrial use and the area was utilized as a coal processing and shipping site for Utah Power. Swisher Coal Co. purchased the site in 1976, and began construction of most of the facilities that exist today. The property has changed owners since the original construction; however, it has remained in continuous operation as a coal processing and shipping facility since 1977. This is a surface-located coal processing facility. There are no mining activities conducted at this site.

411.210 through 411.250. N/A - No mining at this site.

412. Reclamation Plan.

The complete reclamation plan for the site is described in Section 540. of this permit. The proposed reclamation plan is to restore the area to a wildlife habitat as described in the following section.

412.100. Postmining Land-Use Plan. Each application will contain a detailed description of the proposed use, following reclamation, of the land within the proposed permit area, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses, and the relationship of the proposed use to existing land-use policies and plans. The plan will explain:

412.100. The proposed post-mining land use for the Savage Coal Terminal is "Light Industrial", since the area is presently zoned for industrial use. However, since the pre-disturbance land use was primarily song bird and small mammal habitat, Savage Services Corporation will reclaim toward this goal to maximize usable area for wildlife in the event local economics preclude continued industrial use of the site.

Livestock grazing and agricultural use are not proposed as post-mining land uses, even though both activities did take place here during the pre-mining period. As discussed earlier in this chapter, both activities met with little or no success, and it would be counter-productive to propose a land use that has already been proven unsuccessful at this site.

412.110. The proposed post-mining land use is to be achieved by regrading and reseeding the area as described in Section 540.

412.120. N/A - Reclamation is not for range or grazing purposes.

412.130. N/A - Post mining land use is the same as the pre-mining land use.

412.140. This is private-owned land which is zoned for industrial use. The proposed post-mining land use is consistent with the local land use designations for this area - i.e. - industrial/agricultural.

412.200. Savage Services Corporation is the owner of record of this site.

412.300. This is a renewal of an existing, approved permit for this site. Regrading and revegetation plans discussed in Section 540. have previously been determined to be compatible with the natural surroundings and the approved post-mining land use.

413. Performance Standards.

The reclamation of the site is described in detail in Section 540. of this plan.

413.100. The reclamation plan in Section 540. is designed to restore all disturbed areas in a timely manner to the uses they were capable of supporting prior to disturbance. (See Section 412.100 for post-mining land use).

413.110. See 413.100 above.

413.120. See 413.100 above.

413.200. Determining Premining Uses of Land.

413.210. The pre-mining use of this land has been described in Section 411.

413.220. The post-mining land use is compatible with the pre-mining land use, as described in Section 412.100. The area will be reclaimed as described in Section 540.

413.300. N/A - No alternate land uses are proposed for this site.

414. N/A - No alternate postmining land use approval is requested for this site.

420. Air Quality.

Existing Environment

Climate

The climate of the Price, Utah area is varied and strongly influenced by topography. The climate can be characterized as arid, specifically dry continental. The prevailing local low-level meteorological influences are mountain-valley breeze systems. The low amount of annual precipitation is a result of the Sierra Nevada and Cascade Ranges which act as natural barriers and prevent moist maritime air from the North Pacific from reaching the interior basins to the east.

On a more local scale the Wasatch Mountains to the west of Castle Valley and the Tavaputs Plateau to the north provide a shelter from storms associated with westerly and northerly winds. Areas on the lee side of the Wasatch Range generally receive less than 10 inches of precipitation annually.

The Savage Coal Terminal is located approximately 6 miles south of Price, Utah; therefore, climatological data for Price is representative of this site. This climatological data is presented in Chapter 7, Section R645-301-724.400.

Air Quality

The Savage Coal Terminal is a coal preparation facility which blends, sizes, and stores raw coal. Material handling, sizing and storage procedures and associated air pollution control problems are largely those of dust and particulate matter emitted from the mechanical processes. The only criteria pollutant which is expected to be emitted in quantity is suspended particulate matter. The only combustion processes associated with the facility will be those associated with mobile sources, which includes light duty vehicles, heavy duty vehicles, and train locomotive. The gaseous emissions emitted from these vehicles exhausts will have a negligible impact on the air quality of the area because the emissions levels are quite low.

Run-of-mine coal must be broken, sized and screened before loading it. These processes, along with handling, moving, storage and general housekeeping account for most of the dust emissions from the facility.

Coal from the surrounding mines is transported to the site by trucks. On-site, the coal is dumped into an underground hopper. Coal is crushed or screened as necessary.

The coal is then taken from the hopper via covered conveyor and placed into a stacking tube. The coal stacking tubes with windows are allowed to open for cone stacking. The stacking tubes reduce and minimize the dust from freefall. The coal from the open stockpiles is recovered via underground feeders and carried by covered conveyor to a totally enclosed 10,000 ton silo for unit train loading. Water spray systems are located on the underground reclaimed feeders.

Efforts have been made throughout the coal handling system to minimize the generation of dust. This has been done through the utilization of enclosures to prevent wind action upon materials on conveyors, in the loadout silos, in the stacking tubes, and in the truck dumps. Water sprays have also been added to reduce dust emissions at the breaker, beneath pile reclaim feeders, and the stacking tubes. The inherent moisture of the coal also aids in the reduction of the dust emissions.

Estimate of Uncontrolled Emissions

The potential exists for fugitive dust emissions resulting from vehicle traffic on the access and haul roads at Savage Coal Terminal. These roads are surfaced with asphalt, or crushed or pit-run gravel. Administrative controls will be applied to maintain strict speed control at the site, which will aid in reducing the fugitive dust potential. The gravel roads are treated with Magnesium Chloride and watered as necessary to help alleviate the dust produced by traffic. The frequency of application will be determined by visual observations of the degree of road dustiness.

421. The Savage Coal Terminal operations will be conducted in compliance with the requirements of the Clean Air Act (43 U.S.C. Sec. 7401 et. seq.) and any other applicable Utah or federal statutes and regulations containing air quality standards.

422. Air Quality Control Plan

The Savage Coal Terminal is operated under an approved Air Quality Permit DAQE-ANI793003-06, issued by the State of Utah Department of Environmental Quality, on August 16, 2006. A copy of the approval order is included in Appendix 4-3.

423. N/A - This is not a Surface Mining operation.

423.100. N/A

423.200. N/A

424. N/A - This is not a Surface Mining Operation.

425. N/A - This is not a Surface Mining operation.

BIBLIOGRAPHY

Alexander, Thomas G., 1963. From Dearth to Deluge: Utah's Coal Industry; in Utah Historical Quarterly Vol. 31 No. 3, pp 235-248.

Aovasio, James M., 1971. Basketry from Clyde's Cavern. In Report of Excavation at Clyde's Cavern (42 Em 177), Emery County, Utah, Henry G. Wylie. Ms. on file, Department of Anthropology, University of Utah, Salt Lake City.

Beckwith, Lieut. E.G., 1855. Report of Explorations for a Route for the Pacific Railroad, by Captain J.W. Gunnison, Topographical Engineer, near the 38th and 39th Parallels of North Latitude. Reports of Explorations and Surveys, Vol. II. Washington.

Berge, Dale L., 1973. An Archaeological Survey in the Castle Valley Area, Central Utah. Museum of Archaeology & Ethnology, Brigham Young University, Provo. (Manuscript on file)

Berge, Dale L., 1974. An Archaeological Survey in the Castle Valley Area, Central Utah. Publications in Archaeology, Department of Anthropology and Archaeology, New Series No. 1, Brigham Young University Press, Provo.

Berge, Dale L., 1976a. Cultural Resource Evaluation of the Clear Creek Substation-Helper-Blackhawk 46 K.V. Transmission Line, Swisher Mine. Department of Archaeology and Anthropology, Brigham Young University, Provo. (Manuscript submitted to the Utah Power and Light Co.)

Berge, Dale L., 1976b. Archaeological investigations near Hanksville, Utah. Department of Archaeology and Anthropology, Brigham Young University, Provo. (Manuscript submitted to Central Explorations Co. Inc., Oklahoma City)

Berge, Dale L., 1977a. Cultural Resource Evaluation of the Trail Mountain Coal Company Transmission Line; Department of Anthropology, Brigham Young University, Provo.

Berge, Dale L., 1977b. Pictograph Site Evaluation Near Wellington, Carbon County, Utah; Department of Anthropology, Brigham Young University, Provo.

Berge, Dale L., 1977c. Cultural Resource Evaluation of the Emery Substation-Dog Valley Mine Distribution Line; Department of Anthropology, Brigham Young University, Provo.

Berge, Dale L. and Michael Benson, 1977. A Cultural Resource Evaluation of the Emery City Transmission Line; Department of Anthropology, Brigham Young University, Provo.

Berry, Michael S., 1975. Archaeological, Historical and Paleontological Survey for Consolidation Coal Company and Kemmerer Coal Company in Emery County, Utah; A Special Report, Division of State History, Salt Lake City.

Campbell, R.D., 1980. Personal Communication. Prior Landowner, Castle Valley Spur Coal Processing Facilities, Price, Utah.

DeBloois, Evan, n.d. Joe's Valley Alcove; (unpublished manuscript).

Dellenbaugh, Frederick S., 1926. A Canyon Voyage: The Narrative of the Second Powell Expedition Down the Green and Colorado Rivers from Wyoming and the Explorations on Land in the Years 1871 and 1872; New Haven.

Dilley, J.W., n.d. History of Scofield Mine Disaster; The Skeleton Publishing Company, Provo.

Doelling, H.H., 1972. Central Utah Coal Fields; Sevier-Sanpete, Wasatch Plateau, Book Cliffs, and Emery; Utah Geological and Mineralogical Survey, Monograph Series No. 3; Salt Lake City.

Dykman, James L. And Richard A. Thompson, 1976. The Dog Valley Strip Mine Survey; A Special Report; Southern Utah State College; Cedar City.

Gillin, John, 1955. Archaeological Investigations in Nine Mile Canyon, Utah; A Prepublication, University of Utah Press, Salt Lake City.

Gillio, David A., 1975a. Archaeological Survey of Crandall Canyon Mine Road; Ms. on file, Antiquities Section, Utah State Historical Society; Salt Lake City.

Gillio, David A., 1975b. Archaeological Survey of North Dragon Limestone Mine; Ms. on file, Antiquities Section, Utah State Historical Society; Salt Lake City.

Gillio, David A., 1975c. Archaeological Survey of Lowry Water Bridge Site; Ms. on file, Antiquities Section, Utah State Historical Society; Salt Lake City.

Gillio, David A., 1975d. Archaeological Survey of Trail Mountain Timber Sale; Ms. on file, Antiquities Section, Utah State Historical Society; Salt Lake City.

Gunnerson, James H., 1956. A Fluted Point Site in Utah; American Antiquity, Vol. 21, No. 4, Salt Lake City.

Gunnerson, James H., 1957. An Archaeological Survey of the Fremont Area; University of Utah Anthropological Papers, No. 28, Salt Lake City.

Gunnerson, James H., 1962. Unusual Artifacts from Castle Valley, Central Utah; Miscellaneous Collected Papers, University of Utah Anthropological Papers, No. 60, Salt Lake City.

Gunnerson, James H., 1969. The Fremont Culture: A Study in Culture Dynamics on the Northern Anasazi Frontier; Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 59. No. 2, Cambridge.

Hauck, F.R., n.d. Archaeological Reconnaissance in the Paradise Lake Locality of Sevier County, Utah; Papers of AERC, No. 7, Salt Lake City.

Hauck, F.R., 1975. An Archaeological Report on the Lost Creek Chaining Project; Papers of AERC, No. 1, Salt Lake City.

Hauck, F.R., 1976a. Archaeological Reconnaissance in the Dog Valley Locality, Emery County, Utah; Papers of AERC, No. 3, Salt Lake City.

Hauck, F.R., 1976b. An Archaeological Survey of the Banning Railroad Siding Locality in

Hauck, F.R. 1977a. Archaeological Reconnaissance in the Nine Mile Canyon Locality of Carbon County, Utah; Papers of AERC, No. 6, Salt Lake City.

Hauck, F.R. 1977b. Archaeological Clearance of Support Facilities and Right-of-Way at the Wilberg Mine of Grimes Creek in Emery County, Utah; Ms. on file at AERC, Salt Lake City.

Hauck, F.R. 1977c. An Archaeological Survey of Access Roads and a Mine Service Area in the Ferron Creek Locality of Emery County, Utah; Ms. on file at AERC, Salt Lake City.

Hauck, F.R., 1979. Cultural Resource Evaluation in Central Utah 1977; Bureau of Land Management, Cultural Resource Series No. 3, Salt Lake City.

Helm, Claudia, 1973. Preliminary Report of an Archaeological Survey in Eastern Utah; Department of Anthropology, University of Utah, Salt Lake City, Utah.

Helm, Claudia, 1974. Preliminary Report of an Archaeological Survey in Sevier, Emery, and Garfield Counties; Department of Anthropology, University of Utah, Salt Lake City.

Jennings, Jessee D., Alan R. Schroedl and Richard N. Holmer, n.d. Sudden Shelter; University of Utah Anthropological Papers, Salt Lake City, (in Preparation).

Keller, Donald R., 1975. Final Report for Tennessee Valley Authority Drill Hole Survey, April 30, 1975: A Special Report, Museum of Northern Arizona,Flagstaff (various addendums).

Leh, L.L., 1936. Prehistoric Pueblo Ruins in Range Creek Canyon, Utah. University of Colorado Studies, Vol. 23, No. 2.

Louthan, Druce D. And Dale L. Berge, 1975. "Archaeological Survey of the Huntington-Sigured Transmission Line on Bureau of Land Management Lands." Department of Archaeology and Anthropology, Brigham Young University. (Manuscript submitted to the Utah Power & Light

Company)

Lupton, C.T., 1916. Geology and Coal Resources of Castle Valley, U.S. Geological Survey Bulletin 628. Washington.

Madsen, David B., 1975a. Dating Paiute - Shoshoni Expansion in the Great Basin, American Antiquity, Vol. 40 No. 1. Washington, D.C.

Madsen, David B., 1975b. Three Fremont Sites in Emery County, Utah. Antiquities Section Selected Papers, Vol. I, Division of State History, Salt Lake City.

Marwitt, John P., 1968. Pharo Village. University of Utah Anthropological Papers, No. 95, Salt Lake City.

Matheny, Ray T., 1971. "Archaeological Survey of Huntington Canyon Salvage Project, June 1971" Department of Anthropology and Archaeology, Brigham Young University, Provo. (Manuscript submitted to Utah Power & Light Co.)

Morss, Noel, 1931. The Ancient Culture of the Fremont River in Utah. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Vol. 12, No. 3. Cambridge.

Morss, Noel, 1954. Clay Figurines of the American Southwest. Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University, Vol. 49, No. 1. Cambridge.

Nielson, Glenna, 1975. "Archaeological Survey of the Huntington-Sigurd Transmission Line over the First Lake National Forest." Department of Archaeology and Anthropology, Brigham Young University, Provo. (Manuscript submitted to the Utah Power & Light Co.)

O'Neill, Floyd A., 1973. "A History of the Ute Indians of Utah Until 1890". Doctoral Dissertation submitted to the University of Utah, Salt Lake City.

Powell, Allan Kent, 1973. "Tragedy at Scofield"; In Utah Historical Quarterly, Vol. 41 No. 2, Utah State Historical Society. Salt Lake City.

Reagan, Albert B., 1935. An Archaeological Trip to Buck Horn Draw - Indians Worshipping the Sun. Utah Academy of Sciences, Arts, and Letters, Vol. XII, Salt Lake City.

Reynolds, Thursey, J., et al., 1948. Centennial Echoes from Carbon County, Daughters of the Utah Pioneers of Carbon County, Salt Lake City.

Rollins, R.L., R.O. Bown, R.D. Gunnell, 1977. Soil investigations, Swisher Coal Facilities, Price, Utah.

Schneider, Hyrum, 1935. "Geologic Processes and their Relation to Human Activities in Utah"; in Processing of the Utah Academy of Sciences, Arts, and Letters. Vol. XII, Provo.

Spieker, Edmund M., 1949. The Transition Between the Colorado Plateaus and the Great Basin in Central Utah. Guidebook to the Geology of Utah, No. 4, Salt Lake City.

Tripp, George, 1966. A Clovis Point from Central Utah. American Antiquity, Vol. 27, No. 3.

U.S. Department of Agriculture, 1975. Range Site Description 125: Desert Loamy Shale, Soil Conservation Service, Salt Lake City, Utah; Utah; mimeo 5 pp.

U.S. Department of Agriculture, 1975. Range Site Description 128: Desert Shallow Shale, Soil Conservation Service, Salt Lake City, Utah; Utah; mimeo 6 pp.

Walker, J. Terry, 1977. "Archaeological Investigations on Trough Springs Ridge and Near the Huntington Canyon - Electric Lake Dam". Department of Anthropology and Archaeology, Brigham Young University, Provo. (Manuscript on file).

Wylie, Henry G., 1971. Report of excavations at Clyde's Cavern (42 Em 177), Emery County, Utah. A Special Report, Department of Anthropology, University of Utah. Salt Lake City.

REFERENCES

[1]Brown, Merle, 1960: The Climate of Utah. Salt Lake City, 14 pp.

[2]Ibid.

[3]Utah Power & Light Company, 1973: Emery Operating Station Applicant's Environmental Analysis - Volume I. Salt Lake City, p. 26.

[4]Utah Power & Light Company, 1974: Emery Generating Station Applicant's Environmental Analysis - Volume II. Salt Lake City, p.50.

[5]Utah Power & Light Company, 1973: Emery Operation Station Applicant's Environmental Analysis - Volume I. Salt Lake City, p. 26.

[6]U.S. Department of the Interior, 1978: Development of Coal Resources in Central Utah - Draft Environmental Statement, Regional Analysis Part I, Salt Lake City, p. IV-11.

[7]State of Utah Bureau of Air Quality, 1981: Personal communication with Robert Dalley, February 19.

[8]University of Utah Research Institute, Environmental Studies Laboratory, 1981: Personal communication with Dr. Frank Anderson, February 23.

[9]Utah Power & Light Company, 1973: Emery Operating Station Application's Analysis - Volume I. Salt Lake City, p. 51.

[1] "Utah Climate", by Gaylene L. Ashcroft, Donald T. Jensen and Jeffrey L. Brown, Utah Climate Center, Utah State University, 1992.

[2] Utah Power & Light Company, 1974: Emery Generating Station Applicants Environmental Analysis - Volume II. Salt Lake City, p. 50.

Appendix 4-1

Property Agreement

Savage Services Corporation
Savage Coal Terminal

AGREEMENT

THIS AGREEMENT made and entered into this 3RD day of August, 1977 by and between GENERAL EXPLORATION COMPANY, a ~~Texas~~ DELAWARE corporation, hereinafter referred to as "GEX" and ROY D. CAMPBELL and PEGGY L. CAMPBELL of Carbon County, State of Utah, hereinafter jointly referred to as "Campbells",

W I T N E S S E T H :

WHEREAS, Campbells are the owners of a residence, farmlands and related property located near Wellington, Carbon County, Utah, and

WHEREAS, Utah Power & Light Company, hereinafter UP & L has heretofore operated a coal storage and loading facility on property adjoining the Denver and Rio Grande railroad spur which loading operations and railroad facilities are located adjacent to the residence, farmlands and related property owned by Campbells, and

WHEREAS, UP & L has terminated its coal storage and loading operations on said adjoining property and has given to Campbells an option to purchase the property, consisting of approximately 153 acres, a copy of which option, dated July 29, 1977, is attached hereto as Exhibit "A", and

WHEREAS, said option was granted by UP & L to Campbells as part of a settlement of claims for nuisance and damages by the Campbells against UP & L as a result of said coal storage and loading operations, and

WHEREAS, GEX desires to acquire Campbells' rights in said option, dated July 29, 1977, and to place upon the property described therein a coal storage, processing and loading facility generally as depicted and described in Exhibit "B" attached hereto, and

Option executed - see correspondence and UT-310-001

SC-CL-0993

WHEREAS, GEX desires in connection with the operation and construction of said facility to be relieved of any claims which might be made by Campbells, their heirs, successors and assigns for nuisance or for damages as a result thereof, and

WHEREAS, Campbells are willing to assign to GEX their rights under said option and to permit the construction and operation on a permanent basis, the said coal storage, processing and loading facility upon the terms and conditions herein set forth, and to relieve GEX of any claims for nuisance or damages which result from the contemplated activities on the option property, and

WHEREAS, the parties desire in this agreement to set forth their agreement.

NOW, THEREFORE, in consideration of the covenants and conditions herein contained, the parties agree as follows:

1. Campbells do by this agreement hereby assign to GEX all of their right, title and interest in and to said option agreement, dated July 29, 1977, Exhibit "A". As consideration for said assignment, GEX hereby agrees to pay concurrently with the execution of this agreement the sum of $7,500.00 of which $2,500.00 represents a reimbursement to Campbells for the option payment to UP & L for said option. In connection with said option agreement Campbells hereby agree to use their best efforts in cooperation with GEX to obtain a reduction in the purchase price of the property, described in said option from UP & L. As further consideration of the assignment of said option by Campbells, and the agreement to cooperate toward reducing the purchase price, GEX hereby agrees to timely exercise said option and to purchase the property described therein. GEX further agrees that for so long as Campbells own the adjoining property it

will not transfer, convey, assign or sell the property described in the option to any third party without the consent of Campbells, unless such transfer, conveyance, assignment or sale is made to a third party which shall agree in writing to be bound by the terms of this agreement. GEX also hereby agrees that for so long as the adjoining property owned by Campbells is used for farming operations by Campbells, their heirs, administrators and assigns and persons so using and operating the said adjoining property reside thereon, the covenants of GEX under this agreement willrun with the option land so as to protect the Campbells, their heirs, administrators and assigns against other parties who may wish to conduct on the premises described in the operations which are objectionable to Campbells.

2. Campbells have applied to the SCS office for assistance in lining the ditches which transverse the said option property. GEX hereby agrees that it will pay all sums related to such lining of said ditches to the extent the same are not paid by SCS, not to exceed $5,000.00.

3. GEX hereby promises and agrees to pay to Campbells as compensation for the nuisance which it is anticipated their activities and operations on the option property will cause the Campbells in the form of noise, dust, lights, smells and other similar objectionable features of their operation the sum of per year in advance for the first five (5) years of their operation, that is, for the period commencing January 1, 1978 through and including January 1, 1982 and thereafter at the rate of per year for each and every year that GEX conducts operations on the option property. It is understood and agreed that the obligations to pay nuisance damages as above set forth shall be a covenant that shall run with the option property for so long as the

adjoining property owned by Campbells is used for farming operations by Campbells, their heirs, administrators and assigns and persons so using and operating the said adjoining property reside thereon.

4. Campbells hereby agree that in consideration of the nuisance payments provided in the next preceding paragraph hereby waive and relinquish any and all rights to claim that the operations of GEX on the option property are a nuisance or cause of any kind of damage to Campbells, so long as said operations are carried on generally as indicated on Exhibit "B" attached hereto, it being understood that GEX shall have the right to make such reasonable changes from time to time as may be needed to maintain, upgrade and update their said facilities and operations. In this regard, the Campbells do hereby also acknowledge and agree that the said waiver and relinquishment of the right to claim nuisance and damage run with title to the land which they presently own adjacent to the option property, including the properties they presently own, in sections 2 and 11.

5. During the period while this agreement is in effect, GEX will not voluntarily grant to any third party rights-of-way upon or across the option property for the purpose of serving any other coal storage, processing or loading facilities.

DATED this 3rd day of August, 1977.

"GEX"

GENERAL EXPLORATION COMPANY,
a Delaware corporation

By _____
Its VICE PRESIDENT

"Campbells"

_____
ROY D. CAMPBELL

_____
PEGGY L. CAMPBELL

OPTION

FOR AND IN CONSIDERATION of the sum of Two Thousand Five Hundred and No/100 Dollars ($2,500.00), receipt of which is hereby acknowledged, UTAH POWER & LIGHT COMPANY, a corporation, hereinafter designated as "Owner," hereby grants to ROY D. CAMPBELL and PEGGY CAMPBELL, his wife, of Wellington, Carbon County, Utah, hereinafter designated as "Campbells," an exclusive option, subject to the terms, conditions and reservations hereinafter specified, to purchase the following described tract of land located in Carbon County, State of Utah, and hereinafter called "Premises":

> The Southwest 1/4 of Section 11, Township 15 South, Range 10 East, Salt Lake Base and Meridian, excepting therefrom the most Easterly 100 feet thereof.

The conditions of this option are as follows:

1. The term of this option shall be for a period of six (6) months commencing on the 1st day of August, 1977, and expiring on the 31st day of January, 1978, and unless exercised, will automatically terminate at the close of business on the latter date and neither party will thereafter have any further obligation with respect to purchase or sale of the premises.

2. The purchase price for the Premises shall be the sum of Two Thousand Three Hundred Ninety and No/100 Dollars ($2,390.00) per acre for a total purchase price for the 153.94 acre tract of Three Hundred Sixty-seven Thousand Nine Hundred Sixteen and 60/100 Dollars ($367,916.60) which sum shall be paid in full at the time of closing which will be within thirty (30) days after exercise of this option, unless otherwise mutually agreed by the parties.

3. In the event this option is duly exercised, the consideration paid for same shall be credited as a part of the purchase price and in the event this option is not exercised, then said consideration shall be retained by the Owner as full satisfaction for the granting of same.

4. An Abstract of Title to the Premises, continued to date, shall be furnished at the expense of Owner and Owner shall

Exhibit "A"

convey the Premises by delivery of a Special Warranty Deed. Such conveyance shall be specifically subject to any encumbrances or reservation of rights as disclosed by public record or abstract(s) of title to the Premises and shall be further subject to the continued operation and maintenance of any electrical lines now located, or to be constructed during the option period, on, over, under and across the Premises.

5. This option may be exercised prior to the expiration date specified herein by written notice of election to exercise same sent by registered mail or personal delivery to Owner at P. O. Box 899, Salt Lake City, Utah, 84110, Attention Corporate Secretary; provided, however, that any such exercise will be subject to Owner's right to remain in possession of the Premises until November 1, 1977.

6. This option may be extended for an additional period of six (6) months immediately following the date of expiration hereof upon the payment by Campbells to Owner of the additional sum of Five Thousand and No/100 Dollars ($5,000.00), which amount will be submitted prior to the expiration of the initial option term and upon receipt of same this option will be extended for an additional six-month period upon the same terms and conditions set forth herein for the initial option period.

WITNESS the hand of Owner this 29 day of July, 1977.

UTAH POWER & LIGHT COMPANY

By _____

ATTEST:

_____
Secretary

The foregoing option is received and accepted this 2nd day of August, 1977.

_____
Roy D. Campbell

_____
Peggy Campbell

EXHIBIT "B"

1. Loading facilities shall consist of one or more hoppers or silos designed and constructed in such manner as to permit loading of unit trains. Discharge outlets from such hoppers or silos will be designed in such manner as to permit loading from a lowered chute or tube to minimize dust emissions.

2. Preparation facilities will be of an enclosed design so that raw coal will not be exposed to the winds during processing or movement into or out of the plant.

3. All coal conveyor belts shall be covered to minimize or eliminate dust emissions. Lowering wells shall be used for the discharge of coal from the conveyor belts into principle storage piles.

4. Water facilities shall be available and used if necessary for the suppression of dust from storage piles in the event of unusually high winds.

5. In addition to the foregoing facilities, GEX shall build upon the option lands such building and structures as may be reasonable and necessary for the operations contemplated hereby, including the building of roads, bridges, water tanks and ponds, parking areas, maintenance, warehouse, and office buildings and such additional buildings, fixtures, facilities and equipment as may be reasonably necessary for the proposed operation.

6. It is expressly understood that GEX shall maintain on the option lands such items of equipment as may be reasonably necessary for the movement of coal as may be required to keep coal piles compact and for clean up and construction work, and for loading into trucks or rail cars under temporary conditions, if such occasion should arise.

MEMORANDUM OF UNDERSTANDING

With respect to the attorneys' fee to be charged by Snow, Christensen & Martineau for services in connection with the Campbell-Swisher deal, it has been agreed that GEX is to pay the same on behalf of Campbell. This is to be accomplished as follows:

1. At the closing of the transaction Snow, Christensen & Martineau is to receive a fee of $30,000.00.

2. Snow, Christensen & Martineau is to continue its efforts to obtain a reduction in the option price payable to Utah Power & Light. In this regard, as the option price is reduced so that GEX pays $300,000.00 or less, Snow, Christensen & Martineau is to receive an additional $10,000.00, making a total of $40,000.00.

3. In the event the purchase price of the option property is reduced to $260,000.00 or less, Snow, Christensen & Martineau is to receive an additional $10,000.00, making a total of $50,000.00.

REED L. MARTINEAU

JOE E. STARKS

AGREEMENT AND RELEASE

THIS AGREEMENT AND RELEASE, made and executed this 9th day of June, 1977 by and between ROY D. CAMPBELL and PEGGY CAMPBELL, his wife, hereinafter "Campbells" and UTAH POWER & LIGHT COMPANY, a corporation, hereinafter "U P & L".

W I T N E S S E T H:

WHEREAS, commencing in 1973 U P & L constructed and has operated a coal loading facility, hereinafter "coal yard", in Carbon County, Utah which is located adjacent and in proximity to the home and farm lands owned by Campbells, and

WHEREAS, Campbells have heretofore complained of the dust, dirt, noise, lights and other problems caused them by the construction, maintenance and operation of the coal yard in that location, and

WHEREAS, on or about July 15, 1974, Campbells filed a suit in the District Court of Carbon County, Utah entitled "Roy D. Campbell and Peggy Campbell, Plaintiffs, vs. Utah Power & Light Company, a corporation, Defendant, Civil No. 10443" for an injunction and for damages as a result of said coal yard operations, and

WHEREAS, in September, 1974 said suit was dismissed without prejudice on the basis of a settlement between the parties and the payment by U P & L to Campbell of attorney's fees of $10,000.00, general damages theretofore incurred of $48,000.00 and future general damages through October 14, 1975 of $20,000.00, but no punitive damages, and reserving to Campbells all claims for damages following October 14, 1975, and

WHEREAS, Campbells claim that following October 14, 1975 and to the present date they have continued to be damaged by the dust, dirt, noise, lights and other problems caused by the operation of said coal yard, and

WHEREAS, on April 26, 1977 Campbells filed a second suit in the District Court of Carbon County, Civil No. 11768 to enjoin the maintenance and operation of said coal yard, and

WHEREAS, the parties desire by this Agreement and Release to fully settle as between themselves all matters related to the maintenance and operation of said coal yard.

NOW, THEREFORE, in consideration of the terms and conditions herein set forth, the parties hereby agree as follows:

1. U P & L hereby agrees that on or before November 1, 1977 it will remove from its premises located adjacent and in proximity to the home and farm of Campbells all of the coal, machinery, equipment and personal property located therein and to leave the same in a clean and sightly condition so as to eliminate the dust, dirt, lights, noise and other conditions which have caused discomfort and inconvenience to Campbells.

2. U P & L hereby agrees that concurrently with the execution of this Agreement it will pay to Campbells the sum of $65,000.00 representing general damages incurred by Campbells in the sum of $55,000.00 and damage to crops in the sum of $10,000.00. In addition, U P & L will at the same time pay to Snow, Christensen & Martineau the further sum of $10,000.00 representing attorney's fees of Campbell's counsel in connection with said suit, No. 11268 and the settlement

incorporated in this Agreement and Release. No sum has been or will be paid by U P & L to Campbells as punitive damages of any kind or in any form, it being specifically agreed and stipulated that no such damages have been discussed or considered in connection with the settlement provided herein, it being conceded by Campbells that no basis for punitive damages exist.

3. Upon execution of this Agreement and Release and payment of U P & L of the sums referred to in Paragraph 2 above, Campbells will cause said suit No. 11268 to be dismissed with prejudice and without costs as is provided in the form of Stipulation, Motion and Order of Dismissal with Prejudice, a copy of which is attached hereto.

4. Upon the execution of this Agreement and Release, the payment by U P & L of the sums provided in Paragraph 2 above and performance by U P & L of the obligations provided in Paragraph 1 above, Campbells do hereby agree that they will forever release, acquit and discharge U P & L, its officers, agents, servants and employees from any and all claims, damages, suits, actions and causes of action because of, arising out of or in any way related to the construction-maintenance and operation by U P & L of the said coal yard to the date hereof and to and including November 1, 1977.

CAMPBELLS:

Roy D. Campbell
ROY D. CAMPBELL

Peggy Campbell
PEGGY CAMPBELL

U P & L:

ATTEST:

UTAH POWER & LIGHT COMPANY

Robert Jordan
Secretary

By
Its

AGREEMENT

This Agreement made and entered into this _____ day of November, 1973, by and between ROY D. CAMPBELL, General Delivery, Wellington, Utah, hereinafter referred to as "Campbell", and UTAH POWER & LIGHT COMPANY, P. O. Box 899, Salt Lake City, Utah, hereinafter referred to as "Utah Power & Light";

WHEREAS, Campbell has agreed to sell a portion of his real estate to Utah Power & Light to be used for coal storage and coal loading facilities; and

WHEREAS, one of the conditions of the sale was that Utah Power & Light be responsible for damages caused to Campbell because of its operation; and

WHEREAS, it is now mutually agreed as follows:

1. Any damages, as proven by Campbell, to real property, ditches, water supply, or crops, owned by Campbell, directly caused by Utah Power & Light's coal storage and coal loading facilities shall be paid for by Utah Power & Light.

WITNESS the hands of the parties in duplicate the day and year first above written.

Roy D Campbell
ROY D. CAMPBELL

UTAH POWER & LIGHT COMPANY

BY _____

Its Vice President

Appendix 4-2

Utility Easements

Savage Services Corporation
Savage Coal Terminal

APPENDIX 4-2

UTILITY EASEMENTS

DIVISION OF OIL
GAS & MINING STATE OF UTAH

ER 15-1041 6/21/78

For Recording Data

Entry No. 149846
Indexed ✓✓
Abstracted ✓
Rec. Fee 5.00

STATE OF UTAH } SS
COUNTY OF CARBON
FILED AND RECORDED FOR
Utah Power & Light Co.
JUN 15 9 32 AM '79
BOOK 189 OF Records
PAGE 151
ANN O'BRIEN
COUNTY RECORDER

FORM 2069 10-72 1500

(UTAH CORPORATION)

UTAH POWER & LIGHT COMPANY

1.

EASEMENT

SWISHER COAL CO., a corporation doing business in the State of Utah, Grantor, hereby conveys to UTAH POWER & LIGHT COMPANY, a corporation, its successors in interest and assigns, Grantee, for the sum of One ($1.00) Dollar and other valuable consideration, a perpetual easement and right of way for the erection, operation and continued maintenance, repair, alteration, inspection, relocation and replacement of the electric transmission and distribution circuits of the Grantee, with the necessary poles, towers, guys, stubs, crossarms, braces and other attachments affixed thereto, for the support of said circuits, on, over and across a tract of land located in Carbon County, Utah, along a center line described as follows:

Beginning on the Grantor's land at a point 2605 feet north and 100 feet west, more or less, from the south one quarter corner of Section 11, T. 15 S., R. 10 E., S.L.M., thence N.39°56'W. 59 feet, more or less, thence N.89°39'W. 2475 feet, thence S.40°21'W. 60 feet, thence S.0°18'W. 2540 feet, more or less, to the south boundary line of said land and being in the N 1/2 of the SW 1/4 and the SW 1/4 of the SW 1/4 of said Section 11.

Utah Power & Light Company hereby recognizes that Swisher Coal Co. has an underground drainage system in the approximate location covered by the foregoing description. Utah Power & Light Company hereby accepts responsibility, and agrees to immediately reimburse Swisher Coal Co., for any damage to the drain line and/or subsequent interruption or restriction of water flow therefrom because of work done by Utah Power & Light Company in and around the drain line area during the construction of transmission lines and any subsequent inspection, repair and relocation work.

Together with all rights of ingress and egress necessary or convenient for the full and complete use, occupation and enjoyment of the easement hereby granted, and all rights and privileges incident thereto, including the right to cut and remove timber, trees, brush, overhanging branches and other obstructions which may injure or interfere with the Grantee's use, occupation or enjoyment of this easement.

WITNESS the hand of the Grantor, this 1st day of March, A. D. 1979

Swisher Coal Co.

By [signature] President

Attest: [signature] Assistant Secretary

9LPD

STATE OF UTAH } ss.
County of Carbon

On the 1st day of March, A.D. 19 79, personally appeared before me, Max A. Robb, who being by me duly sworn did say that he is the President of Swisher Coal Co., a corporation, and that said instrument was signed in behalf of said corporation by authority of Swisher Coal Co. and said President acknowledged to me that said corporation executed the same.

My Commission expires:
June 12, 1982

[signature] Notary Public

Description Approved KW

Form & Execution Approved RR

Residing at Cleveland, Utah

File No.

FILE NO. 48909

15

For Recording Dat

Entry No. 161789
Indexed ✓✓
Abstracted ✓
Redg. Fee 4.00

STATE OF UTAH } SS
COUNTY OF CARBON
FILED AND RECORDED FOR
Utah Power & Light C
JAN 20 1 54 PM '82
BOOK 214 OF Records
PAGE 84 (UTAH CORPORATION)
ANN O'BRIEN
COUNTY RECORDER

8

FORM 2068 10-78 1000

UTAH POWER & LIGHT COMPANY

EASEMENT

1. Beaver Creek Coal Corp., a corporation doing business in the State of Utah, Grantor, hereby conveys to UTAH POWER & LIGHT COMPANY, a corporation, its successors in interest and assigns, Grantee, for the sum of One ($1.00) Dollar and other valuable consideration, a perpetual easement and right of way for the erection, operation and continued maintenance, repair, alteration, inspection, relocation and replacement of the electric transmission and distribution circuits of the Grantee, with the necessary poles, towers, guys, stubs, crossarms, braces and other attachments affixed thereto, for the support of said circuits, on, over and across a tract of land located in Carbon, County, Utah being 10 feet in width, 5 feet each side of the following described center line:

Beginning at the north boundary fence on the Grantor's land at a point 5 feet east, more or less, from the west one quarter corner of Section 11, T. 15 S., R. 10 E., S. L. M., thence S. 0° 07' W. 48 feet to an existing pole on said land and being in the NW 1/4 of the SW 1/4 of said Section 11.

Together with all rights of ingress and egress necessary or convenient for the full and complete use, occupation and enjoyment of the easement hereby granted, and all rights and privileges incident thereto, including the right to cut and remove timber, trees, brush, overhanging branches and other obstructions which may injure or interfere with the Grantee's use, occupation or enjoyment of this easement.

WITNESS the hand of the Grantor, this 28th day of September, 19 81

Beaver Creek Coal Company

By [signature] President

Attest: [signature] Secretary

STATE OF UTAH,
County of Carbon } ss.

On the 28th day of September, 19 81, personally appeared before me, MAX A ROBB, who being by me duly sworn did say that he is the President of BEAVER CREEK COAL, a corporation, and that said instrument was signed in behalf of said corporation by authority of BOARD OF DIRECTORS and said PRESIDENT acknowledged to me that said corporation executed the same.

My Commission expires: JUNE 12, 1982

[signature] Notary Public

Description Approved [initials]

Form & Execution Approved

Residing at Castlegate Utah

File No.

9LCD

RECORDING INFORMATION ONLY	Entry No. 163158	COUNTY OF CARBON FILED AND RECORDED FOR Mtn. Bell APR 26 9 27 AM '82
	Indexed ✓✓	BOOK 216 OF Records
	Abstracted ✓	PAGE 228-229
	Redg. Fee 4.00	ANN O'BRIEN COUNTY RECORDER

RIGHT-OF-WAY EASEMENT

The Undersigned Grantor (and each and all of them if more than one) for and in consideration of TEN-------- dollars ($10.00) and other good and valuable consideration in hand paid by the Grantee, the receip whereof is hereby acknowledged, hereby grants, bargains and conveys unto The Mountain States Telephone an Telegraph Company, A Colorado corporation, 931 14th Street, Denver, Colorado, 80202, Grantee, its successors assigns, lessees, licensees and agents a Right-of-Way Easement and the right to construct, operate, maintain an remove such communication and other facilities, from time to time, as said Grantee may require upon, over, unde and across the following described land which the Grantor owns or in which the Grantor has any interest, to wit:

An easement 5 feet in width being 2½ feet on each side of buried telephone facilities as shown on Exhibit "A" attached hereto and made a part hereof across Beaver Creek Coal Company property in the Southwest Quarter of Section 11, Township 15 South, Range 10 East, Salt Lake Base and Meridian,

situate in County of CARBON, State of Utah, TOGETHER with the right of ingress and egress over and across the lands of the Grantor to and from the above-described property, the right to clear and keep cleared all trees and other obstructions as may be necessary.

The Grantor reserves the right to occupy, use, and cultivate said property for all purposes not inconsistent with the rights herein granted.

Signed and delivered this 6th day of April, A.D., 1982

At PRICE, UTAH

Grantor Beaver Creek Coal Company

By Albert W. Jeanselme

Title: PROJECT COORDINATOR BEAVER CREEK COAL COMPANY

STATE OF UTAH)
COUNTY OF CARBON) ss.

On the 6TH day of APRIL, 1982, personally appeared before me, ALBERT W. JEANSELME, the signer of the above instrument, who duly acknowledged to me that (he) or (she) executed the same.

WITNESS my hand and official seal this 6TH day of APRIL, 1982.

My commission expires NOVEMBER 4, 1985

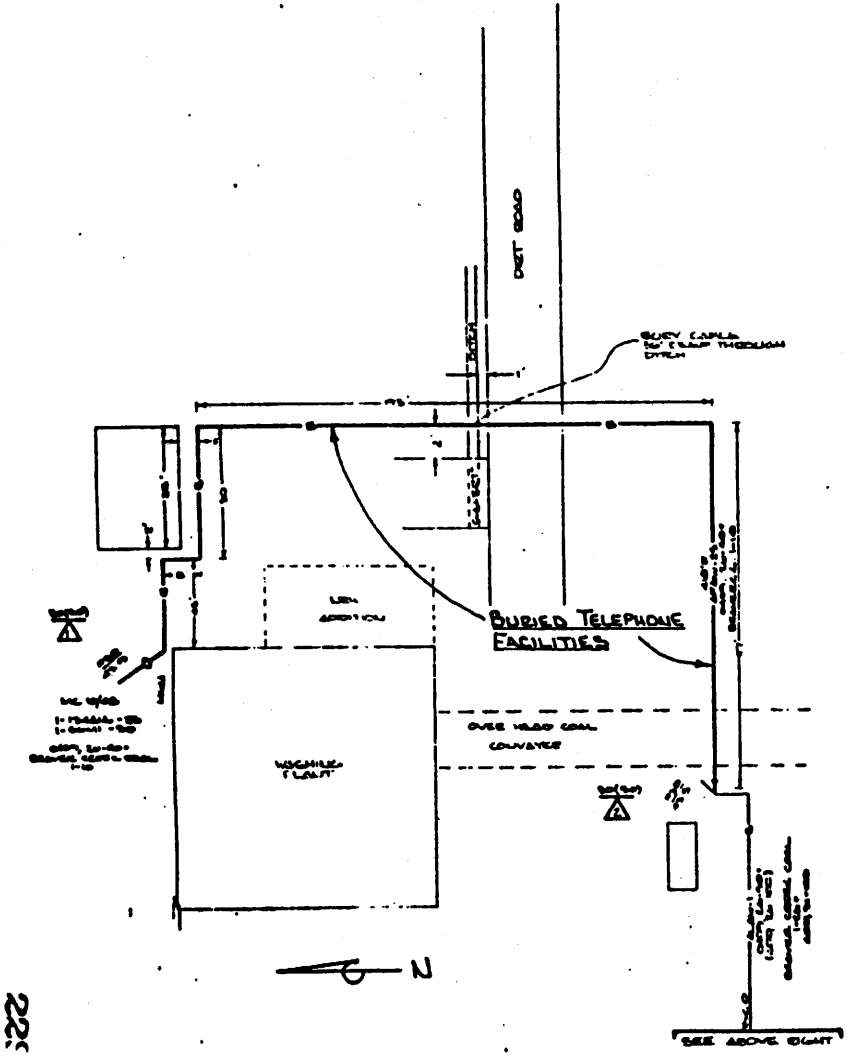
Notary Public, Residing in BOUNTIFUL UTAH

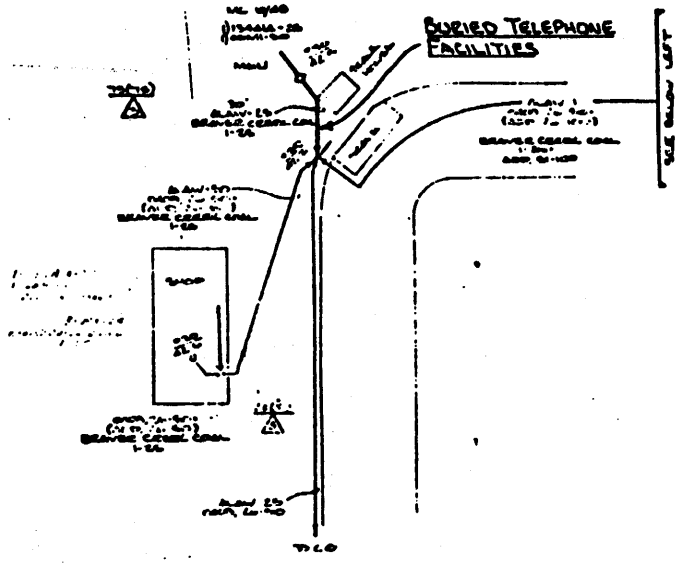
F. Michael Johnson
Notary Public

GWD

R/W NUMBER RW076616		QUARTER SECTION	S	W	1/4							REMARKS
EXCHANGE CODE	AGENT	SECTION	1	1								
JOB NO.	ACCT.	TOWNSHIP	1	5	S							
RR NAME, GOV. AGENCY		RANGE	1	0	E							MAIL TO: THE MOUNTAIN ST TELEPHONE & TELEGRAPH
GEO. LOCATION		PRINCIPAL MERIDIAN	S	L	B	M						

EXHIBIT "A"


DIRT ROAD
BURIED TELEPHONE FACILITIES
WASHING PLANT
OVER HEAD COAL CONVEYOR
N
SEE ABOVE RIGHT


BURIED TELEPHONE FACILITIES
SHOP

Mountain Bell
MAR 14 9 35 AM '80
BOOK 196 OF Records
PAGE 362-363

Entry No. 153362
Indexed ✓ ✓
Abstracted ✓
Rec. Fee 5.00

M.S.T. & T. CO. FORM 7321 (9-70)U

R/W RW 74071

362

RIGHT-OF-WAY EASEMENT

The Undersigned Grantor (and each and all of them if more than one) for and in consideration of ONE DOLLAR AND NO/100 dollars ($1.00) in hand paid by the Grantee, the receipt whereof is hereby acknowledged, hereby grants, bargains and conveys unto The Mountain States Telephone and Telegraph Company, a Colorado corporation, 931 14th Street, Denver, Colorado, 80202, Grantee, its successors, assigns, lessees, licensees and agents, a Right-of-Way Easement and the right to construct, operate, maintain and remove such communication and other facilities, from time to time, as said Grantee may require upon, over, under and across the following described land which the Grantor owns or in which the Grantor has any interest, to-wit:

A five foot easement being 2. 5 feet on each side of a buried telephone cable as shown on Exhibit "A" attached hereto and made a part hereof over and across the Southwest Quarter of Section 11, Township 15 South, Range 10 East, Salt Lake Base and Meridian,

situate in County of Carbon, State of Utah,

TOGETHER with the right of ingress and egress over and across the lands of the Grantor to and from the above-described property, ~~the right to clear and keep cleared all trees and other obstructions as may be necessary and the right to permit other utility companies to use the right of way jointly with Grantee for their utility purposes.~~

The Grantor reserves the right to occupy, use, and cultivate said property for all purposes not inconsistent with the rights herein granted.

Signed and delivered this 19th day of February A.D., 1980

At Swisher Coal Company
1109 South Carbon Avenue
Price, Utah 84501

Max A. Robb, President
Max A. Robb

STATE OF UTAH
County of ~~Salt Lake~~ Carbon } ss.

On the 19th day of FEBRUARY, A.D. 1980, personally appeared before me Max A. Robb, President, Swisher Coal Company,

the (signer) ~~(signers)~~ of the above instrument, who duly acknowledged to me that (he) ~~(she)~~ ~~(they)~~ executed the same.

WITNESS my hand and official seal this 19th day of February, 1980.

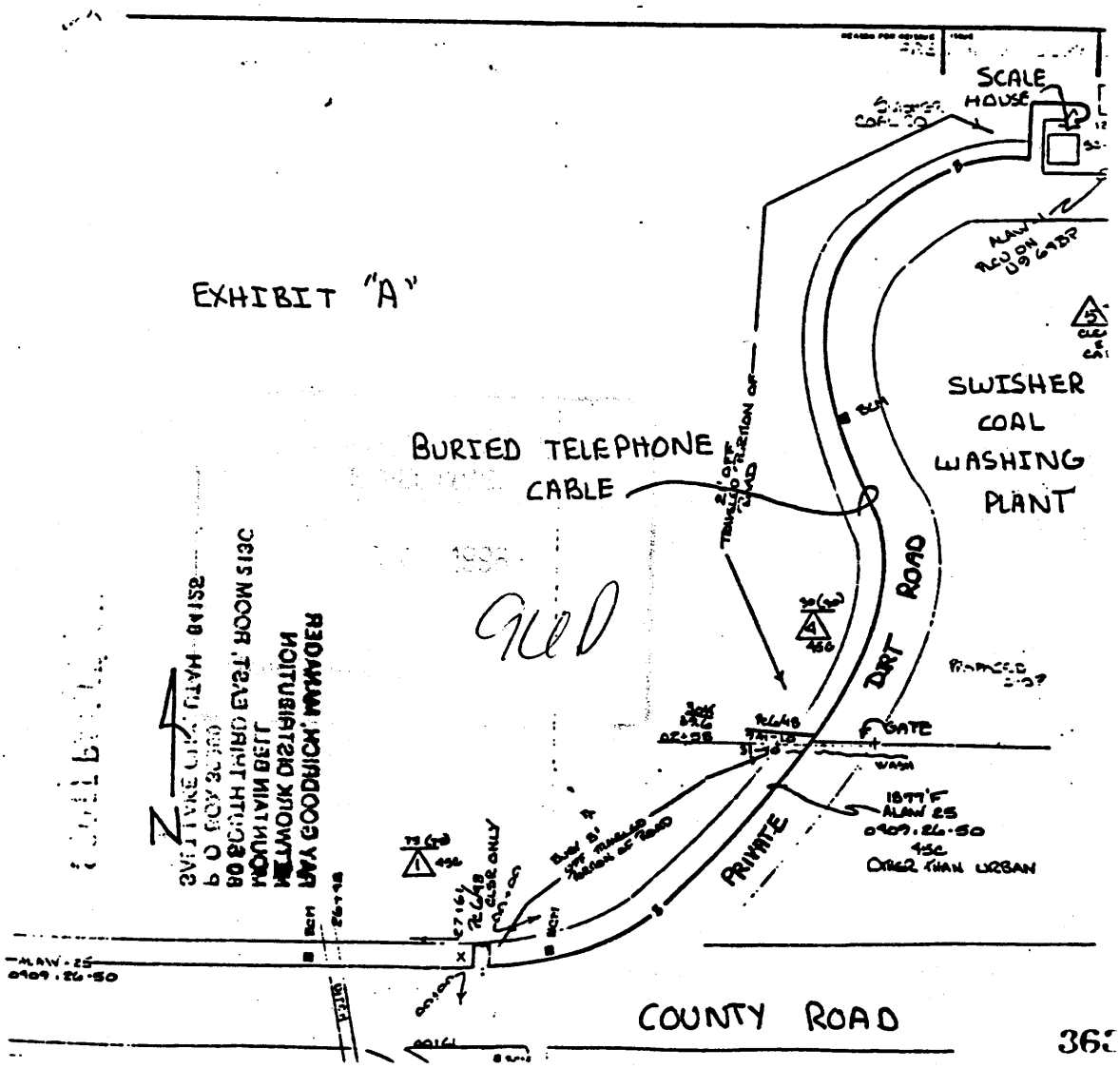
My commission expires June 12, 1982

Notary Public

Grantor is obligated by Government Regulation to maintain drainage ditches to channel runoff waters away from coal storage piles. This easement is given pursuant to the understanding that buried cable will be a minimum of 30-inches under surface at all points.

AUD

EXHIBIT "A"


SCALE HOUSE
SWISHER COAL WASHING PLANT
BURIED TELEPHONE CABLE
DIRT ROAD
GATE
PRIVATE
COUNTY ROAD
OTHER THAN URBAN

FOR
Mountain Bell
DEC. 13 12 14 PM '79
BOOK 194 OF Records
PAGE 256-257
ANN O'BRIEN
COUNTY RECORDER

Entry No. 152393
Indexed ✓
Abstracted ✓
Rec. Fee 5.00

M.S.T. & T. CO. FORM 7331 (9-70)U

R/W RW 73619

RIGHT-OF-WAY EASEMENT

The Undersigned Grantor (and each and all of them if more than one) for and in consideration of

ONE AND NO/100 dollars ($1.00) in hand paid by the Grantee, the receipt whereof is hereby acknowledged, hereby grants, bargains and conveys unto The Mountain States Telephone and Telegraph Company, a Colorado corporation, 931 14th Street, Denver, Colorado, 80202, Grantee, its successors, assigns, lessees, licensees and agents, a Right-of-Way Easement and the right to construct, operate, maintain and remove such communication and other facilities, from time to time, as said Grantee may require upon, over, under and across the following described land which the Grantor owns or in which the Grantor has any interest, to-wit:

A five foot easement being 2.5 on each side of buried telephone cable as shown on Exhibit "A" attached hereto and made a part hereof over and across property located in the Southwest Quarter of Section 11, Township 15 South, Range 10 East, Salt Lake Base and Meridian,

situate in County of Carbon, State of Utah,

TOGETHER with the right of ingress and egress over and across the lands of the Grantor to and from the above-described property, the right to clear and keep cleared all trees and other obstructions as may be necessary and the right to permit other utility companies to use the right of way jointly with Grantee for their utility purposes.

The Grantor reserves the right to occupy, use, and cultivate said property for all purposes not inconsistent with the rights herein granted.

Signed and delivered this 5th day of November A.D., 1979

At Price, Utah

For Swisher Coal Company:

Max A. Robb

President

STATE OF UTAH
County of Carbon } ss.

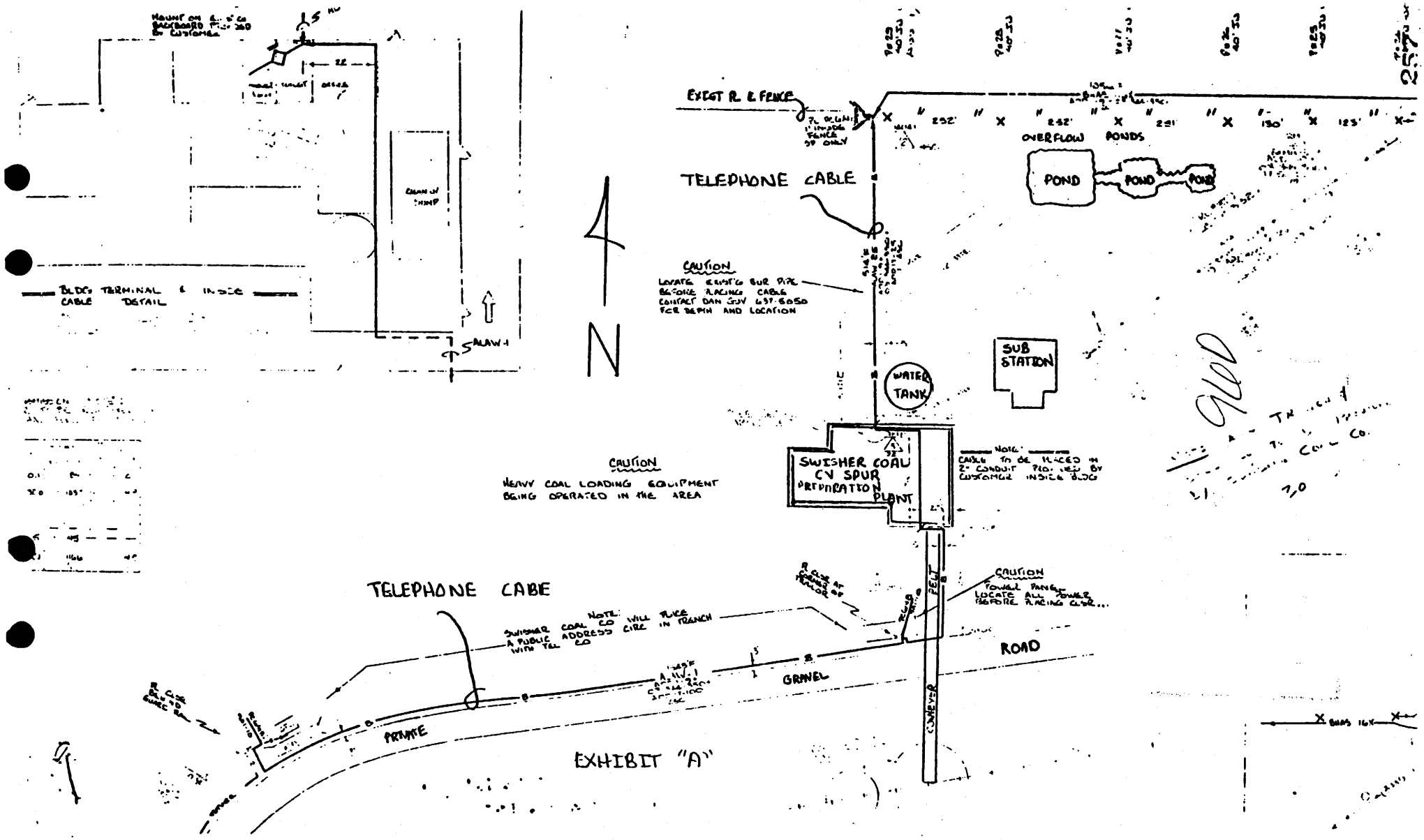
On the 5th day of November, A.D. 1979, personally appeared before me Max A. Robb, President of Swisher Coal Company the (signer) (signers) of the above instrument, who duly acknowledged to me that (he) (she) (they) executed the same.

WITNESS my hand and official seal this 5th day of November 1979

My commission expires June 12, 1982

Notary Public

9UD



EXIST R. & FENCE
TELEPHONE CABLE
OVERFLOW PONDS
POND
POND
POND
CAUTION
LOCATE EXIST'G BUR PIPE BEFORE PLACING CABLE CONTACT DAN GUY 637-5050 FOR DEPTH AND LOCATION
SUB STATION
WATER TANK
SWISHER COAL CV SPUR PREPARATION PLANT
CAUTION
HEAVY COAL LOADING EQUIPMENT BEING OPERATED IN THE AREA
NOTE: CABLE TO BE PLACED IN 2" CONDUIT PROVIDED BY CUSTOMER INSIDE BLDG
CAUTION
TOWER PANEL LOCATE ALL POWER BEFORE PLACING CLSR...
TELEPHONE CABE
NOTE: SWISHER COAL CO WILL PLACE A PUBLIC ADDRESS CIRC IN TRENCH WITH TEL CO
ROAD
GRAVEL
PRIVATE
CONVEYOR
BLDG TERMINAL & INSIDE CABLE DETAIL
ALAW-1
N
EXHIBIT "A"

Appendix 4-3

Division of Air Quality
Approval Order DAQE-ANI793003-06

Savage Services Corporation
Savage Coal Terminal

State of Utah

Department of Environmental Quality

Dianne R. Nielson, Ph.D.
Executive Director

DIVISION OF AIR QUALITY
Richard W. Sprott
Director

JON M. HUNTSMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

DAQE-AN1793003-06

August 16, 2006

Boyd Rhodes
Manager
Savage Services Corporation
2025 East 5000 South
P.O. Box 1001
Price, Utah 84501

Dear Mr. Rhodes:

Re: Approval Order: Modification to the Approval Order to Increase Coal Throughput, Carbon County – CDS SM; NSPS, Title V Minor
Project Code: N1793-003

The attached document is the Approval Order (AO) for the above-referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Maung Maung. He may be reached at (801) 536-4153.

Sincerely,

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

RWS:MM:kw

cc: Southeastern Utah District Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER: Modification to the Approval Order to Increase Coal Throughput

Prepared By: Maung Maung, Engineer
(801) 536-4153
Email: mmaung@utah.gov

APPROVAL ORDER NUMBER

DAQE-AN1793003-06

Date: August 16, 2006

Savage Industries Incorporated

Source Contact
Boyd Rhodes
(435) 637-5664

Richard W. Sprott
Executive Secretary
Utah Air Quality Board

Abstract

Savage Services Corporation has proposed to modify its existing Approval Order DAQE-563-98 to increase coal throughput from 8 million to 10 million tons per year. The company also proposes to change the company name on the approval order to Savage Services Corporation. There is no change in ownership.

The Savage Coal Terminal is located in Carbon County, which is an attainment area of the National Ambient Air Quality Standards (NAAQS) for all pollutants. New Source Performance Standards (NSPS) 40 CFR part 60 subpart Y - Standards of Performance for Coal Preparation Plants applies to this source. Therefore, Title V of the Clean Air Act applies to this source. However, the source does not need to submit an application for Title V permit since it is a minor source. National Emission Standards for Hazardous Air Pollutants (NESHAP) and Maximum Available Control Technology (MACT) do not apply to this source.

The proposed emissions changes (in tons per year) will be as follows: PM_{10} = 1.53, SO_2 = 0.11, NO_x = 1.67, CO = 0.36, VOC = 0.14, aldehydes = 0.02.

The changes in emissions will result in the following potential to emit totals in tons per year: PM_{10} = 49.13, NO_x = 54.64, SO_2 = 3.59, CO = 11.77, VOC = 4.46, Aldehydes = 0.98.

The project has been evaluated and found to be consistent with the requirements of the Utah Administrative Code Rule 307 (UAC R307). A public comment period was held in accordance with UAC R307-401-7 and no comments were received. This air quality Approval Order (AO) authorizes the project with the following conditions, and failure to comply with any of the conditions may constitute a violation of this order.

General Conditions:

1. This Approval Order (AO) applies to the following company:

Facility Location	Corporate Office Location
Savage Coal Terminal	Savage Coal Terminal
2025 East 5000 South	2025 East 5000 South
Price, Utah 84501	Price, Utah

Phone Number: (435) 637-5664
Fax Number: (435) 637-2431
The equipment listed below in this AO shall be operated at the following location:

PLANT LOCATION:

Universal Transverse Mercator (UTM) Coordinate System: UTM Datum NAD27
4,374.0 kilometers Northing; 520.0 kilometers Easting; Zone 12

2. All definitions, terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code (UAC) Rule 307 (R307) and Title 40 of the Code of

Federal Regulations (40 CFR). Unless noted otherwise, references cited in these AO conditions refer to those rules.

3. The limits set forth in this AO shall not be exceeded without prior approval in accordance with R307-401.

4. Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved in accordance with R307-401.

5. All records referenced in this AO or in applicable NSPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request. Records shall be kept for the following minimum periods:

A.	Emission inventories	Five years from the due date of each emission statement or until the next inventory is due, whichever is longer.
B.	All other records	Five years

6. Savage Services Corporation shall conduct its operations in accordance with the terms and conditions of this AO, which was written pursuant to Savage Coal Corporation's Notice of Intent submitted to the Division of Air Quality (DAQ) on April 24, 2006 and additional information submitted on June 5, 2006 and June 22, 2006.

7. This AO shall replace the AO DAQE-563-98, dated September 3, 1998.

8. The approved installations shall consist of the following equipment or equivalent*:

A. Five truck unloading facilities with enclosed receiving hoppers and sprays
B. One coal crusher rated at 400 tons per hour-enclosed
C. One screen plant rated at 250 tons per hour
D. One radial stacker
E. Two underpile reclaim systems
F. One 10,000 tons silo with extendable chute for loading railcar-enclosed
G. Four stacking tubes with associated coal stockpiles
H. Associated mobile diesel equipment
I. Treated, gravel haul roads
J. Associated conveyors
K. Wash plant with associated screens, crushers and conveyors shall be totally enclosed
L. One screen- 200 TPH
M. One crusher- 450TPH (both screen/crusher are below the new underground hopper)
N. One 36"X 100" Radial stocker conveyor
O. One underground reclaim (Doger Trap)
P. One 36"X 150" conveyor to loadout belt (covered)

* Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

9. Visible emissions from the following emission points shall not exceed the following values:

   A. All crushers - 15% opacity
   B. All screens - 10% opacity
   C. All conveyor transfer points - 10% opacity
   D. All diesel engines - 20% opacity
   E. Conveyor drop points - 10% opacity
   F. Silo - 10% opacity
   G. All other points - 10% opacity

   Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

   For sources that are subject to NSPS, opacity shall be determined by conducting observations in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9.

10. The following production limit shall not be exceeded:

    10,000,000 tons of coal per rolling 12-month period
    3,000,000 tons of coal crushed per 12-month period
    1,000,000 tons of coal screened per 12-month period

    To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of throughput, crushed and screened shall be kept for all periods when the plant is in operation. Throughput shall be determined by examination of truck scale records. Amount of coal crushed or screened shall be determined by supervisor monitoring and maintaining of an operations log. The records of throughput, crushed, and screening shall be kept on a daily basis.

Roads and Fugitive Dust

11. The facility shall abide by all applicable requirements of UAC R307- 205 for Fugitive Emission and Fugitive Dust sources.

12. All unpaved roads and other unpaved operational areas that are used by mobile equipment shall be water sprayed and/or chemically treated to control fugitive dust. Treatment shall be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition or unless it is below freezing. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation. The records shall include the following items:

    A. Date
    B. Number of treatments made, dilution ratio, and quantity
    C. Rainfall received, if any, and approximate amount

D. Time of day treatments were made
E. Records of temperature if the temperature is below freezing

13. Visible fugitive dust emissions from haul-road traffic and mobile equipment in operational areas shall not exceed 20% opacity. Visible emissions determinations for traffic sources shall use procedures similar to Method 9. The normal requirement for observations to be made at 15-second intervals over a six-minute period, however, shall not apply. Six points, distributed along the length of the haul road or in the operational area, shall be chosen by the Executive Secretary or the Executive Secretary's representative. An opacity reading shall be made at each point when a vehicle passes the selected points. Opacity readings shall be made one half vehicle length or greater behind the vehicle and at approximately one half the height of the vehicle or greater. The accumulated six readings shall be averaged for the compliance value.

14. The paved haul road loop shall not exceed 0.57 miles in length. The paved haul road shall be watered, flushed, and/or broom swept as necessary to not exceed the opacity limits specified in condition #9.G. Records of cleaning paved roads shall be made available to the Executive Secretary or a representative upon request. Record shall include a period of two years before the date of request. The haul road speed shall be posted. It shall be 15 mph.

15. Control of disturbed or stripped areas is required at all times (24 hours per day every day) for the duration of the project/operation until the area is reclaimed. Areas disturbed during construction of the facility and not subjected to repeated disturbance shall be revegetated. Repeatedly disturbed areas shall be chemically treated with $MgCl_2$ as necessary to meet the opacity limitation of condition #9.

16. The storage piles shall be watered to minimize generation of fugitive dusts as dry conditions warrant or as determined necessary by the Executive Secretary. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation.

17. All above ground conveyors shall be covered. All reclaim points for the primary coal storage shall be below the stockpile.

18. The following transfer points shall be enclosed:

A. Each conveyor to conveyor transfer point
B. Reclaim conveyor from the primary coal stockpile to the stacking tube
C. All wash plant with associated screens, crushers and conveyors

19. Water sprays or chemical dust suppression sprays shall be installed at the following points to control fugitive emissions:

A. All crushers
B. All screens

The sprays shall operate whenever dry conditions warrant or as determined necessary by the Executive Secretary.

Fuels

20. The owner/operator shall use only #2 fuel oil or lighter as a primary fuel in diesel engine for electrical generator and liquefied petroleum gas (LPG) as a fuel in the furnace.

21. The sulfur content of any fuel oil or diesel burned shall not exceed 0.5 percent by weight for diesel fuels consumed in all diesel engines. Sulfur content shall be determined by ASTM Method D-4294-89 or approved equivalent. Certification of sulfur content shall be either by source's own testing or test reports from the fuel supplier. Records of test report on sulfur content shall be available on-site for each load delivered.

Federal Limitations and Requirements

22. In addition to the requirements of this AO, all applicable provisions of 40 CFR 60, New Source Performance Standards (NSPS) Subpart A, 40 CFR 60.1 to 60.18 and Subpart Y, 40 CFR 60.250 to 60.254 (Standards of Performance for Coal Preparation Plants) apply to this installation. The facility must operate in accordance with the most current version of 40 CFR 60 applicable to this source. The following emission points are subject to Subpart Y:

    A. All crushers (above ground)
    B. All screens (above ground)
    C. All conveyors (above ground)
    D. Storage silo stack

Records & Miscellaneous

23. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this Approval Order including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded.

24. The owner/operator shall comply with R307-107. General Requirements: Unavoidable Breakdowns.

25. The owner/operator shall comply with R307-150 Series. Inventories, Testing and Monitoring.

The Executive Secretary shall be notified in writing if the company is sold or changes its name.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including R307.

A copy of the rules, regulations and/or attachments addressed in this AO may be obtained by contacting the Division of Air Quality. The Utah Administrative Code R307 rules used by DAQ, the Notice of Intent (NOI) guide, and other air quality documents and forms may also be obtained on the Internet at the following web site:
http://www.airquality.utah.gov

The annual emissions estimation below includes mobile equipment and associated fugitive dust emissions. These emissions are for the purpose of determining the applicability of Prevention of Significant Deterioration, non-attainment area, maintenance area, and Title V source requirements of the R307. They are not to be used for determining compliance.

The Potential To Emit (PTE) emissions for Savage Coal Services Corporation are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	49.13
B.	SO_2	3.59
C.	NO_x	54.64
D.	CO	11.77
E.	VOC	4.46
F.	Aldehydes	0.98

The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. An invoice will follow upon issuance of the final Approval Order.

Approved By:

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

Savage Services Corporation
Savage Coal Terminal
C/007/022

Chapter 5

Engineering

R645-301-500

Savage Services Corporation
Savage Coal Terminal
C/007/022

Chapter 5

Engineering

R645-301-500

R645. Natural Resources; Oil, Gas and Mining; Coal.

R645-301. Coal Mine Permitting: Permit Application Requirements.

R645-301-500. Engineering.

510. Introduction.

The engineering section of this permit application is divided into the operation plan, reclamation plan, design criteria, and performance standards. All of the activities associated with the coal mining and reclamation operations are designed, located, constructed, maintained, and reclaimed in accordance with the operation and reclamation plan. All of the design criteria associated with the operation and reclamation plan will be met.

511. General Requirements.

Each permit application will include descriptions of:

511.100. Proposed Operations

This section outlines the scope of mining, environmental control and reclamation activities that will occur under the terms of the permit. The purpose of this plan is to provide the regulatory authority with comprehensive and reliable information which ensures that proposed activities will be conducted in compliance with the Act, the regulations, and guidelines of the permanent regulatory program.

Surface Facilities

Site Selection and Preparation

Utah Power & Light originally leased the site for coal loading operations because of its proximity to the Denver and Rio Grande Western (D&RGW) railroad siding. Swisher Coal Company purchased the SW ½ Section 11 for the purpose of developing a preparation and loadout facility for unit coal trains. The site was also advantageous because of its central location to the contributing coal mines. Original UP&L disturbance occurred in 1975. Expansion activities by Swisher Coal Company were conducted between October 1977 and April 1978. The site was purchased by ARCO in 1980, and was sold to Savage Industries, Inc. (now Savage Service Corporation) in 1995. The facility name was then changed to Savage Coal Terminal. Plate 5-1 presents surface disturbance as of the submittal date of this application.

Maintenance

All support facilities at Savage Coal Terminal will be maintained and used in a manner which prevent damage to fish, wildlife and related environmental values and prevents additional contributions of suspended solids to streamflow or runoff outside the permit area.

Facilities Construction Dates

The following is a list of facilities and approximate dates on which construction begun and completed on each:

Facility	Construction Begun	Construction Completed
Preparation Plant	10/77	12/78
Conveyors	10/77	4/78
Silo/Loadout	10/77	4/78
Shop/Lab/Warehouse	3/80	6/80
Power Line/Substation	10/77	4/78
Pumphouse	8/78	10/78
Scales/Scalehouse	2/78	4/78
Refuse Pile	12/78	On-Going
Railroad Loop	10/77	4/78
Roads/Parking Areas	10/77	4/78
Water System	10/77	10/78
Culinary Water	8/84	9/84
Sewage System	3/80	5/80
Diversion Ditches	6/78	6/79
Sedimentation Ponds	6/78	6/79
New Shop/Oil Storage	10/05	4/06
New Reclaim Conveyor	10/05	6/06
New Stacking Tube	04/06	8/06
New Plant Feed Conveyor	08/06	11/06
New Stacking Conveyor	08/06	11/06
New Raw Coal Conveyor	08/06	11/06
Settling Ponds	08/06	11/06
Refuse Conveyor	08/06	11/06
Storage to Silo Conveyor	10/07	12/07

Buildings and Structures

All buildings and structures at the Savage Coal Terminal are shown on Plate 5-2. There are no present plans to modify or re-construct any structures at this site.

Coal Refuse and Non-Coal Storage/Disposal

Storage sites for stockpiled coal and disposal of coal processing refuse and non-coal wastes are shown on Plate 5-2.

Non-Coal Waste Disposal

Temporary storage of non-coal waste is in a metal trash receptacle and/or a designated storage area. As needed, the garbage is loaded into a truck and disposed of within an approved sanitary landfill. See Plate 5-2 for locations.

Oil and Grease Disposal

Oil and grease wastes are collected in a surface tank for temporary on-site storage. As needed, this tank is pumped out by a licensed contractor and removed for recycling. All oil, grease and anti-freeze wastes at Savage Coal Terminal are recycled, and none of these wastes are stored in underground tanks or disposed of in any landfill.

Coal Processing Waste Disposal

The coal processing waste disposal sites are designed and constructed to meet all requirements of R645-301-536. Plate 5-3, Refuse Disposal Plan, shows the planned locations and cross-sections of refuse disposal areas #1, #2, and #3. Coal processing waste from the 2006 plant restart is taken to the approved Dugout Canyon Mine refuse site per contract agreement.

Transportation Facilities

Roads

The location of access and coal haulage roads and parking areas are provided on Plates 5-2 and 5-4.

All roads on the site will be maintained throughout their life to meet the design standards. This will include, as necessary, regrading, resurfacing, cleaning of ditches and culverts, watering and/or sweeping for dust control.

If a road is damaged by a catastrophic event, it will be repaired as soon as practical after the damage has occurred.

All roads will be removed and regraded upon final reclamation of the site.

The following is a description of each of the primary roads on this site:

PR-1
Main entrance and coal haul road on west side. Road runs from west entrance to preparation plant. Approximately 1705' long with an average grade of 2.23%. Approximately 770' of road is paved, and the balance is gravel-surfaced. Road is approximately 24' wide.

PR-2
Haul road from SW entrance to intersection with PR-1. Approximately 1720' long with an average grade of 1.51%. Entire length of road is paved, and is 24' wide.

PR-3
This is the No. 1 Truck Dump loop road. The road is approximately 1425' in length with a maximum plus grade of 7.06% and a maximum minus grade of 6.45%. This is a gravel-surfaced road and is 24' wide.

PR-4
Refuse haul road, running from the wash plant to the refuse pile. The road is approximately 3840' long and has an average grade of 0.42%. This road is gravel-surfaced and maintained at a width of 20'.

PR-5
This is the pumphouse road running from the intersection with the refuse road (PR-4) to the pumphouse. The road is approximately 625' long with an average grade of 0.96%. It is gravel-surfaced and approximately 16' wide.

PR-6
Sample house road, running from the refuse road (PR-4) to the sample building/loadout tunnel. The road is approximately 545' long with an average grade of 1.83%. It is gravel-surfaced and approximately 16' wide.

PR-7
No. 2 Truck Dump Road, running from its intersection with PR-1, over the truck dump and back to the intersection with PR-2. The road is approximately 2340' in length with an average grade of 1.28%. It is a gravel-surfaced road with a width of approximately 24'.

PR-8
Truck Dump No. 5 Road, running from PR-7, across the No. 5 Truck Dump and back to the PR-7. This road is approximately 890' in length with an average grade of 2.02%. The road is gravel-surfaced and is 20' wide. Maximum grade down from the truck dump is 9.00%.

PR-9
Topsoil Pile Road, running from PR-7 to the refuse road (PR-4). This road is approximately 420' long with an average grade of 1.91%. The road is gravel-surfaced and approximately 20' wide.

PR-10
Truck Dump No. 3 Road running from the refuse road (PR-4) over the No. 3 truck dump and back to PR-4. It is approximately 560' in length with a maximum grade of +10.00% up and -10.34% down. The road is gravel-surfaced and approximately 16' wide.

PR-11
This is a short length of road constructed to tie the 2 main haul roads, PR-1 and PR-2, together. The road is approximately 400' in length with an average grade of 0.25%. This road is gravel-surfaced and approximately 24' wide.

PR-12
Office/Shop Road, running from PR-1 across the office parking pad and down to the intersection of PR-1 and PR-3. The road is approximately 575' in length with an average grade of 1.74%. It is gravel-surfaced and approximately 20' wide.

PR-13
This is the access/haul road for the new settling ponds. The road runs from PR-12, below the office, to the settling ponds. The road is approximately 950' in length with an average grade of approximately 2.22%. The road is gravel-surfaced and approximately 16' wide.

The above referenced roads are all considered "Primary Roads" as provided in R645-301-527.100. All other roads on the site are considered "Ancillary Roads", as described below.

The following are considered "Ancillary Roads" as shown on Plate 5-4.

AR-1
This is an access on the east side of the settling ponds, used primarily for periodic cleaning of the ponds. It is approximately 700' long with an average grade of 2.25%.

AR-2
This is an access road used only occasionally for inspection purposes. It is approximately 1270' in length at an average grade of 1.73%, and runs from the pump house pad west along the north edge of ponds 1, 2 & 3.

AR-3
This is an access road around the back side of the refuse pile, used only occasionally. It is about 2250' long with an average grade of 1.67%.

AR-4
This road is primarily used by railroad personnel, and only on an infrequent basis. It runs parallel to the railroad behind the refuse pile area. It is approximately 1500' long, at a grade of approximately 2.50%.

The following information pertains to all roads on the site:

1- Roads are located, designed, constructed, reconstructed, used, maintained and will be reclaimed to:

a. Prevent or control damage to public or private property;
b. Use non-acid or non-toxic substances in road surfacing;
c. Have a minimum static safety factor of 1.3 for all embankments;
d. Be removed and regraded during the final site reclamation;
e. Using current, prudent engineering practices to control or prevent erosion, siltation or air pollution;
f. To ensure environmental protection and safety by designing roads with appropriate limits for use and type and size of equipment used.

In addition, all Primary Roads will meet the following requirements:

a. Be located, constructed and maintained in such a manner as to protect fish wildlife and related environmental values by avoiding wetlands, using non-acid and non-toxic materials, providing adequate drainage and employing the lowest practical speed limits on site;
b. Be located on the most stable available surface (see Plate 5-4);
c. Be surfaced with crushed gravel or asphalt to provide durability for the volume, weight and speed of the anticipated vehicles;
d. Be routinely maintained to provide intended use;
e. Have culverts designed, installed and maintained to sustain the vertical soil pressure, passive resistance to the foundation, and the weight of the vehicles using the road. All culverts are steel or corrugated metal pipe and are of adequate strength to withstand expected vehicle weights. No failures have ever been noted.

Railroads

A major railroad grade embankment (approximately 4'-12' in height) is located on the eastern edge of the site, immediately outside of the permit area. This grade supports the main rail line(s) and is owned and maintained by the Denver and Rio Grande Western Railroad. This line will undoubtedly remain in service after closure of the Savage Coal Terminal.

The railroad loop within the Savage Coal Terminal is owned by Savage Services Corporation. It consists of a single set of tracks slightly elevated (3') above natural ground. This rail serves as a loop for the unit trains to travel head-first into the silo, eliminating the need for engine switching. The loop is 8,340 feet long. This rail line will be used and maintained throughout the Savage Coal Terminal operational life.

Grades and typical cross-section of the rail loop are shown on Plate 5-5, "Railroad Facilities".

Conveyors

There are eighteen (18) separate, permanent conveyor runs at the Savage Coal Terminal (see Figure 5-7). In addition, there are temporary, portable conveyors used on the site. The number and location of the temporary conveyors varies according to need.

Conveyor #1 - 36" x 250' long stacking conveyor from the truck dump to the raw coal stacking tube.

Conveyor #1a - 36" x 250' long stacking tube conveyor from the above raw coal stacking tube to a new steel stacking tube. (Appendix 3-8 BC-01)

Conveyor #1b - 36" x 233' conveyor from new stacking tube area to wash plant. (Appendix 3-8 BC-02)

Conveyor #1c - 36" x 130' stacking conveyor from wash plant to clean coal pile on north side. (Appendix 3-8 BC-05)

Conveyor #1d - 36" x 200' conveyor for -1/4" coal from wash plant to raw coal pile to west. (Appendix 3-8 BC-03)

Conveyor #1e - 36" x 101' conveyor to carry refuse from the wash plant to the refuse bin. (Appendix 3-8 BC-04)

Conveyor #2 - 36' x 300' reclaim conveyor from raw coal pile to conveyor #9.

Conveyor(s)#3-(2) 36" x 365' clean fine and coarse coal conveyors from the plant to the clean coal stacking tube.

Conveyor #4 - 36" x 225' clean fine coal transfer conveyor from coarse coal stacking tube to fine coal stacking tube.

Conveyor #5 - 48" x 600' clean coal reclaim conveyor from clean coal piles to transfer in loadout sample building.

Conveyor #6 - 48" x 660' loading conveyor from transfer point in sample building to 10,000 ton silo.

Conveyor #7 - This conveyor is 36" x approximately 350' and runs from the new truck dump to a crushed coal stacking tube.

Conveyor #8 - 42" x 150' conveyor from the new truck dump to the twin 36" conveyors described in #3 above.

Conveyor #9 - 48" x 440' conveyor from the plant feed belt to the clean coal stacking tube area.

Conveyor #10 - 48" x 728' elevated conveyor from truck loop storage area to conveyor #9.

Conveyor #11 - 48" x 246' feed conveyor from the truck loop storage area to conveyor #10.

Conveyor #12 - 48" x 564' surface transfer system to move coal from the track loop storage area to conveyors #10 and #11.

Conveyor #13 - 48" x 375' feed conveyor from storage area to silo feed conveyor #6.

Grades of all conveyors are shown on Figure 5-7. "Conveyors - Loadout & Grades". All surface conveyors are covered and equipped with walkways. All conveyors will be used throughout the Savage Coal Terminal operational life.

Maintenance

Transportation facilities are maintained and will be restored to prevent damage to fish, wildlife and related environmental values, as well as additional contributions of suspended solids to streamflow or runoff outside the permit area. In addition, they are maintained in a manner to control and minimize degradation of water quality and quantity, control and minimize erosion and siltation as well as pollution. This is accomplished in the following ways:

(1) All conveyors are covered to minimize fugitive dust;

(2) The use of stacking tubes for coal pile minimizes fugitive dust from free-falling coal;

(3) Coal is drawn into the plant and silo conveyors by underground feeders, equipped with water sprays to minimize dust;

(4) The unit train loadout is within an enclosed area, and water sprays are available if necessary to reduce dust;

(5) Roads are paved and/or watered as necessary to minimize dust:

(6) Drainage controls are maintained to prevent contaminated water from the disturbed area from leaving the permit area.

Water Management Facilities

The process water system for the preparation plant is designed so that under normal operating conditions no waste water is discharged and makeup water is added only to replace absorption losses of water into the coal and refuse. A six-inch pipeline from a pumping station at the Price River is the primary water supply. This pipeline, as well as the secondary makeup water source (the sedimentation ponds) feeds a collection sump housed on the northeast corner of the site. (See Plate 5-2) From there water is then drawn on demand into the prep plant.

Sewage System

There are two (2) wastewater disposal facilities at Savage Coal Terminal (See Plate 5-2). Both sites are of the septic tank-drainfield type and each is approved by the Utah Health Department.

Storm Runoff and Sedimentation Control

Sedimentation ponds provide for collection and treatment of surface water runoff from all disturbed areas at the sire. Water control facilities are shown on Plate 5-2 and further described in Chapter 7.

Undisturbed Flow Diversions

Overland runoff from areas west and northwest of the Savage Coal Terminal site is intercepted by a diversion ditch which carries the runoff northeasterly around the site, emptying into a drainage ditch leading northwards away form the site. Shallow groundwater flows moving toward the site from the west and the north are intercepted by a buried perforated pipe which carries the flows around the west and north edge of the site to a sump (housed on the northeast corner of the site, see Operations Map) where it can then be piplined to the Price River. These facilities are important to the entire water management system at the Savage Coal Terminal, but because they are simply diversions of off-site flows, no UPDES permitting of the discharges is required.

Sedimentation Ponds

All disturbed area surface runoff up to the 10-year, 24-hour storm level is collected in a series of incised impoundments connected by spillways and drawdown pipelines. The lowermost pond (No. 6) is equipped with gravel filter dikes, an open channel spillway, and a 6-inch steel drainpipe connecting the pond to the nearby prep plant makeup water line. The gravel dikes and drain pipe provide for useful return of cleaned surface water to the preparation plant, thereby minimizing off-site discharge from the sedimentation ponds. Issuance of UPDES discharge permit by the EPA and Utah Health Department has established the open-channel spillway of pond No. 6 as UPDES Outfall No. 001.

Power Supply and Transmission Lines

The primary electrical service for the Savage Coal Terminal is from a 44.5k V transmission line owned and operated by Utah Power and Light Company. This HVTL skirts the north and west edge of the property and lies within the permit boundary on a utility easement.

A 12.5k V overhead line extends from the northeast corner of the property to the substation adjacent to the coal processing plant (see Plate 5-2).

A 12.5k V overhead distribution line extends from the west edge of the property to the shop/lab/warehouse facility.

Various lower voltage underground distribution lines extend from the substation to the truck dumps, stacking tubes, etc.

Operations Plan

Plant Processing System

Raw coal will be fed into the plant wash box via the existing feed conveyor. -1/4" material will be separated prior to washing, and conveyed to the 2 x 0 clean coal pile west of the plant. It should be noted this will include the majority of the minus 28 mesh material which is to be later separated in the settling ponds. Refuse will be separated from the coal and placed in the refuse bin for loadout. The clean coal will continue through the plant systems for sizing and drying, with the final, clean product being stockpiled on the north side of the plant. Residual minus 28 mesh material from the washing cycle will be pumped to the settling ponds where the solids are settled out and the process water is clarified and returned to the plant wash cycle.

Washed Coal System

The washing cycle will operate in the same manner as the previous plant operation, except there will be no static thickener for removal of fines and water clarification. Minus 1/4" material will not be washed. As the +1/4" product is washed, only the residual minus 28 mesh material still adhering to the larger product is pumped to the series of settling ponds constructed northeast of the main office building. The fines will be settled in these ponds, and the clarified water will return to the plant in a separate line for reuse in the washing cycle. A dual set of ponds have been constructed as shown on Plate 5-2. When one set of ponds become full of settled fines, the valves can be switched to the other set of ponds, allowing the previous set to be cleaned.

It should be noted that the ponds are constructed in such a manner as to prevent inflow from site runoff, and will not be part of the sedimentation and drainage control system for the site. The ponds are incised; however, they are also be surrounded by a raised berm to prevent runoff inflow, as shown on Plate 7-6. The settling ponds provide the same function as the previously operated static thickener, and still allow for the plant wash cycle to operate as a closed-loop circuit with no discharge except in the event of an emergency. If such an emergency should occur, any discharge from the plant or settling ponds would be contained by the sedimentation ponds on site.

The -28 mesh coal slurry to be settled in the ponds will be pumped to the ponds at a rate of approximately 25 gpm, with a projected maximum amount of -28 mesh material of 1 ton per hour. The material removed from the settling ponds during cleaning will be treated as a coal product and blended in with coal shipments, rather than being disposed of as refuse.

When one set of ponds become full of settled material, the valves will be switched to use the adjacent set of ponds, while the full set is allowed to dry and be cleaned. Cleaning will be accomplished by a trackhoe, loader or dozer, or a combination of equipment. Actual equipment utilized for cleaning will depend on availability and conditions at that particular time; however, all pond cleaning operations will be conducted to minimize damage to the ponds and to minimize impacts to the environment.

It should be noted that the ponds are constructed with raised berms all around as shown on Figure 5-13. Runoff from the undisturbed area west of the ponds will flow into the undisturbed diversion ditch UD-1. Runoff from the disturbed area around the ponds, as well as from the material cleaned from the ponds will flow to the existing disturbed area collection ditch CD-6 and to the sediment ponds, as shown on Plate 7-2.

The material removed from the ponds will be windrowed on the northwest side of the ponds or trucked to a coal storage area for drying. Once the material is dry enough to handle, it will be taken by a front-end loader to the 2 x 0 clean coal pile west of the plant. The proposed drying area is considered part of the overall coal stockpile area in the air quality approval order. It should be noted that, since the minus 1/4" material is not washed, the only minus 28 mesh material settled in the ponds will be the residual material adhering to the larger size washed product. As a result, the settling ponds will very likely not need cleaning more than once a year.

The details for the proposed settling ponds are shown on Plate 7-6 and Plate 5-2. The ponds have a total capacity of 11.11 acre feet and therefore do <u>not</u> meet any of the criteria of 30 CFR 77.216(a).

The ponds were constructed under the supervision of a registered professional engineer. The pond construction was monitored and inspected by the P.E. during construction, and certified upon completion, to ensure compliance with performance standards. The ponds will be inspected by a qualified individual at least quarterly, and certified with other impoundments annually. The ponds will be checked and maintained on a regular basis to ensure they operate in a safe, efficient manner. Maintenance may include cleaning, drainage control and erosion control.

The settling ponds have a total storage capacity of 11.11 acre feet. Only 2 of the 4 ponds will be used at one time, reducing the active water storage capacity to 5.56 acre-feet. The ponds are approximately 95% incised, with only a small portion of the dam above ground level. This would leave only 0.278 acre-feet of potential water release in the event of a failure of the ponds. This water would flow to the disturbed ditch CD-6 and into Ponds 1, 2, 3 and 6. The wash plant will contain a maximum of 23,500 gallons, or approximately 0.07 ac.ft. of water at any given time. In the event of a failure, at least 10,000 gallons of this water would remain in the plant in 2 below-floor sumps, with the balance of approximately 13,500 gallons, or 0.04 acre feet of water going to Ponds 1, 2, 3 and 6. This amount added to the maximum potential release from

the ponds, will total 0.319 acre feet, or approximately 0.012 ac.ft. less than the excess pond capacity. Therefore, the ponds would safely contain a worst case discharge from both the settling ponds and plant along with the runoff and sediment from a 10-year, 24-hour precipitation event. The sedimentation ponds have previously been shown to present no significant risk of harm to the environment or public health; therefore, since the proposed settling ponds would flow to and be contained by, the sediment ponds, they also present no significant risk of harm to the environment or public health.

Non-Washed Coal System

Contract coal from various customers is received in double trailer bottom dump and rear dump highway trucks. This coal may be shipped as received, or crushed and screened as necessary. Facilities used for this operation include truck dumps, transfer belts, stacking tubes, and a reclaim belt and tunnel.

Loadout System

The loadout silo is totally enclosed, and will contain 10,000 tons of coal for loading. Unit trains of up to one hundred 100-ton cars are brought into the property, around the track loop and into the base of the silo. Loading of the train is controlled by 2 hydraulic operated gates and chutes. Trains are then loaded out at a rate of 5,000 to 7,500 tons per hour.

Coal Handling

The Savage Coal Terminal facility has the capability and approval for shipping up to 10.0 million tons per year.

Signs, Fences and Gates

The main access road entrances to the site are marked with a permit identification sign (Figure 5-1) identifying the name, operator, and current operating permits. Other signs encountered on the site include perimeter boundary markers, soil stockpile signs, vegetation reference area signs, and MSHA-required refuse area disposal signs. (Figures 5-1 and 5-2.)

A three-strand wire fence encircles the quarter-section site. One vegetation reference area is separately fenced with a 3-strand barbed wire fence. Locked gates secure the main access to the site during non-operating hours.

Savage Services Corporation will install and maintain signs or markers required during the activities to which they pertain, or until bond release.

Safety, Fire Protection and Security

Savage Services Corporation Safety Department personnel routinely inspect all phases of the operation for compliance with Mine Health Safety Administration (MSHA) safety standards.

Fire protection meets or exceeds all MSHA standards. Fire protection maps are posted on each floor which designates locations of fire extinguishers and escape routes. The plant is also equipped with a hydrant system and strategically located firehoses.

Safety during non-operating hours is accomplished by the locked main access gates.

Operating Schedule and Employment

The Savage Coal Terminal operates two (2) shifts/day and the third shift is a scheduled maintenance shift. The operation is scheduled 240 days per year.

Three (3) salaried and seventeen (17) hourly employees currently operate the facility.

511.200. Potential Impacts and Protection

Upon completion of operations at Savage Coal Terminal, final reclamation work will commence. Reclamation efforts will be directed to recreating the pre-disturbance land use which was small mammal and songbird habitat.

This will be achieved by use of an acceptable seed mixture with shrubs and grasses.

Projected Impacts of Mining on Current and Future Land Use

Surface disturbance will be limited to what is necessary for operations at Savage Coal Terminal. Future disturbance will consist mainly of areas needed for additional coal storage areas. Operations have not affected public facilities or roads and are not projected to at the present time.

Control Measures to Mitigate Impacts

Based on the boundaries of the present surface disturbance, no public parks or historic places will be impacted by operations so mitigation measures need not be discussed here. A further discussion of Cultural Resources may be found in Chapter 4.

Protection of Human Values

As discussed in Chapter 4, there are no sites currently registered on or proposed for the National Register of Historic Places. Also no known archaeological sites are known to occur in the area.

Preservation of Soil Resources and Projected Impacts of Mining on Soil Resources

Soils of Savage Coal Terminal were mapped and analyzed in July, 1980. At that time natural occurring soil bodies were distinguished from disturbed land fill. The purpose of the survey was two-fold; (a) to identify soils and their stripping depths for salvaging and suitability prior to additional disturbance and (b) to determine the amount of topsoil available for final reclamation.

Most of the disturbance at Savage Coal Terminal occurred prior to enactment of P.L. 95-87 or the Utah Interim Program that established regulations for salvaging topsoil. Soil disturbance is displayed on the Soils Map, Plate 2-1, where areas mapped as disturbed land fill constitutes roads and areas for which no topsoil was salvaged.

The current plans are to disturb additional land only as it becomes necessary for coal storage. Areas that may be disturbed are presented on Plate 5-1. Prior to disturbance, suitable topsoil and subsoil will be stripped and stored in their respective piles until needed for permanent reclamation.

Due to the fact that topsoil was not salvaged for areas disturbed prior to the reclamation laws adopted in 1978, it becomes necessary to evaluate a substitute material for final reclamation. The chemical and physical analysis from the disturbed land fill indicated the material has a poor rating as topsoil material (see Chapter 2, Soil Resources). However, since no other topsoil materials exist in the immediate vicinity of disturbance, Savage Services Corporation proposed the use of disturbed land fill as a substitute for topsoil in final reclamation (see Chapter 2 for justification).

Control Measures to Mitigate Impact to Soil Resources

Disturbed areas will be protected to prevent excessive erosion of soils on disturbed sites. These areas include pond embankments, diversions, soil piles, and selected areas no longer used for everyday operations.

Protection of Vegetative Resources

A reclamation plan has been designated which will establish on all areas disturbed by surface operations and facilities a diverse, effective and permanent vegetative cover which will be capable for supporting the uses which the land was capable for supporting before mining. This plan is fully described in Section 540.

Areas to be planted will be "roughened" by tilling (or other means) to help hold the seeds in place. The seed mixtures, found on Tables 5-1, 5-2 and 5-3 will be spread either by drill seeder or hydroseeder. Mulch will then be applied at a rate of 2,000 pounds per acre either by machine crimping with a disc or stabilization onto the surface with a tackifier. The revegetated area will be monitored and if success appears unlikely, alterations will be made until revegetation is successful.

All disturbed lands, will be seeded or planted to achieve a permanent vegetative cover of the same seasonal variety native to the area of disturbed land.

Mitigating Measures to be Employed to Reduce Impacts on Vegetative Resources

Vegetation resources will be disturbed only as necessary for additional storage area. Surface disturbance will be conducted immediately prior to the need for additional area. Upon completion, all disturbed areas will be reclaimed to return vegetation to these areas as described in Section 540.

Monitoring Procedures - Reference Areas, and Revegetation

The reference areas have been established at the Savage Coal Terminal.

The location of the reference areas are shown on Plates 5-2 and 3-1.

The shadscale (or upland) reference area is 2.0 acres in size. It is located within and adjacent to the southwest corner of the permit boundary. The reference area represents the shadscale phase of the salt desert community, which is the typical upland vegetation at Savage Coal Terminal.

A second reference area has been established to represent the lowland areas of the site. This reference area is located in the undisturbed area north of the No. 1 Truck Dump.

The upland reference area is fenced, since it is located near the county road, and outside the main property gates. The lowland area is not fenced; however, corners are marked, and it is located in an undisturbed and controlled access area of the site.

Details on reference areas can be found in Section R645-301-321.100.

Protection of Fish and Wildlife

As an initial part of the fish and wildlife study, open file data and wildlife range maps available from the DWR Regional Office in Price, Utah were reviewed. Study methods were discussed informally with the DWR in Price, Utah, in September, 1980. The final reclamation seed mixture will consist of species that are adapted to onsite conditions and are of known value to wildlife for cover, forage, or both.

Potential Impacts on Fish and Wildlife

As discussed in Chapter 3, the Savage Coal Terminal contains limited wildlife habitat. The wildlife that does occur on the site consist mainly of small mammals and songbirds. These species appear to be unaffected by on-going operations as compared to larger species of birds and mammals that are more furtive in nature. At the time of decommissioning it is most likely that wildlife inhabiting the surrounding areas will quickly re-inhabit Savage Coal Terminal.

Mitigation and Management Plans

Since Savage Coal Terminal is an existing operation, wildlife management measures have been designed to prevent additional impacts from continuing operations. This will be achieved in the following ways:

(1) Limiting the amount of disturbance to what is necessary for on-going operations and refuse disposal.

(2) Preventing hunting or harassment of wildlife in the permit area.

(3) "Employee awareness" programs will specifically inform mine personnel of especially sensitive periods (e.g., the nesting of raptors, snake dens, etc.).

These policies will enhance wildlife usage of the site during operations and help facilitate the rapid return of the site to wildlife habitat after decommissioning.

Protection of Air Quality

The air quality at Savage Coal Terminal will be protected through implementation of control devices such as covered conveyors, water sprays to minimize wind erosion from coal piles and dust in reclaim tunnels, water trucks and chemical dust suppressants to control emissions from unpaved roads and coal piles, silo enclosures, and vibrating feeders for the pile load-in area.

Projected Impacts of Mining Operation on Air Quality

Impacts from dust emissions at Savage Coal Terminal will be localized close to the source of emission. Most of the emissions are anticipated to be composed of large-sized particles grater than 10 micrometers, which settle out within a half mile of the emission source. The large particles do not produce any health effects since they are not inhalable or respirable. Since most light scattering is caused by micron-sized particles, little impact on visibility is anticipated from dust emissions from the Savage Coal Terminal processing facilities. Most of the air quality impact from facility emissions, if any, will be generally confined to the plant site.

Mitigating Measures to be Employed to Control Air Pollutants

Since emissions from unpaved roads compose the largest source of particulate emissions at Savage Coal Terminal, paving, adequate watering of the road surfaces, proper road application of chemical dust suppressants on an as needed basis, and vehicular speed controls are appropriate mitigation measures to be employed.

Air Quality Monitoring Plan

Particulate matter is the only air pollutant which might degrade air quality at the plant site. The particulate matter is predominantly fugitive dust. Increases in concentrations of other pollutants such as sulfur dioxide, nitrogen oxides, carbon monoxide, and photochemical oxidants are insignificant.

No air monitoring program is currently planned for the Savage Coal Terminal facility. The plant is considered to be a minor air pollution source by the Utah Bureau of Air Quality and no air monitoring has been required. Particulate emissions at the plant site are minor and are estimated to be less than 30 ton/year. Sources of this magnitude are generally considered insignificant by air regulatory agencies. Secondly, fugitive dusts from materials handling are predominantly large particles (greater than 10-30 um) which fall out rapidly due to gravitational settling. These dust particles will not impact air quality to any great degree at distances greater than one-half mile from a source.

Refuse Stability

Refuse piles are inspected regularly under MSHA requirements and construction procedures assure the long-term stability of the piles (see Section 536). No adverse impacts to human safety or environmental quality are foreseen. Should a slide occur which may have a potential adverse effect on public, property, health, safety or the environment, the company shall notify the Division immediately and comply with remedial measures required by the Division.

Waste Disposal Plans

Two (2) septic tank/drainfields serve the preparation plant and the office/shop/warehouse. All necessary county and state permits have been obtained for operation of these facilities.

511.300. Reclamation.

Complete reclamation plans are discussed under Section 540.

512. Certification.

512.100. All required maps in this plan have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer in the State of Utah.

512.110. N/A - This is a surface operation.

512.120. Surface Facilities and operations maps are certified.

512.130. Surface configuration maps are certified.

512.140. Hydrology maps are certified (see Chapter 7).

512.150. Geologic maps are certified (see Chapter 6).

512.200. Refuse pile, impoundments and primary road designs are certified.

512.210. N/A - There are no excess spoil plans for this site.

512.220. N/A - There are no durable rock fills planned for this site.

512.230. The refuse pile design is certified by a professional engineer experienced in such designs.

512.240. Impoundment designs use current, prudent engineering practices, and are certified by an experienced professional engineer according to R645-301-743.

512.250. Design and construction of primary roads are certified as meeting the requirements of R645-301-534.200 and R645-301-742.420.

512.260. The only variance from approximate original contour is the permanent refuse pile. Designs for this pile are certified.

513. Compliance With MSHA Regulations and MSHA Approvals.

513.100. N/A - There are no coal processing waste dams or embankments proposed for this site.

513.200. N/A - There are no impoundments or sedimentation ponds meeting the size of other qualifying criteria of MSHA, 30 CFR 77.216 (a).

513.300. N/A - There are no underground workings at this site.

513.400. Refuse piles have been designed and constructed to meet the requirements of MSHA, 30 CFR 77.214 and 30 CFR 77.215. MSHA has issued approvals and I.D. numbers for all refuse areas.

513.500. N/A - This is a surface operation.

513.600. N/A - There are no underground mines at this site.

513.700. N/A - This is not a surface mining operation.

513.800. A plan for extinguishing coal mine waste (refuse pile) fires is discussed in Section 536.

514. Inspections.

All required inspections, except quarterly impoundment inspections, are conducted by a qualified, registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

514.100. N/A - There are 2 topsoil piles and one refuse pile at Savage Coal Terminal. Each of these piles were constructed and inspected under the direction of a professional engineer, and are presently stable. The soil piles are temporary, and will be removed upon reclamation. The refuse pile is permanent, and has been and continues to be, inspected on a regular, quarterly basis. It should be noted that the refuse pile has been approved for removal for waste utilization; however, only a portion of the pile has been removed at this time. None of these piles meet the definition of Excess Spoil.

514.110. N/A - These piles do not meet the definition of Excess Spoil.

514.120. Refuse pile inspections are certified and made available to MSHA and the Division on a quarterly basis. These reports include appearances of instability, structural weakness and other hazardous conditions.

514.130. N/A - No drainage system or protective filter reports are required.

514.200. The refuse pile has been, and continues to be, inspected by a registered, professional engineer. See Figure 5-1 for Inspection Form.

514.210. The refuse pile is active; however, it receives only minor amounts of material from periodic ditch, culvert and sediment pond cleaning. Inspections are conducted on a quarterly basis.

514.220. Inspections are conducted on the refuse pile on a quarterly basis, whether any new material has been added, or not.

514.221. Although this is on the Inspection Form, no new foundation preparation is necessary for this existing pile.

514.222. N/A - There are no underdrains or protective filter systems associated with this pile.

514.223. Surface drainage controls are inspected quarterly.

514.224. N/A- The pile has not reached final configuration.

514.230. Refuse pile inspection reports are made available to MSHA and the Division promptly after each inspection. These reports include appearances of instability, structural weakness and other hazardous conditions.

514.240. N/A - There are no underdrains or protective filters associated with this pile.

514.250. A copy of each refuse pile inspection report is retained at Savage Coal Terminal.

514.300. There are a total of 9 impoundments at this site. Five are considered sedimentation ponds and 4 are settling ponds for the plant.

514.310. All impoundments are inspected on a quarterly basis by a professional engineer or specialist experienced in the construction of impoundments. Impoundments are also inspected and certified on an annual basis by a professional engineer.

514.311. Impoundments are inspected quarterly and certified on an annual basis. This will continue until removal of the structure or release of the performance bond.

514.312. Annual certified reports are submitted to the Division with the Annual Report for the Coal Terminal, as required. These reports include discussion of appearances of instability, structural weakness or other hazardous conditions, depth and elevation of impounded water, existing storage capacity, existing or required monitoring procedures and instrumentation and any other aspects of the structure affecting stability, such as erosion and inlet/outlet conditions.

514.313. A copy of all impoundments inspection reports are retained at Savage Coal Terminal.

514.320. N/A - There are no impoundments subject to MSHA, 30 CFR 77.216, at this site.

514.330. As indicated above, all impoundments are inspected at least quarterly by a professional engineer or qualified person.

515. Reporting and Emergency Procedures.

515.100. The Savage Coal Terminal is located on relatively flat land (less than 5% slope) and very little potential exists for a slide; however, in the event of such an occurrence, the following procedure would be followed:

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

515.200. All impoundments at Savage Coal Terminal are incised, and present little, if any, hazard; however, if a potential impoundment hazard is discovered, the following procedure will be followed:

"If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action." Emergency procedures and remedial action will be discussed with Savage Coal Terminal supervisors, and a course of action determined at that time. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately.

515.300. See 515.322 for procedures to be employed during a temporary cessation.

515.310. It is understood that Savage Services Corporation has an obligation to comply with provisions of the approved permit during temporary cessation.

515.311. N/A - This is a surface operation.

515.312. All surface facilities will be secured during a temporary cessation.

515.320. See Section 515.322.

515.321. N/A - This is a surface operation.

515.322. Whenever it is known that operations are to be temporarily ceased for more than 30 days, Savage Services Corporation shall submit to the Division a notice of intention to cease or abandon the operations, in accordance with R645-301-575.300 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 acres involved in the cessation, extent of sub-surface strata, 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.

516. N/A - This is not a Surface Mining Operation.

520. Operation Plan.

521. The Savage Coal Terminal receives, processes, stores and ships coal from various coal mines in the area. In general, coal is brought in by truck and dumped through 1 of 5 separate truck dump locations. The coal is then screened and/or crushed, washed if required, and conveyed into specific storage areas. When ordered, specific coal is withdrawn from the pile and loaded into the silo by conveyor. The coal is then loaded into a unit train at the silo, and shipped to the desired location.

The Savage Coal Terminal is operated under an approved Mining and Reclamation Plan, and has an excellent history of compliance with that plan and the R645 Regulation.

521.110. Previously Mined Areas.

521.110. This is a surface operation. Original disturbance on the site occurred in 1975 under Utah Power & Light ownership. The site was expanded under Swisher Coal Co. between October 1977 and April 1978. Some additional disturbed area was added after the Arco Coal Co. purchase in 1980.

Previous and present disturbance on the area are shown on Plate 5-1.

521.111. N/A - Surface operation.

521.112. This is not a surface mine; however, the extent of surface disturbance is shown on Plate 5-1.

521.120. Existing surface and subsurface facilities are shown on Plate 5-2.

521.121. See Plate 5-2.

521.122. See Plate 5-2.

521.123. See Plate 5-2.

521.124. See Plate 5-2 and 5-6.

521.125. See Plate 5-2 and 7-3.

521.130. Landowner and Right of Entry and Public Interest Maps are on Plate 1-1.

521.131. See Plate 1-1.

521.132. See Plate 1-1.

521.133. N/A - There are no operations within 100 feet of the right-of-way line of a public road, and there are no plans to relocate a public road.

521.140. Mine Maps and Permit Area Maps

521.141. See Plate 5-2.

521.142. N/A - This is a surface operation.

521.143. See Plate 5-2 and Section R645-301-536.

521.150. Land Surface configuration is shown on Plates 5-1 and 5-2.

521.151. See Plate 5-1. Pertinent maps are prepared and certified according to R645-301-512.

521.160. Maps and Cross Sections of the Proposed Features for the Proposed Permit Area are shown on Plate 5-2.

521.161. See Plate 5-2.

521.162. See Plate 5-2.

521.163. See Plate 5-2.

521.164. See Plate 5-2.

521.165. See Plate 5-2.

521.166. See Plate 5-2.

521.167. N/A - No explosive storage or holding at this site.

521.168. N/A - No air pollution collection or control facility.

521.169. N/A - No coal processing waste bank.

521.170. Transportation Facilities Maps are on Plate 5-2 and described in Section 511.100.

521.180. Support Facilities are shown on Plate 5-2.

521.190. Other relevant information requested by Division:

Permitted Acres	-	153.46 ac.
Disturbed Acres	-	132.50 ac.
Pre-Law Disturbance	-	77.20 ac.
Post-Law Disturbance	-	55.30 ac.
Ownership (Surface)	-	All Private

521.200. Signs and Markers.

All signs and markers will:

521.210. Be posted, maintained and removed by Savage Services Corporation;

521.220. Be of a uniform design that can be easily seen and read; be made of durable material; and conform to local laws and regulations;

521.230. Be maintained during all activities to which they pertain.

521.240. A typical mine identification sign is shown on Figure 5-1.

521.241. N/A - This is a surface operation.

521.242. Identification signs are placed at each point of access to the permit area from public roads. (See Plate 5-2).

521.243. See Figure 5-1.

521.244. Identification signs will be retained and maintained until after the release of all bonds for the permit area.

521.250. A typical perimeter marker is shown on Figure 5-2.

521.251. N/A - This is a surface operation.

521.252. The perimeter of the permit area is clearly marked. (See Plate 5-2). Perimeter signs and markers are placed around the permit boundaries as required.

521.260. N/A - There are no buffer zones associated with this operation.

521.261. N/A

521.262. N/A

521.270. A typical topsoil marker is shown on Figure 5-2.
All topsoil and subsoil piles are clearly marked with the signs.

522. N/A - This is a surface preparation and shipping facility.

523. N/A - No mining takes place at this operation.

523.100. N/A - There are no operations proposed within 500 feet of an underground mine.

523.200. N/A

523.210. N/A

523.220. N/A

524. N/A - There are no plans for blasting or explosives at this facility during the life of operation. Any blasting during reclamation activities will be performed by licensed, certified contractors and in accordance with local, state and federal regulations.

525. N/A - This is a surface preparation and shipping operation. No underground mining takes place here.

526. Plant facilities are described under Section 511.100 and 511.200. Reclamation is described in Section 550.

526.100. Mine Structures and Facilities.

526.110. The following is a list of structures that were constructed on the site prior to January 21, 1981:

Structure	Construction Begun	Construction Completed
Preparation Plant	10/77	12/78
Conveyors	10/77	4/78
Silo/Loadout	10/77	4/78
Shop/Lab/Warehouse	3/80	6/80
Power Line/Substation	10/77	4/78
Pumphouse	8/78	10/78
Scales/Scalehouse	2/78	4/78
Refuse Pile	12/78	On-Going
Railroad Loop	10/77	4/78
Roads/Parking Areas	10/77	4/78
Water System	10/77	10/78
Sewage System	3/80	5/80
Diversion Ditches	6/78	6/79
Sedimentation Ponds	6/78	6/79

526.111. See Plate 5-2.

526.112. See Plates 5-2 thru 5-5, 5-7, 5-8 and Plates 7-3 thru 7-6.

526.113. All of the above structures were in use at the time of the original permit application, and are still in use at this time. The structures were constructed, and have been maintained to meet the requirements of R645-301. This is evidenced by the fact that they have been reviewed, inspected and approved in the original and all subsequent permit renewals.

526.114. See Section 526.100.

526.115. N/A - There are no plans to modify or reconstruct any facilities at this time.

526.116. N/A - There are no plans to conduct operations within 100 feet of the right of way line of a public road or to relocate a public road.

526.200. Utility Installation and Support Facilities.

The majority of utility and support facilities for this operation were installed 20 - 30 years ago, and have been reviewed and approved by relevant agencies whenever required. See Section 511.100.

526.210. "All operations will be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines; and water and sewage lines which pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the Division.

526.220. Support facilities are operated in accordance with the permit issued for this facility, and in a manner which:

526.221. Prevents or controls erosion and siltation, water pollution, and damage to public or private property; and

526.222. To the extent possible using the best technology currently available - minimizes damage to fish, wildlife, and related environmental values; and minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions will not be in excess of limitations of Utah or Federal law;

526.300. Water pollution control facilities are described in Chapter 7 (Section R645.700) of this Permit.

526.400. See Section 511.200.

527. Transportation Facilities are described under Section 511.100.

527.100. See Section 511.100.

527.110. See Section 511.100.

527.120. See Section 511.100.

527.130. See Section 511.100.

527.200. See Section 511.100.

527.210. See Section 511.100.

527.220. See Section 511.100.

527.230. See Section 511.100.

527.240. If a road is damaged by a catastrophic event, such as a flood or earthquake, the road will be repaired as soon as practical after the damage has occurred.

527.250. N/A - No alternative specifications or steep cut slopes are planned for this operation.

528. See Sections 511.100 and 536 for details on coal and refuse handling.

528.100. See Section 511.100.

528.200. N/A - This is not a mining operation.

528.300. See Section 536.

528.310. N/A - No excess spoil is generated.

528.320. See Section 536.

528.321. N/A - There are no plans to return coal processing waste to underground workings.

528.322. See Section 536.

528.323. See Section 536 for complete fire fighting plans.

528.330. Handling and disposal of non-coal mine waste is discussed under Section 511.100.

528.331. See Section 511.100.

528.332. See Section 511.100.

528.333. See Section 536.

528.334. Any non-coal mine waste defined as "hazardous" under 3001 of the Resource Conservation and Recovery Act (RCRA) (Pub.L. 94-580, as amended) and 40 CFR Part 261 will be handled in accordance with the requirements of Subtitle C of RCRA and any implementing regulations.

528.340. See Section 536.

528.350. See Section 536.

528.400. Dams, embankments and other impoundments are discussed in Section 511.100 and in Chapter 7 (R645-301-700).

529. N/A - This is a surface operation.

530. Operational Design Criteria and Plans.

531. Operational designs and plans are discussed under Sections 511.100, 536 and Chapter 7 (R645-301-700).

532. Complete designs for sediment control are discussed in Chapter 7 (R645-301-700).

532.100. See Chapter 7.

532.200. See Chapter 7.

533. Complete designs for impoundments are discussed in Chapter 7 (R645-301-700).

533.100. There are no impoundments meeting the size or other criteria of 30CFR 77.216(a), or located where failure would be expected to cause loss of life or serious property damage. All impoundments at this site are incised.

533.200. See Chapter 7.

533.210. See Chapter 7.

533.220. See Chapter 7.

533.300. See Chapter 7.

533.400. See Chapter 7.

533.500. See Chapter 7.

533.600. N/A

533.610. N/A

533.620. N/A

533.700. See Chapter 7 (R645-301-700).

534. Roads are discussed under Section 511.100.

534.100. See Section 511.100.

534.200. See Section 511.100.

534.300. See Section 511.100.

535. N/A - This is a surface preparation and shipping facility. No spoil is generated at this site.

536. The refuse pile at Savage Coal Terminal is composed primarily of coal processing waste generated prior to 1984; however, a small percentage of the pile is made up of coal mine waste generated by the operations prior to ownership by Savage Services Corporation.

The primary use of the refuse pile at this time is for disposal of sediment from the cleanout of ponds, ditches and culverts.

The main refuse disposal area is approved to be removed and burned in the Sunnyside Cogeneration Power Plant, starting in the fall of 2000. The pile has been surveyed and found to contain approximately 684,000 cubic yards of material. As of 2007, only a relatively small amount of material has been removed from the east and west ends of the pile. The power plant has been utilizing waste material from another site; however, it is still anticipated that the Savage Coal Terminal refuse will be used in the future.

An alternative proposal has been made and approved to use the refuse as a B.T.U. resource recovery material. This is simply another form of waste utilization for the refuse, and provides Savage Services Corporation with an alternate method of removing the refuse pile and having it used beneficially. The details of the B.T.U. resource recovery plan are provided in Appendix 5-2. This plan is not intended to replace or supercede the original plan for the refuse pile removal, but merely to supplement the original plan. Having an additional or alternate plan will help ensure that the refuse is removed and used in an approved and beneficial manner.

The material will be removed over a period of 3-4 years, and the area will be utilized as a coal storage area through the operational life of the facility. When the area is no longer required for the operation, it will be reclaimed according to the approved plan.

Details on the refuse pile and plan for removal are found in Appendices 5-1 and 5-2 of this plan.

Although the pile is being removed periodically, it is still considered active since ditch, culvert and sediment pond cleanout material as well as other site cleanup material are disposed of in the pile. The following is the approved Coal Processing Waste Disposal Plan for this site.

Coal Processing Waste Disposal

Coal processing waste at Savage Coal Terminal was truck hauled from the preparation plant to the designated disposal site within the permit area. The design, construction and maintenance of the waste bank is under the supervision of a registered professional engineer. The refuse pile is approved by MSHA, and marked with an identification sign as shown in Figure 5-1.

The coal processing waste is the reject from the washing cycle used to clean and upgrade the coal from the Beaver Creek Coal Company mines in the Carbon-Emery County area. Coal was washed from the Gordon Creek #2 Mine (Castle Gate "A" Seam), Gordon Creek #3 Mine (Hiawatha Seam), and Huntington Canyon #4 Mine (Blind Canyon Seam). All of the seams were low-sulfur (0.5% to 0.8%). The reject is also low-sulfur, non-acid, and non-toxic. The attached analyses show the typical quality of the coal and the refuse product (Figure 5-3 and 5-4).

The wash plant has been idle since 1984; however, it was restarted during the fall of 2006. Equipment was replaced or upgraded within the plant as required. The coal to be washed under this restart plan is owned by another company, and the refuse generated by the washing cycle will be disposed of in their refuse pile.

At the present time, no coal processing waste is being deposited on the refuse pile from the plant. Materials from ditch and pond cleaning are periodically placed on the refuse pile.

The texture of the refuse material has been classified as "coarse", as indicated by the following typical screen analysis:

+4	-	5%
4" x 2"	-	5%
2" x 3/4"	-	15%
3/4" x 1/4"	-	20%
1/4" x 28m	-	25%
28m x 0	-	30%

Additional refuse analyses are provided in Appendices 5-1 and 5-2.

Based on the analyses, there is no apparent reason that the toxicity of the refuse product should change; however, if water analysis in the area should indicate a change in pH or other possible toxic levels after the refuse has weathered, additional sampling will be performed to check for acid-toxic levels in the refuse.

If the tests show an acid or toxic forming potential, the disposal material will be covered with 4 feet of non-acid, non-toxic material.

Site Inspection

The refuse banks are inspected under the supervision of a qualified registered engineer at least quarterly; this will continue until the bank has been graded, covered, and reseeded. Inspections include observations of any potential safety hazards, to assure that organic material and topsoil is removed before deposition and that construction and maintenance are being performed in accordance with the design plan.

If such inspection discloses a potential hazard, the inspector will immediately notify the regulatory authority of the hazard and the emergency procedures to be implemented.

Copies of the inspection findings are maintained and available for review on site.

Water Control Measures

The surface drainage from the refuse pile is carried by collection ditches sized to convey runoff from a 100 year-6 hour event, and deposited into a sediment pond (#5) downslope. The overflow (if any) from this pond is conveyed through an additional collection ditch to a final filtering pond and discharged into the same underground sump to be recirculated through the plant as washdown, sprinkler and roadway water. Slope protection is provided at the face of the refuse bank through the use of grading and berms along the top. Upon completion, the bank will be graded, covered with suitable plant growth material and revegetated. All earthlined collection and diversion ditches will be revegetated upon completion of construction.

The completed refuse pile is not designed to purposely impound water, but rather to drain the top and side slopes to properly sized structures which convey runoff to Pond 5; however, during the course of pile construction, minor undulations may exist temporarily due to the large surface area of the pile and the periodic nature of material deposition without the consistent import from the wash plant. These areas may impound small amounts of water for short periods of time.

The pile is regraded on a regular basis, and any such undulations will be graded out at least quarterly. The overall slope on the refuse pile will be maintained to provide positive drainage as shown in the plan.

Protection of water resources is accomplished through the use of sedimentation and filtering ponds and a system designed for no discharge from the permit area within a 10 year - 24 hour precipitation event.

Construction Requirements. The following is a general refuse disposal procedure employed at this site:

Preparation

(1) Remove vegetation and topsoil and place in uncompacted lifts of 2 feet or less on designated storage area.

(2) Remove lower soil to a depth as allowed by as ground conditions. This material will also be place in uncompacted lifts of 24 inches or less in a designated storage area.

Dumping

1. Refuse should be dumped on the extreme perimeter of the prepared area. Truckloads dumped should have three to five feet clearance from previous loads to allow spreading. Refuse will not be dumped beyond the perimeter or upon any unprepared area.

2. Continue dumping around perimeter until filled:

   a. If using more than one area, proceed to next prepared area and repeat above dumping procedure.

   b. If only using one large area begin dumping back at original point or as near as possible to this point.

Spreading and Compaction

1. Refuse piles should be knocked down and spread as soon as practical. Spread the refuse as thinly as possible to allow for more efficient drying. Moisture should be at 10% to 12% for effective compaction. The entire previously compacted pile area or prepared area may be used for drying if necessary.

2. Compaction should take place during spreading operation if possible. If refuse is too wet to compact, allow for air-drying and then proceed. Compact in layers not to exceed 24 inches, starting at the perimeter and working out. This will allow for the building of the height of the pile in a series of stable lifts. Compaction will be to 90% of maximum dry density. The pile will be graded and maintained in a manner to allow drainage and prevent water impoundment as per the plan on Plate 5-3.

Burning

Proper compaction and maintenance of the waste bank should prevent any combustion from occurring; however, in the event of a fire, the following plan will be followed:

The plant manager will be notified immediately. The operations manager of chief engineer will also be notified.

The plant manager will examine the fire area and determine its severity. He will then confer with the operations manager or chief engineer to determine the extinguishing method to be employed. The manager shall contact the regulatory authority and MSHA to discuss a plan for extinguishing the fire. In lieu of other suggestions or plans, one of the following two methods will be used, depending upon the extent of the fire:

1. Small area of heat or fire: with a small area, it will be best to smother the fire by hauling incombustible earth material only from a previously soil-stripped zone and spreading and compacting the borrow over the burning area to eliminate the air supply.

2. Large area of heat or fire: with an area grater than 100 feet x 100 feet, it will be necessary to begin removal of the burning material. The removed material will be spread in thin layers onto a soil-stripped area for extinguishing. This area will be within that proposed for refuse disposal and pre-stripped as per the plan. Water will be employed only if the spreading material is not sufficient to prevent further burning. Once a fire is extinguished, a layer of incombustible material at least eighteen inches thick will be placed over the burned material and compacted before any further waste deposition takes place over it.

Only the plant manager and operators or others designated by him will be allowed to participate in fire extinguishing procedures. All authorized persons will be familiar with the above techniques prior to working around a fire, and adequate safety measures will be employed to ensure the safety of the fire fighters and the public in general.

Burned Waste Utilization

It is currently not anticipated that any burned coal waste, other minerals, or refuse is to be removed from any disposal area. However, should this become necessary, a plan for removal shall be certified by a qualified engineer and approval obtained from the regulatory authority.

The Office of Surface Mining has completed a stability analyses using the Slope IV computer for worst case conditions at the Savage Coal Terminal which indicates a static safety factor of 1.98 (OSM Review Document, C.V. Spur Application, May 1981 (Figure 5-5). MSHA has reviewed processing waste disposal design and construction specifications and determined that the proposed piles present no safety hazard (Figure 5-6).

Soil Stockpiles

The locations of topsoil stockpile is shown on Plate 5-2. The majority of the material in the main topsoil pile was salvaged from areas shown on Plate 5-1 which were disturbed between May 1978 and December 1981. Additional stripped topsoil was added to the pile in 2002. This material came from the railroad loop area shown on Plate 5-2. It is not anticipated that additional stripping or soil salvaging operations will occur during the new permit term. Stockpiles will be vegetated to minimize wind and water erosion, with all runoff draining into sedimentations ponds.

536.100. See Section 536.

536.110. See Section 536.

536.120. See Section 536.

536.200. See Section 536.

536.210. See Section 536.

536.220. See Section 536.

536.230. See Section 536.

536.300. N/A - No Excess Spoil Fills.

536.400. N/A - No Impounding Structures from Coal Mine Waste.

536.500. Disposal of Coal Mine Waste in Special Areas.

536.510. N/A - No coal mine waste from outside a permit area is planned to be disposed of at this operation.

536.520. N/A - There are no plans to dispose of coal mine waste in underground workings.

536.600. N/A - There are no future plans to dispose of underground development waste at this site.

536.700. N/A - This is a surface operation with no plans to return coal processing waste to underground workings.

536.800. See Section 536. There are no plans for coal processing waste dams.

536.810. See Section 536.

536.820. See Section 536.

536.900. See Section 536.

537. Regraded Slopes.

537.100. N/A - There are no plans for steep cut slopes at this site.

537.200. N/A - This is a surface operation.

540. Reclamation Plan.

541. Contemporaneous Reclamation

At the present time it is not possible to project the life of the Savage Coal Terminal facility, as it may be used indefinitely. Therefore, only inactive refuse disposal areas may be reclaimed as the piles are completed. These areas will be covered with an appropriate amount of plant growth material. Seeding, fertilizing, and mulching will be performed simultaneous with placement of subsoil and topsoil.

541.100 When operations at Savage Coal Terminal are finally terminated, all surface facilities will be removed and the surface area graded (except the refuse disposal sites), topsoiled and revegetated. After revegetation efforts have been completed, all drainage structures, culverts, and diversions will be removed and the areas reclaimed.

Reclamation efforts, including backfilling, grading, topsoil replacement and revegetation shall occur as contemporaneously as practicable.

Seeding and planting will occur immediately after site preparation and during the first normal period of planting conditions.

Soil Removal and Storage

The soil survey conducted in July, 1980 distinguished disturbed soils from undisturbed soil mapping units (See Plate 2-1, Soils Map). Areas mapped as Disturbed Land were areas where the soils, vegetation, both were affected by operations. Disturbance of areas which now occupy roads and surface facility sites occurred prior to enactment of reclamation legislation so no topsoil was salvaged from these areas. However, soils underlying disturbance are considered to be in-place aside from the top several inches of coal fines, and compaction.

The undisturbed soil mapping units will have topsoil removed immediately prior to disturbance based on stripping depths that have been assigned to each soil type. The stripping depths were derived from soil physical and chemical analysis (see Section 8.5). Subsoil is that material which exist between the topsoil and the parent material.

Where chemical analysis substantiates, subsoil will be stripped down to the parent material.

The location of the topsoil piles that currently exist at Savage Coal Terminal are displayed on Plate 5-2. These stockpiles were placed on level ground and revegetated with the temporary seed mixture to reduced wind and water erosion. As additional topsoil and subsoil is placed on the respective stockpiles they are reclaimed contemporaneously with the first suitable growing season.

The present stockpiles are most likely expanded to their maximum size at this time. Materials from the stockpiles will not be moved until needed for final reclamation.

541.200 Final Abandonment

Upon final cessation of operations all surface structures and facilities for the operation will be removed. There are no plans to transfer any wells to other parties. The shallow monitoring wells located within and around the property has been sealed by filling them with cement or other inert sealing material. All salvageable materials will be recovered and removed for sale or re-use. Non-salvageable materials (concrete, gravel, etc.) will be placed to the extent possible in existing impoundment excavations and low areas as fill prior to final grading and stored on the berms of sedimentation ponds. Remaining material will be taken off site to an approved landfill. The schedule and cost of removal is detailed in Chapter 8.

541.300 N/A - This is a surface operation.

541.400 Disposition of Drill Holes

Thirteen observation (ground water monitoring) wells were drilled at Savage Coal Terminal (formally C.V. Spur) in the period 1980-1982. Nine holes were within the permit area, with an additional four holes drilled on adjacent farmland. By Division approval, all ground water monitoring wells were filled and capped as of July, 1999. Two new water monitoring wells were drilled in 2006. When no longer needed, these wells will also be filled and capped as described above.

Removal of Impoundments and Diversions

All sedimentation ponds and diversion ditches will remain in place until an effective vegetation cover has been reestablished to reduce suspended solids runoff from the affected areas.

The success of the revegetation will be monitored and measured. Once the success of revegetation is determined to be acceptable, all diversions and sedimentation ponds will be filled in first with the concrete rubble and gravel stored on the berms. See Chapter 7 for details of post-mining hydrology.

The berms around the ponds will then be pushed in and compacted to complete the backfilling. The diversions will then be removed by pushing the berms into the ditches.

These areas will then be prepared and planted in accordance with the revegetation plan. The ponds will be removed in numerical order (1, 2, 3, 5, 6); the diversions will be the last to be removed (D-1, D-2) to minimize the risk of a major precipitation event eroding the newly revegetated area.

Removal of Roads/Railroads

The roads required for access to the sedimentation ponds and diversions will be left in place until pond and diversion reclamation is under way. The roads will then be removed and reclaimed in the same manner. There are no plans to leave any roads at this property.

The loop track within the property belongs to Savage Services Corporation, and will be removed upon completion of operations. The spur track is the easternmost track running north-south, and is the property of D & RGW railroad, and will remain in place upon reclamation. The final configuration of the property is shown on Plate 5-6.

Reclamation of River Pump/Pipeline System

The pipeline system consists of 2 PVC pipes laid parallel in a trench approximately 30" wide for a distance of approximately 10,000 feet, from the Savage Coal Terminal pumphouse to the Price River. The lines are a 6" PVC which provides water from the river pump to the Savage Coal Terminal facility, and an 8" PVC line for discharge of ground water from the Savage Coal Terminal French Drain to the Price River. The river pump facility consists of a 6' diameter, perforated C.M.P. culvert placed vertically in a hole approximately 30' deep, and 20' wide, surrounded by drain rock to allow entry of water into the pipe. A concrete base and steel grating cover the pipe. A deep-well pump is mounted over the well and hooked to the 6" pipeline to the plant. A steel hinged building covers the well and pump for protection.

During reclamation, the pipelines will be removed and the area reclaimed according to the plan. The pumphouse, pump, grating, and 6' CMP well will be removed. The concrete will be broken up and dozed into the well hole, and the remainder of the hole will be filled in with existing material on site (originally taken from the hole). The pumphouse and pipeline area will be regraded to original contour and reseeded according to the plan, using the seed mix described in Table 5-4. The pumphouse area is a natural low spot, therefore, the reclamation will be in a small, non-draining area and no silt fence or additional runoff controls should be required. Sediment controls on the reclaimed pipeline area will be provided only if deemed necessary. The area is designated a Small Exemption Area with no required sediment control based on a Sed-Cad analysis.

The river pump/pipeline system is shown on Plates 5-7 and 5-8.

542 Narratives, Maps and Plans

542.100 Schedule of Reclamation

Upon completion of operations, the following approximate schedule will be followed for final reclamation. Time frames are approximated and may overlap, decreasing the overall time. The sequence of events may also be slightly altered. This procedure will begin within 180 days of termination of operations.

Procedure, Time Frame, Accumulative Time

Procedure	Time Frame	Accumulative Time	Time of Year
Remove Structures	44 Weeks	44 Weeks	Spring-Spring
Regrade Areas	18 Weeks	62 Weeks	Summer - Fall
Topsoil and Soil Placement	2 Weeks	64 Weeks	Fall - Winter
Seeding & Mulching	2 Weeks	68 Weeks	Winter (after 10/15)

* Removal of Sediment
  Ponds and Diversions 2 Weeks
* To be completed after the revegetation cover meets the standards described in Section 3.5.3.1.

Cost of Reclamation

Estimates of the cost of reclamation are detailed in Chapter 8, Appendix 8-1.

542.200 Backfilling and Grading Plans

With the termination of Savage Coal Terminal operations, the surface area will be graded, except refuse disposal sites. The post-mining topography and drainage for the refuse disposal areas is shown on Plate 5-6. Cross-sections of the reclaimed refuse disposal areas are shown on Plate 5-3. For the most part, reclamation backfilling and grading will be minimal since no overburden will be removed.

Areas to be backfilled will consist of the 5 ponds, diversions, and any other depressions that will act to trap water. In each case, the material to be used for backfilling is either stored adjacent to the structure in the form of berms or dams, or will be placed there prior to the backfilling (i.e. - concrete to be placed in the ponds). The entire disturbed area will be graded to the necessary degree to reach the configuration shown on Plate 5-6, Post Mining Topography and Drainage.

Recontouring

All final grading, preparation and placement of topsoil (where applicable) will be done along the contour to minimize subsequent erosion and instability.

Rills or gullies deeper than 9 inches in regraded areas will be filled, graded or otherwise stabilized and reseeded.

The proposed final configuration of this area is shown on Plate 5-6. This final recontouring is compatible with the surrounding terrain and the post-mining land use.

Terracing and Erosion Control

As a part of the final reclamation work, native hay will be placed on the side slope of the refuse disposal piles and crimped into the soil. Other organic mulches will be used with a tackifier on steeper slope areas where native hay cannot be crimped into the soil.

Soil Redistribution and Stabilization

On pre-law disturbed areas (see Plate 5-1) the disturbed land fill will be used as a seedbed material. Any material which has been contaminated by more than 50% coal or coal refuse will be removed. Areas with excessive rock (more than 50% or rocks greater than 12" diameter will not be utilized as a soil substitute but will be salvaged to be employed as rip-rap. The balance of the material will be ripped at a depth of 14" to 18" utilizing a D-6 or the equivalent crawler tractor on approximately 18" center to center spacing.

Note: The 50% coal contamination will be determined visually; however, if such areas are left, they will have coal % verified by laboratory analyses. Contaminated material will be disposed of on site.

Post law disturbed areas will have an average of 6" of topsoil respread onto the area. This material as well as the disturbed land fill will be scarified (disced or tilled) in areas of less than 20% slopes to reduce clodiness. On steeper areas (greater than 20% slopes), the area will be surface roughened by placement of gouges approximately 30" in diameter by 12" - 18" deep and 2' - 3' apart. Based on knowledge gained from topsoil stockpiles the surface roughening for water harvesting and seeding immediately after topsoil placement appears to be the best technology for establishing vegetation on these areas.

The redistributed topsoil will be random sampled on a basis of 1 composite sample per acre. The sample sites will be randomly located on a grid of the reclaimed area by numbering each grid from 1 to 100/acre and selecting numbers to sample from a random number table. The sites will be located on the ground and a 4" soil auger will be utilized to extract a 4" to 6" core of surface material for laboratory analyses. The sample will be labeled as to its location and shipped to a certified lab to be analyzed as to those parameters the regulatory agency requires at the time of reclamation.

Revegetation Plan

Soil Preparation

Prior to seeding soil samples will be taken from all areas to be reclaimed to determine appropriate fertilizer types and application rates from the soil analysis.

Seeding and Transplanting

Areas which have been disturbed during mining will be reseeded with either native species or a mixture of native and introduced species. Mixtures containing introduced species may be more efficient in establishing ground cover for preventing erosion and protecting topsoil since some may grow faster and produce cover more quickly than native species.

Presently, Savage Services Corporation has been granted permission to use the Seed Mixture in Table 5-1. This mixture contains some introduced species that the company feels may be valuable for reclamation of the site. By studying the effects of specific introduced and native species planted together on Savage Coal Terminal during temporary reclamation, the company will be able to design a permanent reclamation seed mixture most compatible with the site. At the present time, the permanent reclamation seed mixture consists of the species and rates found in Tables 5-2 and 5-3 for the upland and lowland areas, respectively. The mix in Table 5-4 will be used to revegetate the disturbed area on the Price River pipeline system. The revegetation plan for the Price River Well area also includes the planting of Sandbar Willows at a density of 150 per acre (to a distance of 200 feet from the river).

In most cases the post-mining topography will be gentle enough to drill seed along the contour. On steeper areas (greater than 4:1), a combination of hydroseeding and broadcast seeding will be utilized. Hydroseeding and broadcast seeding will be applied at twice the rate of drill seeding. Areas to be hydroseeded are shown on Plate 5-6, all other areas are to be drill seeded.

Seeding will take place as soon as practical after placement of topsoil and scarification or roughening. Success of the revegetation program will be determined by comparing the percent ground cover and shrub density on the reclaimed area with that on the reference areas described in Chapter 3. Success standards will be those required by the Division.

Establishment of acceptable shrub densities may be achieved either through the use of seed or by planting bare root or containerized seedlings.

Mulching

To protect newly reclaimed areas against erosion, drying, and frost heave, planted areas will be mulched following seeding. The type of mulch and method of application will vary depending on slope conditions.

On 3:1 slopes or less, wood fiber or hay mulch will be used. The application rate will be 1 ton per acre. Seed will be inspected by the State Department of Agriculture prior to use.

Slopes steeper than 3:1 will be hydromulched using wood fiber mulches or other commercial mulches at a rate of 2,000 pounds per acre which have been proven successful on other areas. Tackifiers will also be used at a rate of 120 pounds/acre on all areas hydroseeded to keep mulch in place. Hydromulch will be applied at a rate of 2000 lbs./acre for slopes between 2:1 and 3:1, and at a rate of 2500 lbs./acre for slopes steeper than 2:1.

Reclamation Management

The reclaimed area will be monitored closely to determine if maintenance is necessary for areas of soil erosion, weed control, pest control, reseeding of small areas and maintenance fertilization.

Soil erosion will be controlled through the use of mulch, chemical stabilizers, or other appropriate techniques. Gullies will be filled and stabilized. During revegetation, activities will be conducted parallel to the contour.

Bare patches of failed planting will be reprepared and planted. Where there is evidence of erosion, additional mulch, jute, or excelsior will be applied as needed to stabilize the area until vegetation can reestablish.

Attempts will be made to control noxious weeds. At present bindweed is present on and adjacent to the site. One year prior to reclamation, an inventory of the area will be conducted with the purpose of locating this noxious weed as well as all others listed on the state and county control program. Carbon County has a cooperative program wherein the county will spray noxious weeds when located, and in cooperation with the local land owners. It is the company's intent to work within the guidelines established by the county to control weeds both prior to and during the reclamation period.

Insect problems will be controlled with insecticides, or other appropriate methods. Savage Industries, Inc. will not use persistent pesticides unless approved by the regulatory authority. Grazing of revegetated areas by domestic livestock and wildlife will be restricted by fencing until vegetation is mature enough to maintain regrowth and control of erosion.

The success of revegetation efforts will be compared with an established reference area as shown on Plate 3-1 and described in Chapter 3. Reclaimed areas will be monitored utilizing methods approved by the division and will meet sample adequacy requirements. Both the reclaimed area and corresponding reference area will be sampled during the 9th and 10th year following reclamation. The monitoring schedule is as follows:

Monitoring Schedule

Year	Qualitative Sampling	Quantitative Sampling
1	X	
2	X	X
3	X	X
4	X	
5	X	X
6	X	
7	X	
8	X	
9	X	X
10	X	X

Schedule of Reclamation

Upon completion of operations at Savage Coal Terminal, the following approximate schedule will be followed for final reclamation. Time frames are approximate and may overlap, decreasing the overall time. The sequence of events may also be slightly altered. This procedure will begin within 180 days of termination of operations.

542.300. Post Mining Topography is shown on Plate 5-6.

542.400. See Section 541.400.

542.500. See Section 542.100.

542.600. See Section 541.400.

542.700. See Section 541.200.

542.710. N/A

542.720. N/A

542.730. N/A

542.740. See Section 541.200.

542.800. See Section 542.100 and Chapter 8.

550. Reclamation Design Criteria and Plans.

Each permit application will include site specific plans that incorporate the following design criteria for reclamation activities.

551. N/A - Surface Operation.

552. N/A - No permanent structures are proposed for this operation.

552.100. See Section 542.200.

552.200. N/A - There are no plans for permanent impoundments.

553. See Section 542.200.

553.100. See Section 542.200.

553.200. N/A - This is a surface processing and shipping operation - no spoil will be generated.

553.250 Refuse Piles.

553.251. See Section 542.200 and Plates 5-3 and 5-6.

553.252. See Section 542.200.

553.260. N/A - There are no plans to dispose of coal processing or underground development waste in mined-out areas.

553.300. See Section 542.200

553.400. N/A - No cut and fill terraces are proposed for reclamation.

553.500. N/A - There are no PMA'S, CMA'S or highwalls associated with this site.

553.700. N/A - This is not a mining operation.

553.800. N/A - This is not a mining operation.

553.900. N/A - Fills are not spoil or underground development waste.

560. Performance Standards.

Coal mining and reclamation operations will be conducted in accordance with the approved permit and requirements of R645-301-510 through R645-301-553.

TABLE 5-1
TEMPORARY RECLAMATION SEED MIXTURE

LIVE SPECIES	POUND OF PURE SEED/ACRE*
SHRUBS:	
Atriplex corrugata (Mat saltbush)	2.0
Atriplex gardneri var. cuneata (Castle valley clover)	2.0
Ceratoides lanata (Winterfat)	2.0
Atriplex canescens (Fourwing saltbush)	2.0
FORBS:	
Sphaeralcea coccinea (Scarlet globemallow)	1.5
GRASSES:	
Stipa hymenoides (Indian ricegrass)	4.0
Bouteloua gracilis (Blue grama)	1.0
Elymus elymoides (Bottlebrush squirreltail)	4.0
Pseudoroegneria spicata (Bluebunch wheatgrass)	7.0
Sporobolus airoides (Alkali sacaton)	0.5
TOTAL:	31.0
* Broadcast or hydroseeded.	
Drill seed at ½ above rates.	

TABLE 5-2
SEED MIX FOR THE SHADSCALE (UPLAND AREAS)

SCIENTIFIC NAME	COMMON NAME	PLS/Acre*	Seeds/Ft^2
SHRUBS			
Atriplex gardneri var. cuneata	Castle Valley saltbush	2.00	5.10
Atriplex confertifolia	Shadscale	4.00	5.88
Chrysothamnus nauseosus	Rubber rabbitbrush	0.30	2.75
Ceratoides lanata	Winterfat	4.00	5.05
FORBS			
Eriogonum inflatum	Desert trumpet	1.00	4.80
Helianthus annuus	Annual sunflower	4.00	5.33
Oenothera caespitosa	Evening primrose	0.30	6.20
Sphaeralcea coccinea	Globemallow	0.50	5.74
GRASSES			
Bouteloua gracilis	Blue grama	0.50	8.16
Elymus lanceolatus	Thickspike wheatgrass	2.00	7.07
Hilaria jamesii	Galleta	2.00	7.30
Sporobolus airoides	Alkali sacaton	0.20	8.03
Stipa comata	Needle-and-thread	3.00	7.92
Stipa hymenoides	Indian ricegrass	2.00	8.63
TOTALS		25.80	87.96

* Based on broadcast seeding methods.

TABLE 5-3
SEED MIX FOR THE GREASEWOOD (LOWLAND AREAS)

SCIENTIFIC NAME	COMMON NAME	PLS/Acre	Seeds/Ft^2
SHRUBS			
Atriplex confertifolia	Fourwing saltbush	4.00	5.88
Atriplex corrugata	Mat saltbush	3.00	4.13
Atriplex gardneri var. cuneata	Castle Valley saltbush	2.00	5.10
Chrysothamnus nauseosus	Rubber rabbitbrush	0.50	4.59
Sarcobatus vermiculatus	Greasewood	0.50	3.28
FORBS			
Eriogonum inflatum	Desert trumpet	1.00	4.80
Helianthus annuus	Annual sunflower	4.00	5.33
Oenothera caespitosa	Evening primrose	0.30	6.20
Sphaeralcea coccinea	Globemallow	0.50	5.74
GRASSES			
Bouteloua gracilis	Blue grama	0.30	4.90
Distichlis spicata	Saltgrass	0.50	5.97
Elymus cinereus	Gt. Basin wildrye	2.00	4.36
Elymus smithii	Western wheatgrass	1.00	2.89
Hilaria jamesii	Galleta	1.50	5.48
Sporobolus airoides	Alkali sacaton	0.10	4.02
TOTALS		21.20	72.65

* Based on broadcast seeding methods.

TABLE 5-4
PERMANENT RECLAMATION SEED MIXTURE
PRICE RIVER SYSTEM
(5.28 Acres)

Name	Acreage 1 Pounds PLS/Acre	Price/#	# Seeds/Pound	Total
Steambank Wheat Grass	5	$3.25	137,830	16.25
Tall Wheat Grass	3	$0.80	76,805	2.40
Alkali Sacaton	2	$3.00		6.60
Crested Wheat Grass Fairway	3	$1.20	319,660	3.60
Yellow Sweet Clover	2	$0.40	258,560	.80
Total	15			$29.65

Containerized of Bare Root Stock	Number Per Acre
Rubber Rabbitbrush	200 - $158 (@ .79 per plant)
Sandbar Willow	150 - $118
	$279/Acre
Fourwing Salt Brush Winter Fat Shadscale	May be utilized to supplement the shrub density as containerized stock depending on the success of the seeding effort.

TABLE 5-5
PROJECTED WATER CONSUMPTION

Use	Calculation Basis	Volume
1- Road Watering Dust Control	*1.20 gal/ton x 10MM ton/yr. = 12,000,000 gal/yr.	36.83 ac. ft./ yr.
2- Coal Washing	**2.5 gpm x 60 min./hr. 16 hr./day x 250 days/yr. = 6,000,000 gal/yr.	18.42 ac. ft./yr.
3- Bath House/Office	35 gal./day/person x 25 people/day x 250 day/yr. = 218,750 gal/yr.	0.67 ac. ft/yr.
	Total Projected Water Usage =	55.92 ac.ft./yr.

* Average usage over last 5 years.
** Projected make-up water for washing circuit.

I.D. SIGN

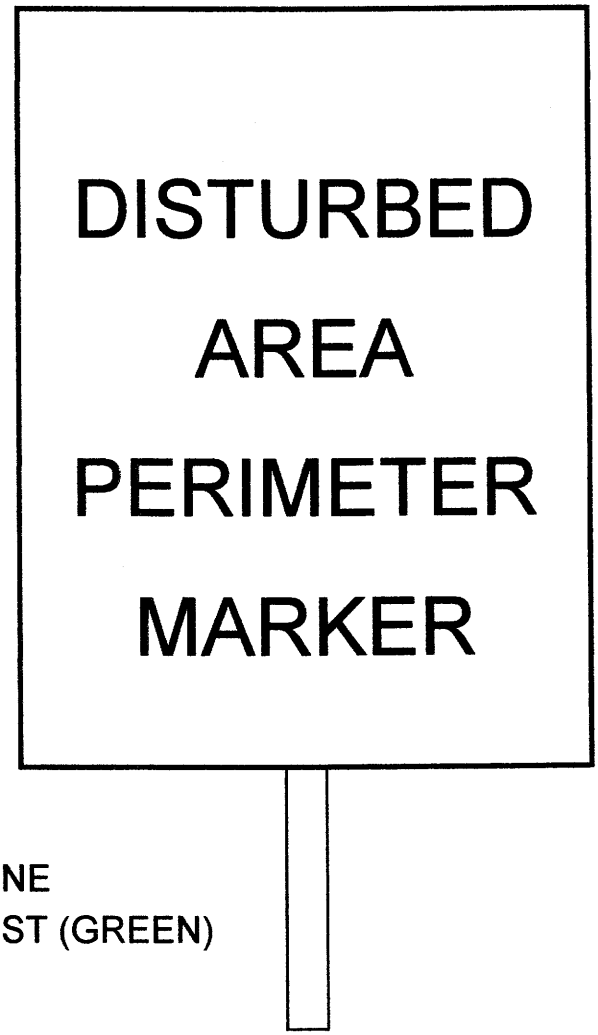
SAVAGE COAL TERMINAL
I.D.-42-01444
SAVAGE SERVICES CORPORATION
6340 SOUTH 3000 EAST, #600
SALT LAKE CITY, UTAH 84121
(801) 944-6600
PERMIT NO. C/007/022

REFUSE PILE SIGN

SAVAGE COAL TERMINAL
REFUSE FILL AREA
I.D. NO. 1211-UT-09-01444-01

FIGURE 5-1

PERIMETER MARKERS
STEEL SIGN (12" x 8")



48" STEEL LINE
T FENCE POST (GREEN)

TOPSOIL STORAGE MARKER
(18" x 12")

FIGURE 5-2

FIGURE 5-3

TYPICAL COAL ANALYSIS

NO. 7 MINE - CASTLE GATE "A" SEAM

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300
SINCE 1908
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
224 SO. CARBON AVE., PRICE, UT 84501
TELEPHONE: (801) 637-7540

BEAVER CREEK COAL CO.
P.O. Box 1378
Price, Utah 84501

February 6, 1989

Sample identification by

Beaver Creek Coal Co.

No. 7 Mine

Kind of sample reported to us	Coal
Sample taken at	C V Spur
Sample taken by	Beaver Creek Coal Co.
Date sampled	12/30/88
Date received	01/24/89

Analysis report no. 57-28459

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	8.63	xxxxx
% Ash	6.54	7.16
Btu/lb	12380	13549
% Sulfur	0.50	0.55

% Air Dry Loss = 6.93
Moisture, Ash-free Btu = 14594
Pounds of SO2 per 10^6 Btu = 0.81
Moist, Mineral matter free Btu * = 13333
(Based on as rec'd moisture)*
Pounds of Sulfur per 10^6 Btu = 0.41
% Residual moisture = 1.83

NEUTRALIZATION POTENTIAL 6 tons $CaCO_3$ / 1000 tons
ACID POTENTIAL (of pyritic sulfur) 3 tons $CaCO_3$ / 1000 tons

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Darlene Pennington

Manager, Price Laboratory

DP/rf

Original Copy Watermarked For Your Protection

FIGURE 5-4

REFUSE PILE ANALYSIS

COMMERCIAL TESTING & ENGINEERING CO.
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PLEASE ADDRESS ALL CORRESPONDENCE TO:
224 SO. CARBON AVE., PRICE, UT 84501
TELEPHONE: (801) 637-7540

BEAVER CREEK COAL CO.
P.O. Box 1378
Price, Utah 84501

February 6, 1989

Sample identification by

Beaver Creek Coal Co.

Refuse material

Kind of sample reported to us	Coal
Sample taken at	C V Spur
Sample taken by	Beaver Creek Coal Co.
Date sampled	12/30/88
Date received	01/24/89

Analysis report no. 57-28458

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	5.75	xxxxx
% Ash	30.96	32.85
Btu/lb	8483	9000
% Sulfur	0.62	0.66

% Air Dry Loss =	4.77
Moisture, Ash-free Btu =	13403
Pounds of SO2 per 10^6 Btu =	1.47
Moist, Mineral matter free Btu * =	12763
(Based on as rec'd moisture)*	
Pounds of Sulfur per 10^6 Btu =	0.73
% Residual moisture =	1.03

NEUTRALIZATION POTENTIAL 97 tons $CaCO_3$ / 1000 tons
ACID POTENTIAL (of pyritic sulfur) 10 tons $caCO_3$ / 1000 tons

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Darlene Pennington

Manager, Price Laboratory

DP/rf

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F-464

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

SINCE 1908

Reply to
139 South Main
Helper, Utah 84526

Phone: 801-472-3537

March 25, 1980

Mr. Herman Beckman
BEAVER CREEK COAL CO.
P. O. Box AU
Price, Utah 84501

ANALYTICAL REPORT

Acidity and pH were determined on a 1:1 w/v water extract prepared according to the procedures of U.S.D.A. Agriculture Handbook No. 60.

Separate portions of the sample were extracted following the procedures of the U.S. EPA as outlined in the Federal Register, Part IV, December 18, 1978. The extracts were then analyzed for barium, cadmium, chromium, lead, and silver by flame atomic absorption, for arsenic and selenium by hydride generation atomic absorption, and for mercury by cold vapor flameless atomic absorption.

The results of these analyses are presented in Table No. 1 and are reported in mg/l unless otherwise indicated.

If you have any questions concerning these analyses, please call.

Jack Blair

Jack Blair, Manager
Helper Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

WESTERN DIVISION MANAGER
LLOYD W. TAYLOR, JR.

PLEASE ADDRESS ALL CORRESPONDENCE TO:
139 SOUTH MAIN, HELPER, UTAH 84526
OFFICE TEL. (801) 472-3537

BEAVER CREEK COAL CO.
P. O. Box AU
Price, Utah 84501

Mar. 25, 1980

Sample identification by Beaver Creek Coal Co.
Refuse Elevator-Coarse

Kind of sample reported to us	Coal Refuse
Sample taken at	C. V. Spur
Sample taken by	Beaver Creek Coal Co.
Date sampled	12-04-79
Date received	12-05-79

Analysis report no. 57-3117 page 3

Table No. 1

Parameter	Concentration in mg/l
Acidity, as $CaCO_3$	15
pH	7.8
Arsenic	≤0.003
Barium	0.32
Cadmium	≤0.003
Chromium	≤0.02
Lead	≤0.09
Mercury, ug/l	0.12
Selenium	≤0.004
Silver	≤0.005

JB/cp

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.
Jack Blair
Manager, Helper Laboratory

Original Copy Watermarked For Your Protection

Charter Member

FIGURE 5-5

OSM SAFETY FACTOR CALCULATIONS

FOR

REFUSE PILE

* SLOPE STABILITY ANALYSIS *

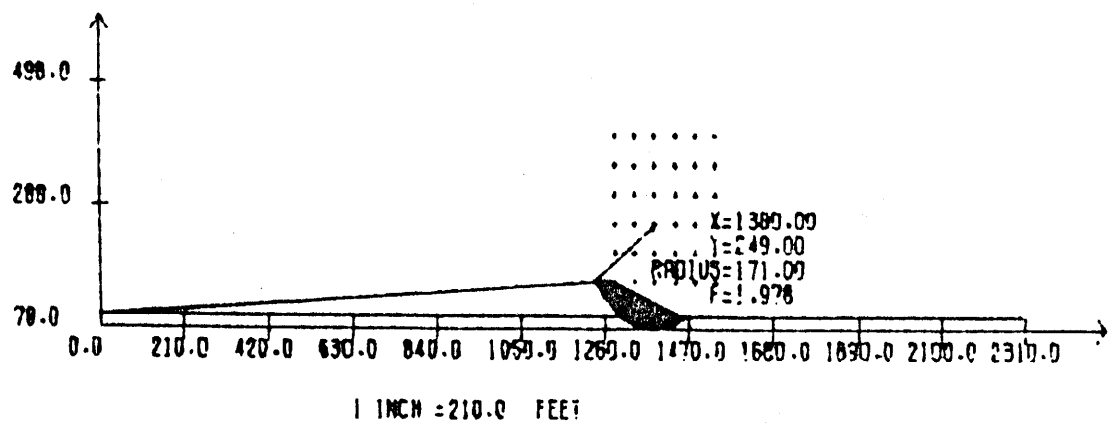
DATE: 12-19-80 RUN NUMBER: 5 PROJECT: WORST CASE CONDITION BEAVER CREEK COAL CO

SIMPLIFIED BISHOP=S METHOD

Figure - 1
OSM Stability Analysis
Processing Waste Pile, C.V. Spur

(1) UNIT WEIGHT =115.00 PCF
COHESION =100.00 PSF
FRICTION ANGLE =25.00 DEGREES

(2) UNIT WEIGHT =145.00 PCF
COHESION =500.00 PSF
FRICTION ANGLE =20.00 DEGREES



```
 80/12/19. 11.11.36.
PROGRAM   SLPOUT

1
          1         2         3         4         5         6         7         8
 12345678901234567890123456789012345678901234567890123456789012345678901234567890

 HEAD21112-19-80   5     WORST CASE CONDITION BEAVER CREEK COAL CO   112 11  1
 GRID  0
   0.01280. 50.0    5 149. 50.0    5  0.0  0.0   10 135.  40.  0.00.000 0.00  0.0

 GEOM  2
    0.1270.1445.2300.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.    0

  100. 160. 100. 100.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.
    0.2300.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.    0

  100. 100.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.
 SOIL  2
     115.00    100.00     25.00      0.00  COAL WASTE WORST CASE                10

     145.00    500.00     20.00      0.00  MANCOS SHALE WORST CASE              20

 POR4  2 WORST CASE PORE PRESSURE
    0.1140.1445.2300.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.    0

  100. 120. 100. 100.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.
    0.1140.1445.2300.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.    0

  100. 120. 100. 100.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.   0.
 CALC  0
          1         2         3         4         5         6         7         8
 12345678901234567890123456789012345678901234567890123456789012345678901234567890
```

For definition of key words and data input information, refer to Slope II Computer Program User's Manual S-10 available in the Earth Sciences and Geotechnical Branch, OSM, Region V.

FIGURE 5-6

MSHA LETTERS

FOR

REFUSE PILES

U. S. Department of Labor

Mine Safety and Health Administration
P.O. Box 25367
Denver, Colorado 80225-0367

Coal Mine Safety and Health
District 9

3 1

Charles Boyd Rhodes
Savage Industries Inc.
3321 Soldier Creek Road
P. O. Box 587
Wellington, UT 84542

RE: Savage Coal Terminal
Mine ID No.42-01444
Refuse Pile
ID No. 1211-UT-09-01444-01
Reassigned Identification Number

Dear Mr. Rhodes:

Our files show one(1) refuse pile, ID No. 1211-UT-09-0034. In order to update the files, the District Manager is reassigning the following identification number for the refuse pile.

NEW NUMBER	OLD NUMBER
ID No. 1211-UT-09-01444-01	ID No. 1211-UT-09-0034

Please change all markers to indicate the new number and refer to the reassigned identification number on future correspondence with this office.

Sincerely,

John A. Kuzar
District Manager

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225
Coal Mine Safety & Health
District 9

March 2, 1981

Dan W. Guy, P.E.
Chief Engineer
Beaver Creek Coal Company
P.O. Box AU
Price, UT 84501

Re: C. V. Spur Prep Facility, I.D. No. 42-01444
Site I.D. No. 1211-UT-9-0034
Refuse Pile Report

Dear Mr. Guy:

The refuse pile report submitted for the subject site has been reviewed by this office and will be maintained on file.

No further information need be submitted to this office regarding this site unless the site is determined to present a hazard by the District Manager, or at such time the site is to be abandoned.

Sincerely,

Harold E. Dolan
for John W. Barton
District Manager

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225
Coal Mine Safety & Health
District 9

March 19, 1981

Dan W. Guy, P.E.
Chief Engineer
Beaver Creek Coal Company
P.O. Box A.U.
Price, UT 84501

Re: C.V. Spur Prep Facility, ID No. 42-01444
Site ID No. 1211-UT-9-0033
Refuse Pile Report

Dear Mr. Guy:

The refuse pile report submitted March 5, 1981, for the subject site has been reviewed by this office and will be maintained on file.

No further information need be submitted to this office regarding this site unless the site is determined to present a hazard by the District Manager, or at such time the site is to be abandoned.

Sincerely,

for Donald E. Dolan
John W. Barton
District Manager

U.S. DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

Mailing Address:
P.O. Box 25367, DFC
Denver, Colorado 80225

Street Address:
730 Simms
Lakewood, Colorado

Coal Mine Safety and Health
District 9

October 2, 1979

Dan W. Guy, P. E.
Chief Engineer
Swisher Coal Company
P. O. Box A. U.
Price, Utah 84501

Re: C. V. Spur Preparation Facility
I. D. No. 42-01444
Temporary Refuse Fill Area No. 1, I. D. No. 1211-UT-9-0033
Refuse Dumping Site Area No. 2, I. D. No. 1211-UT-9-0034

Dear Mr. Guy:

Your letter of June 28, 1979, notifying this office of two (2) new refuse sites at the C. V. Spur Preparation Facility, has been received and the following identification numbers assigned:

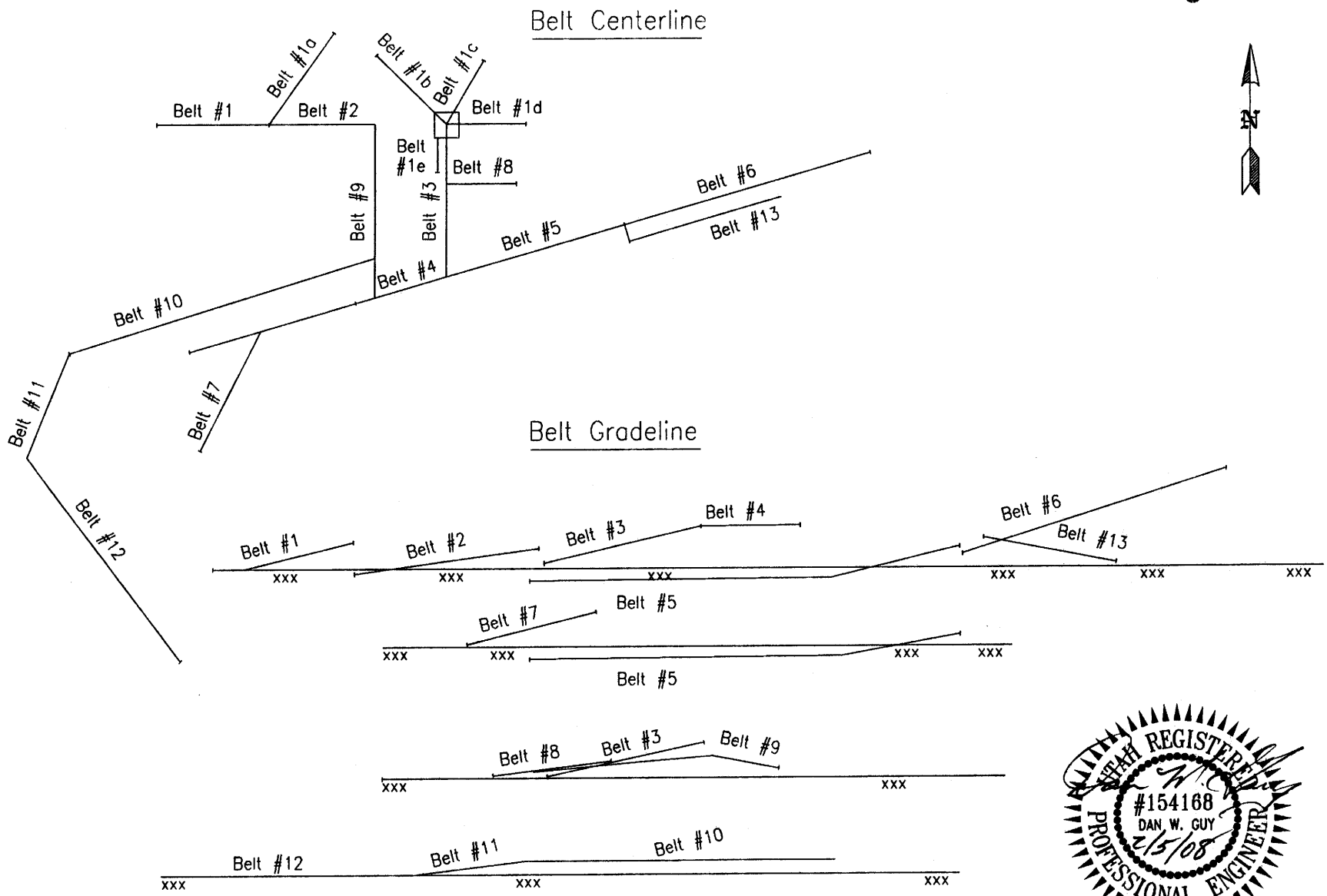
(a) Temporary Refuse Fill Area No. 1, I. D. No. 1211-UT-9-0033
(b) Refuse Dumping Site Area No. 2, I. D. No. 1211-UT-9-0034

Please note that Section 77.215-1, 30 CFR, requires an identification marker to be placed at each site, and Section 77.215-2, 30 CFR, requires a refuse pile report be submitted within 180 days of the date of this acknowledgement letter. Please refer to these two sections of Title 30 concerning the marker and report requirements.

Sincerely,

Harold E. Dolan
Supervisory Mining Engineer

Figure 5-7

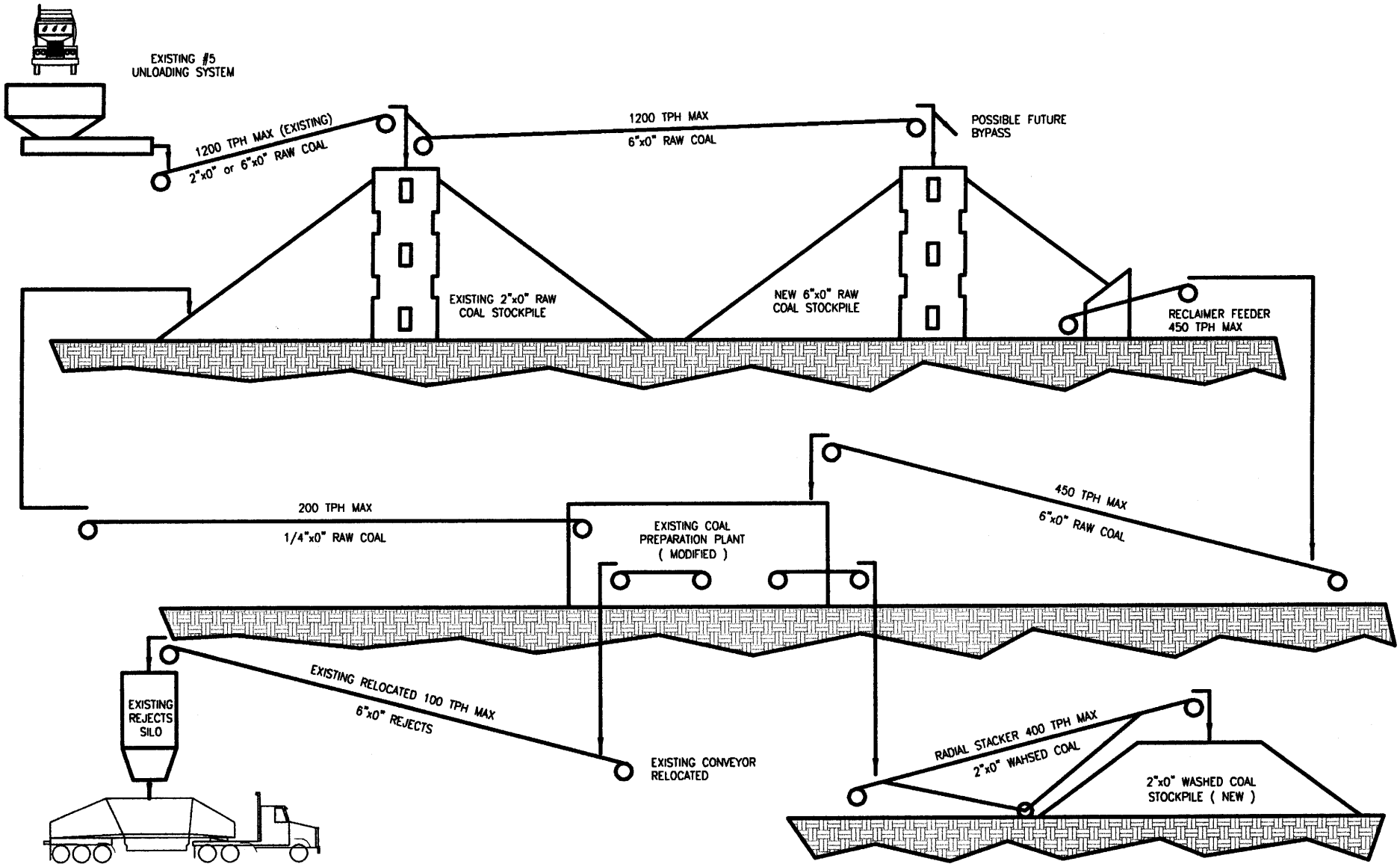


Savage Coal Terminal

Centerline and Grade of Belts

C.V. Spur 1"=300' August 2007

Figure 5-8



Savage Coal Terminal
Processing Flow Chart

C.V. Spur

Appendix 5-1

Proposed Removal of Main Refuse Pile

Savage Services Corporation
Savage Coal Terminal

Proposed Removal of Main Refuse Pile

I. Introduction

Savage Industries, Inc. has entered into an agreement with the Sunnyside Cogeneration Associates (SCA) to burn the refuse from the Savage Coal Terminal in their waste-coal fired production facility location in Sunnyside, Utah. This amendment is being submitted to provide details required for Division approval to remove and burn the coal waste material contained in the main refuse pile located at the Savage Coal Terminal.

II. General

The basic plan is to begin removal of the refuse material in August of this year. At that time, approximately 5000 tons of material will be placed in the permitted lay-down area at the Sunnyside Facility, to provide for a small back-up or surge area as needed. After that it is planned to haul approximately 450 to 600 tons/day of the refuse material directly to the power plant feed. This is intended to continue 7 days/week until the pile is removed and burned.

Removal of the refuse is proposed to start at the northeast corner of the pile, and continue toward the southwest until the entire pile is removed, as shown on Figure 1.

All environmental controls (i.e. - drainage, etc.) will be maintained throughout the removal process. There are no plans to reclaim the removal area in the near future, since this area will likely be used as a coal stockpile area for the life of the facility; however, it will be reclaimed per the plan when it is no longer required for the operation. A submittal has been made to OSM requesting a determination of the applicability of reclamation fees for this pile, along with information to support the request for a no value/fee determination. A ground control plan has also been submitted to MSHA for their approval of the removal of this pile. A sample location map and analyses are included as Figure 2 and Attachment 1, respectively.

III. Timing

As indicated above, refuse removal is proposed to start in August of 2000, and continue at the proposed rate of 450-600 tons per day until completed. At the projected rate, final removal of the pile will be completed in late 2004. The projected pile removal locations for each year are shown on Figure 1. It is possible that the removal process could be slightly accelerated if the power plant is capable of burning at a higher rate in the future; however, at this time the rates will be as proposed.

IV. Environmental Controls

The proposed method and direction of extraction allow for existing environmental controls (berms, ditches, culverts) to remain in place for approximately one year before they have to be simply relocated on the pile.

A. Hydrology

The main environmental controls for this pile consist of hydrologic protection in the form of ditches, berms and culverts. During the removal process, the existing ditches CD-13 and CD-7 will remain in place and continue to be maintained to the size required for runoff from a 100 year-6 hour event. The erosion protection berm on the top of the pile and the flex pipe (Culvert C-22) will remain in place as long as they can be properly operated. Once extraction approaches the berm and culvert, they will be relocated as shown on Figure 1. This will continue until the pile is eliminated. The operation and maintenance of existing hydrologic controls will therefore remain the same throughout the removal process, although specific drainage areas will be less and locations will vary with the reduction of the pile.

It should also be noted that all runoff will continue to go to Sediment Pond No. 5 as per the plan.

B. Vegetation

None of the refuse area has been resoiled or revegetated, with the exception of the small test plot on the southwest corner. This test plot has been in place for more than 10 years, and has been regularly monitored during that time. A further evaluation of this test plot will be made in 2000, and a proposal will be made after that time as to whether the test plot should be removed or relocated. This will be covered by a separate amendment.

C. Soils

No new removal of soils will be needed for this amendment. Existing soils stockpiles were taken from this area; however, since the refuse area will be used as a coal stockpile area, no soil replacement is planned until final reclamation.

D. Air Quality

The refuse pile is included in the present Air Quality Permit as a stockpile area. Since the site will remain as a stockpile area, no changes are needed to the plan. The actual impact on the removal will likely be positive, since the area covered by the refuse is likely larger than that which will be covered by a coal stockpile at any given time.

E. Reclamation

Since this is a disturbed area, it is planned to continue to use the site for needed coal storage area after the refuse is removed. Once the area is no longer required for the operation, it will be reclaimed according to the approved reclamation plan. The depth of soil replacement, treatment and seeding will be the same as that approved for the refuse area.

Attachment 1

Refuse Pile Analyses

Attachment 1

Refuse Pile Analyses

INCORPORATED
EFFECTIVE:
AUG 10 2000
CDE
UTAH DIVISION OIL, GAS AND MINING

COMMERCIAL TESTING & ENGINEERING CO.

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ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020
HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

November 5, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		COMPOSITE HOLES 1-7 1 BAG 47.00 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224583

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	10.51	xxxxx
% Ash	44.57	49.80
% Volatile	26.09	29.15
% Fixed Carbon	18.83	21.05
	100.00	100.00
Btu/lb	5923	6619
% Sulfur	0.53	0.59
MAF Btu		13185
Alk. as Sodium Oxide	0.75	0.84

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	10.51	xxxxx
% Carbon	33.90	37.88
% Hydrogen	2.47	2.76
% Nitrogen	0.65	0.73
% Sulfur	0.53	0.59
% Ash	44.57	49.80
% Oxygen(diff)	7.37	8.24
	100.00	100.00

INCORPORATED
EFFECTIVE:
AUG 10 2000
COE
UTAH DIVISION OIL, GAS AND MINING

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

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HUNTINGTON, UT 84528
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FAX: (435) 653-2436

November 5, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		COMPOSITE HOLES 1-7 1 BAG 47.00 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224583

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	64.64
Aluminum oxide	13.12
Titanium dioxide	0.54
Iron oxide	2.86
Calcium oxide	11.49
Magnesium oxide	2.63
Potassium oxide	2.09
Sodium oxide	0.31
Sulfur trioxide	1.11
Phosphorus pentoxide	0.17
Strontium oxide	0.02
Barium oxide	0.06
Manganese oxide	0.03
Undetermined	0.93
	100.00

Silica Value = 79.20
Base:Acid Ratio = 0.25
T_{250} Temperature = 2665 |F

Type of Ash = LIGNITIC
Fouling Index = 0.31
Slagging Index = xxxxx

INCORPORATED
EFFECTIVE:
AUG 10 2000
COE
UTAH DIVISION OIL, GAS AND MINING

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

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FAX: (435) 653-2436

November 4, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #1 4' 1 BAG 35.0 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224562

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	6.01	xxxxx		
% Ash	18.28	19.45		
Btu/lb	10525	11198	MAF	13902
% Sulfur	0.45	0.48		

INCORPORATED
EFFECTIVE:
AUG 10 2000
OOE
UTAH DIVISION OIL, GAS AND MINING

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

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ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020
HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

November 4, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #1 8' 1 BAG 67.75 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224563

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	9.03	xxxxx		
% Ash	56.47	62.07		
Btu/lb	4228	4648	MAF	12254
% Sulfur	0.34	0.37		

INCORPORATED
EFFECTIVE:
AUG 10 2000
OOF
UTAH DIVISION OIL, GAS AND MINING

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

F-465

TERMS AND CONDITIONS ON REVERSE

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

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SGS Member of the SGS Group (Société Générale de Surveillance)

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020
HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

November 3, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #1 12.5' 1 BAG 56.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224564

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	10.96	xxxxx		
% Ash	59.26	66.55		
Btu/lb	3717	4175	MAF	12481
% Sulfur	0.37	0.41		

INCORPORATED
EFFECTIVE:
AUG 10 2000
COF
UTAH DIVISION OIL, GAS AND MINING

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

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SGS Member of the SGS Group (Société Générale de Surveillance)

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020
HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

November 3, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #2 4' 1 BAG 42.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224565

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	15.90	xxxxx		
% Ash	38.29	45.53		
Btu/lb	6043	7185	**MAF**	13191
% Sulfur	0.61	0.72		

INCORPORATED
EFFECTIVE:
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UTAH DIVISION OIL, GAS AND MINING

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

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FAX: (435) 653-2436

November 3, 1999

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P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #2 8' 1 BAG 51.25 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224566

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	11.78	xxxxx		
% Ash	49.31	55.90		
Btu/lb	5125	5809	MAF	13172
% Sulfur	0.53	0.60		

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P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #2 15' 1 BAG 56.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224567

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	17.37	xxxxx		
% Ash	37.18	44.99		
Btu/lb	6056	7329	MAF	13323
% Sulfur	0.43	0.52		

INCORPORATED
EFFECTIVE:
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WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #3 4' 1 BAG 58.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224568

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	10.83	xxxxx		
% Ash	45.54	51.07		
Btu/lb	5782	6484	MAF	13252
% Sulfur	0.75	0.84		

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November 3, 1999

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P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #3 8' 1 BAG 64.25 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224569

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	13.81	xxxxx		
% Ash	47.91	55.59		
Btu/lb	5124	5945	MAF	13387
% Sulfur	0.67	0.78		

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P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #3 14.5' 1 BAG 56.75 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224570

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	13.26	xxxxx		
% Ash	40.85	47.10		
Btu/lb	6329	7297	MAF	13794
% Sulfur	0.93	1.07		

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November 3, 1999

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P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #4 4' 1 BAG 59.75 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224571

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	9.16	xxxxx		
% Ash	59.60	65.61		
Btu/lb	3542	3899	MAF	11338
% Sulfur	0.45	0.49		

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BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #4 8' 1 BAG 64.75 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224572

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	8.27	xxxxx		
% Ash	66.52	72.52		
Btu/lb	2689	2931	MAF	10666
% Sulfur	0.41	0.45		

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WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #4 14' 1 BAG 63.75 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224573

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	14.32	xxxxx		
% Ash	57.40	66.99		
Btu/lb	3515	4102	**MAF**	12427
% Sulfur	0.44	0.51		

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November 3, 1999

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P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #5 4' 1 BAG 54.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224574

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	9.19	xxxxx		
% Ash	42.80	47.13		
Btu/lb	6310	6949	MAF	13144
% Sulfur	0.53	0.58		

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November 3, 1999

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P.O. 587
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BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #5 8' 1 BAG 62.25 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224575

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	8.85	xxxxx		
% Ash	44.74	49.08		
Btu/lb	6235	6840	MAF	13433
% Sulfur	0.44	0.48		

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November 3, 1999

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WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #5 14' 1 BAG 68.0 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224576

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	9.96	xxxxx		
% Ash	61.70	68.52		
Btu/lb	3284	3647	MAF	11585
% Sulfur	0.32	0.36		

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November 4, 1999

SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #6 4' 1 BAG 61.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224577

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	6.79	xxxxx		
% Ash	20.11	21.58		
Btu/lb	10117	10854	MAF	13841
% Sulfur	0.62	0.66		

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November 4, 1999

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WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #6 8' 1 BAG 55.0 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224578

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	8.60	xxxxx		
% Ash	29.66	32.45		
Btu/lb	8242	9017	MAF	13349
% Sulfur	0.53	0.58		

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WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #6 14' 1 BAG 63.25 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224579

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	13.16	xxxxx		
% Ash	59.98	69.07		
Btu/lb	3260	3754	MAF	12137
% Sulfur	0.36	0.42		

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SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #7 4' 1 BAG 56.50 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224580

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	13.21	xxxxx		
% Ash	47.74	55.01		
Btu/lb	5148	5932	MAF	13185
% Sulfur	0.41	0.47		

INCORPORATED
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WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #7 8' 1 BAG 52.25 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224581

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	12.48	xxxxx		
% Ash	35.74	40.84		
Btu/lb	7162	8183	MAF	13832
% Sulfur	0.49	0.56		

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SAVAGE COAL TERMINAL
P.O. 587
WELLINGTON UTAH 84542
BOYD RHODES

Sample identification by

Kind of sample reported to us		HOLE #7 14' 1 BAG 64.25 LBS. EST. TOP SIZE 3"
Sample taken at	Savage Coal Terminal	
Sample taken by	Savage	
Date sampled	------	
Date received	November 2, 1999	

Analysis Report No. 59-224582

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	12.93	xxxxx		
% Ash	55.72	63.99		
Btu/lb	4034	4633	**MAF**	12866
% Sulfur	0.37	0.42		

INCORPORATED
EFFECTIVE:
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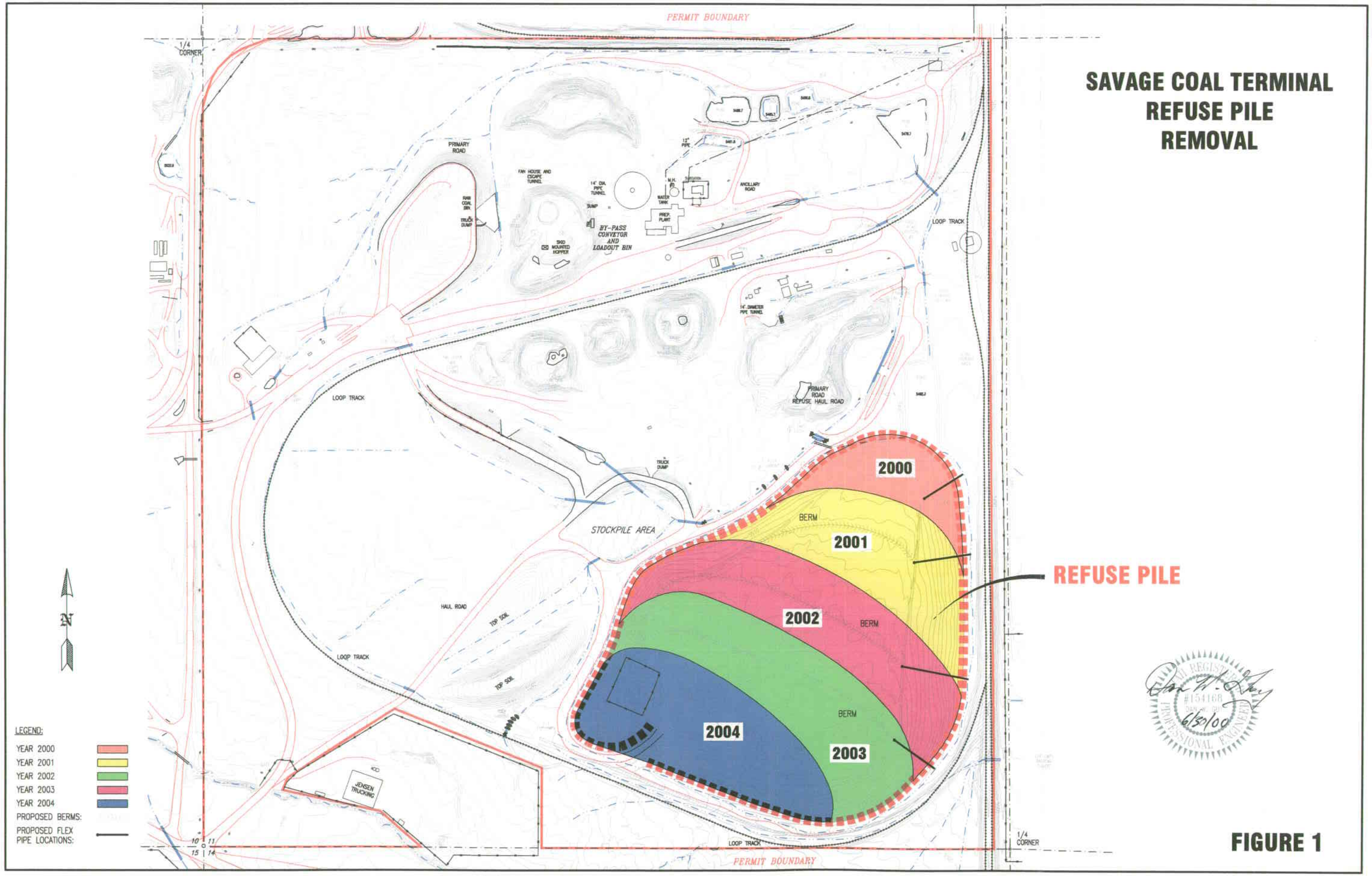

SAVAGE COAL TERMINAL
REFUSE PILE
REMOVAL
PERMIT BOUNDARY
1/4 CORNER
PRIMARY ROAD
FAN HOUSE AND ESCAPE TUNNEL
14' DIA. PIPE TUNNEL
SUMP
BY-PASS CONVEYOR AND LOADOUT BIN
SKID MOUNTED HOPPER
WATER TANK
PREP. PLANT
ANCILLARY ROAD
12" PIPE
LOOP TRACK
14' DIAMETER PIPE TUNNEL
PRIMARY ROAD REFUSE HAUL ROAD
TRUCK DUMP
STOCKPILE AREA
HAUL ROAD
TOP SOIL
JENSEN TRUCKING
2000
2001
2002
2003
2004
BERM
REFUSE PILE
N
LEGEND:
YEAR 2000
YEAR 2001
YEAR 2002
YEAR 2003
YEAR 2004
PROPOSED BERMS:
PROPOSED FLEX PIPE LOCATIONS:
10 11
15 14
#154168
6/30/00
PROFESSIONAL ENGINEER

FIGURE 1

SAVAGE COAL TERMINAL
REFUSE PILE
SAMPLE LOCATION
MAP

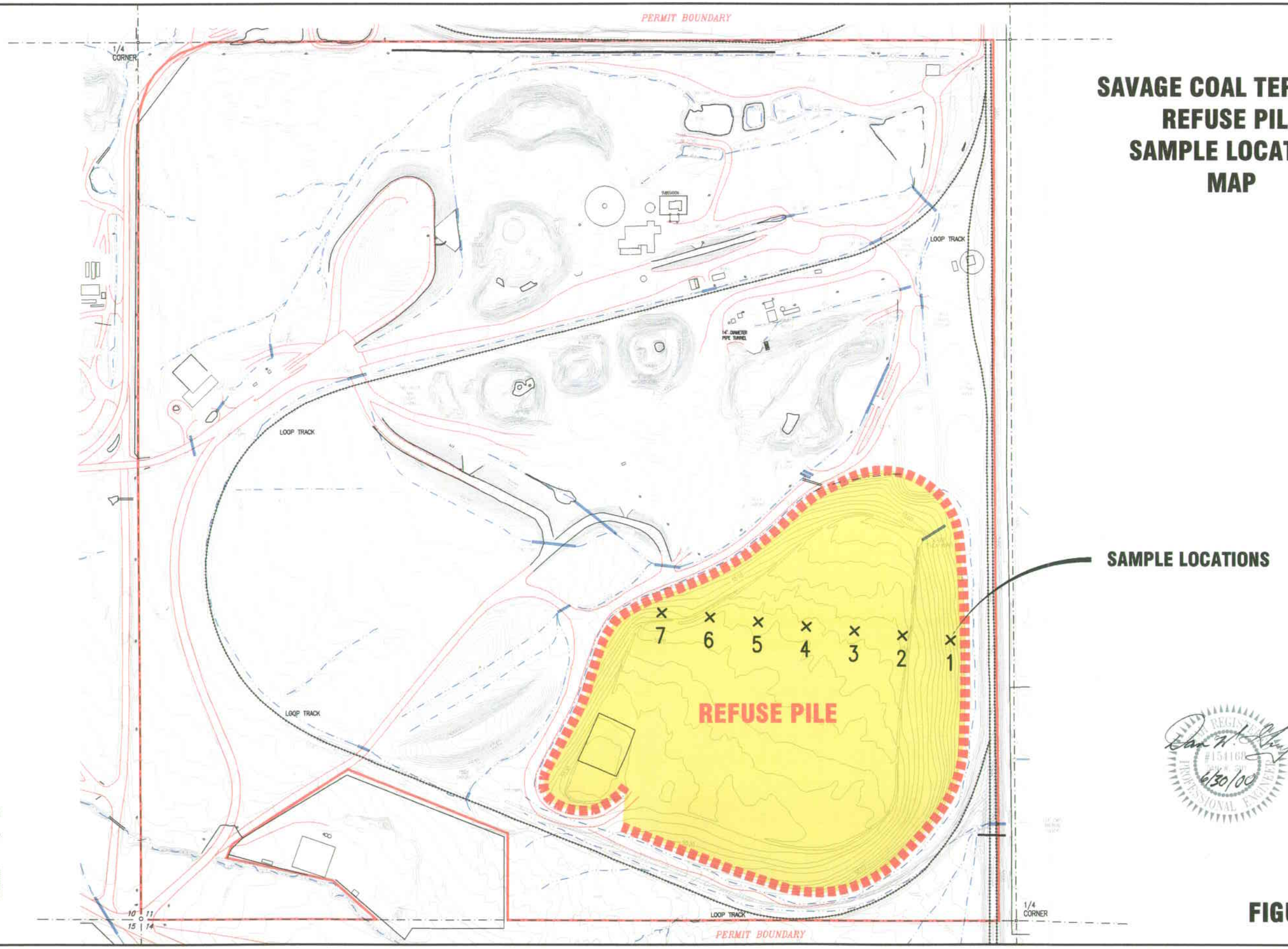


FIGURE 2

Appendix 5-2

B.T.U. Resource Recovery Plan for Refuse Pile

Savage Services Corporation
Savage Coal Terminal

(Revised October 2005)

B.T.U. Resource Recovery Plan for Refuse Material

Introduction : Savage Services Corporation is proposing to utilize a portion of the existing Savage Coal Terminal refuse pile as a B.T.U. Resource Recovery Material. A plan and approval are in place for removal of the refuse pile and subsequent burning of the material in the Sunnyside Cogeneration Associates power plant. This proposal is not intended to replace that plan, but to supplement it, since the power plant has not been consistent in its usage of the material.

General : The proposal is to remove from 15,000 to 100,000 tons of refuse material to be used as a B.T.U. resource recovery material. The refuse will be blended with a coal product, shipped to and burned in cement plants. The actual amount of refuse material to be recovered will be determined by analyses and customer demand.

The plan for removal is detailed in Appendix 5-1. The removal plan will remain the same; however, dates of removal will vary since Sunnyside Cogeneration Associates have not been taking the refuse on a regular basis.

Under this alternate scenario, refuse will be removed and cleaned using a patented air cleaning technology. The cleaned product will actually be the B.T.U. Resource Recovery product to be blended or shipped to the customer. The company which will perform the cleaning and distribution to the customer is operating under approved permits for these activities; however, since they are not considered a coal preparation facility they do not have an approved refuse disposal site. Therefore, this proposal is to allow removal and cleaning of the refuse, and then to return the reject from the cleaning back to the Savage Coal Terminal refuse pile.

The refuse to be returned will be sampled for acid-toxic potential according to Division guidelines, at no less than 5000 ton intervals. Sampling and testing will be completed and the material will be shown to be non-acid and non-toxic prior to return and final placement at Savage Coal Terminal.

The following parameters will be tested on the refuse designated for return: pH, EC, Soluble Na, K, Mg, Ca (October 2005 Soil Guidelines, Table 3), and total Organic Carbon, Soluble Selenium, Available Born, Acid Potential, Neutralization Potential (October 2005 Soil Guidelines, Table 7).

Under this proposal, only tested material from the Savage Refuse Pile would be returned to the Savage Coal Terminal. The reject material would be placed and compacted in the refuse pile according to the approved refuse disposal plan, after test results show the material to be non-acid and non-toxic.

Although this procedure will not completely eliminate the refuse pile, it will at least partially reduce the size of the pile, reduce the potential for a pile fire by substantially reducing the combustible material and provide for the original intent of the plan, which is B.T.U. Resource Recovery. Refuse will be provided at no cost as per the "no value determination". Refuse remains under ownership of Savage Services Corporation until shipped.

The refuse, or B.T.U. resource recovery material, will be handled and burned by the customer in the same manner as any other fuel product at their site.

The material has been tested and found to be non-acid and non-toxic. (See Attachment 1). The cleaning process uses only air, and there will be no chemicals or other material added to the refuse; therefore, the returned material will also be non-acid and non-toxic.

The removal plan will be as shown and described in Appendix 5-1, whether the refuse material is shipped to Sunnyside Cogeneration Associated, or utilized as a B.T.U. resource recovery material.

Existing Approvals :

1- Removal of the entire refuse pile for burning at the Sunnyside Cogeneration Plant was approved by the Division on 8/10/2000;

2- A "No Value Determination" for the refuse was made by OSM on 10/28/2000;

3- MSHA approved the removal and ground control plan on 7/31/2000.

4- DOGM approved the removal of 15,000 tons of the refuse material (without the return of reject) on August 19, 2005.

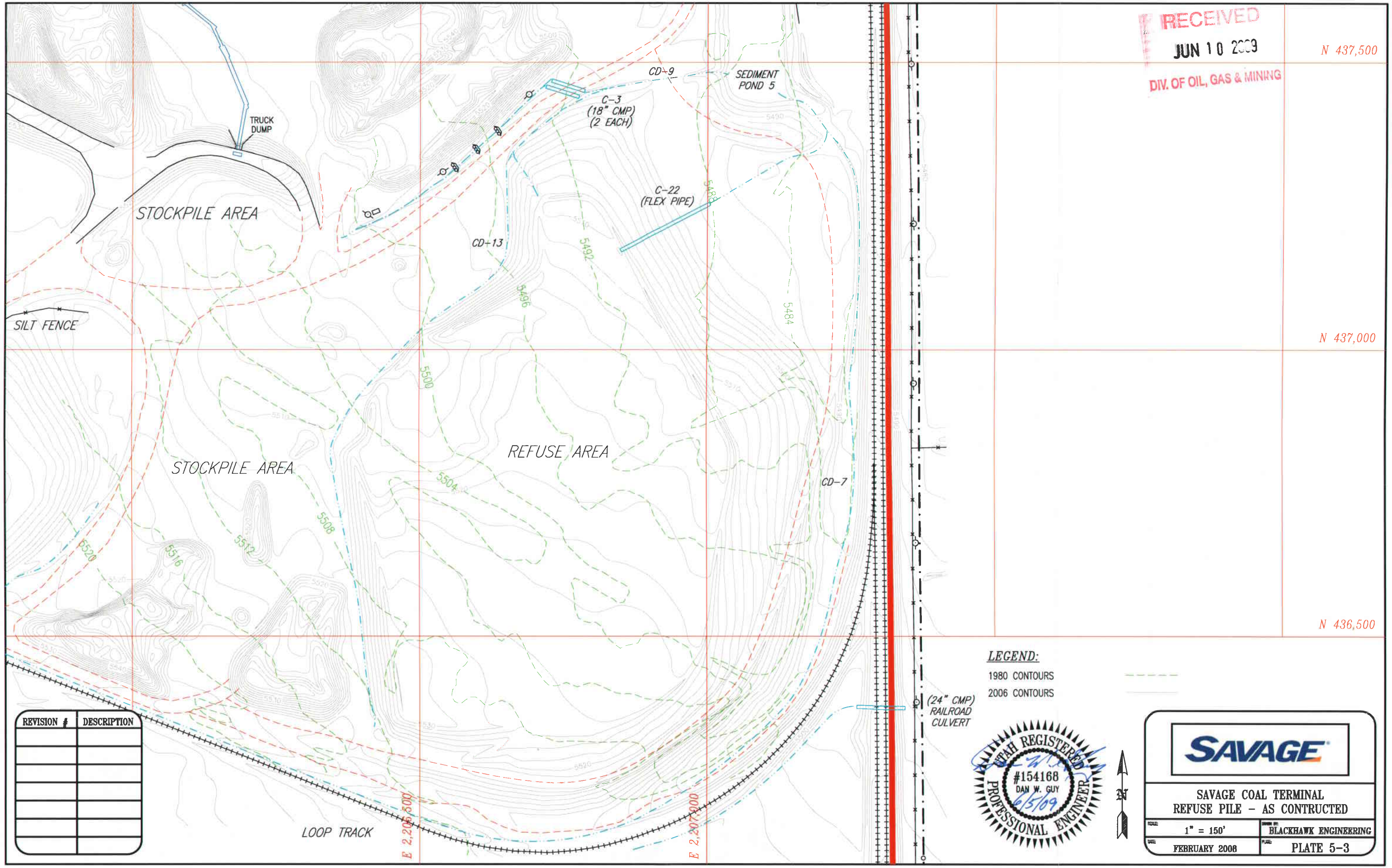
Environmental Controls : The method of removal and environmental controls will remain the same as described and approved in Appendix 5-1 of this M.R.P.

Attachment 1

Acid-Toxic Analysis
for
Savage Coal Terminal Refuse

Note :

No Refuse has been returned to Savage Coal Terminal at this time. Required Acid-Toxic Analyses will be provided when refuse is returned.



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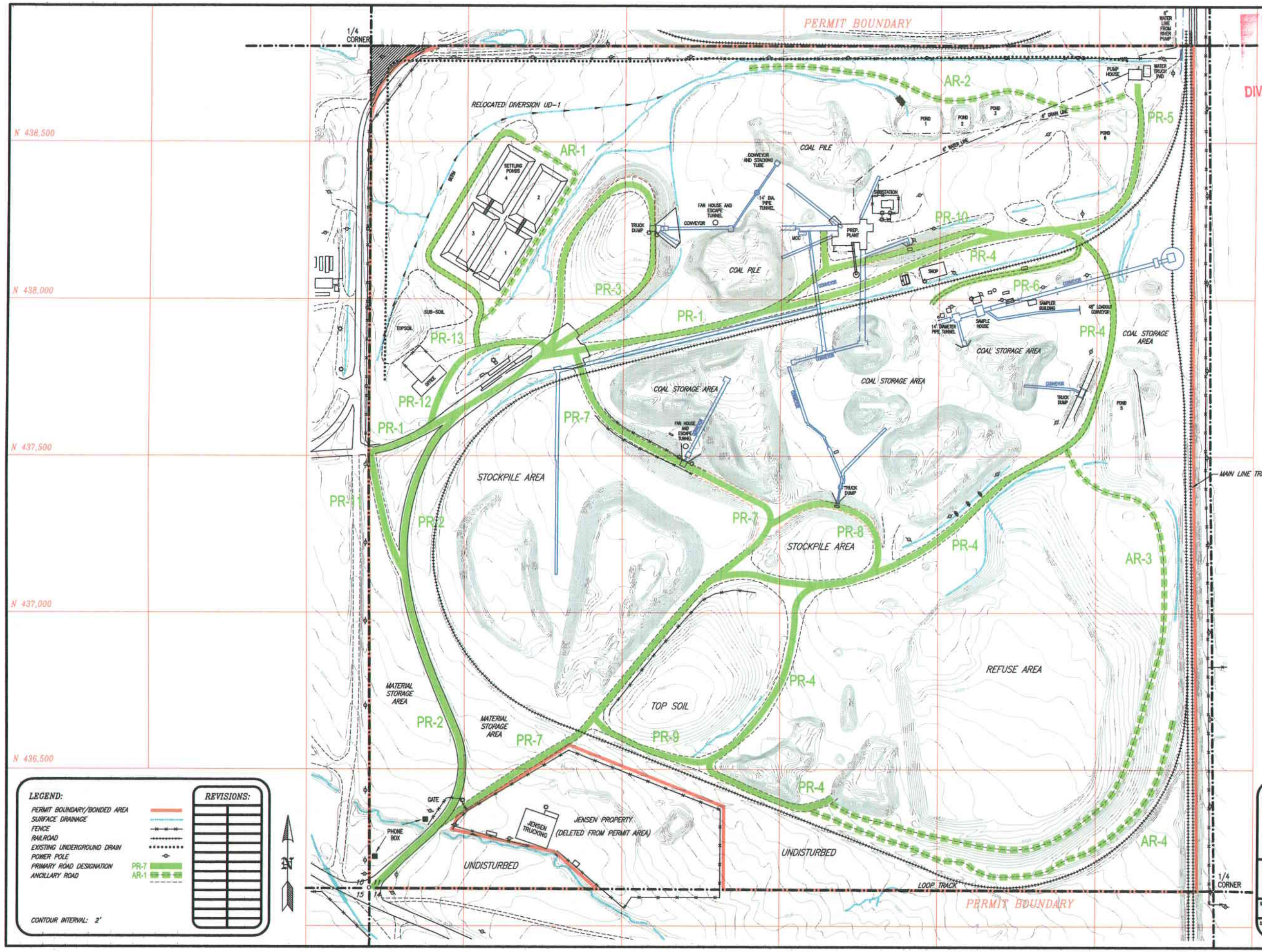
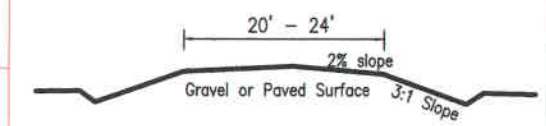
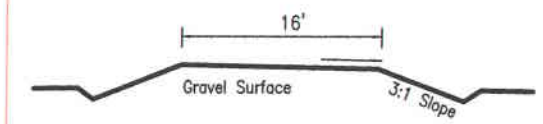


TYPICAL CROSS SECTION
Haul Road



Ditch flow is parallel to the road centerline.

TYPICAL CROSS SECTION
Primary Access Road



Ditch flow is parallel to the road centerline.

LEGEND:

- PERMIT BOUNDARY/BONDED AREA
- SURFACE DRAINAGE
- FENCE
- RAILROAD
- EXISTING UNDERGROUND DRAIN
- POWER POLE
- PRIMARY ROAD DESIGNATION — PR-7
- ANCILLARY ROAD — AR-1

CONTOUR INTERVAL: 2'

REVISIONS:

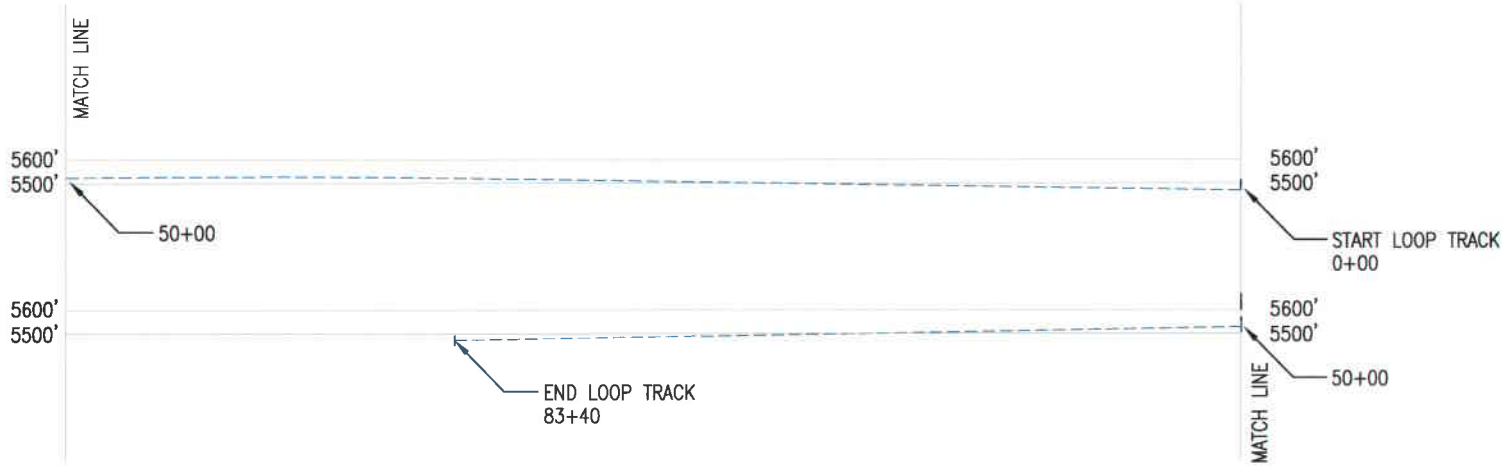
N

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 2/5/09

SAVAGE

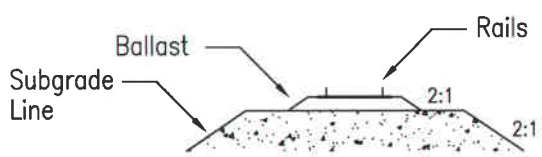
SAVAGE COAL TERMINAL
ROAD MAP

SCALE: 1" = 300'	DRAWN BY: BLACKHAWK ENGINEERING
DATE: JULY 2006	PLATE: PLATE 5-4



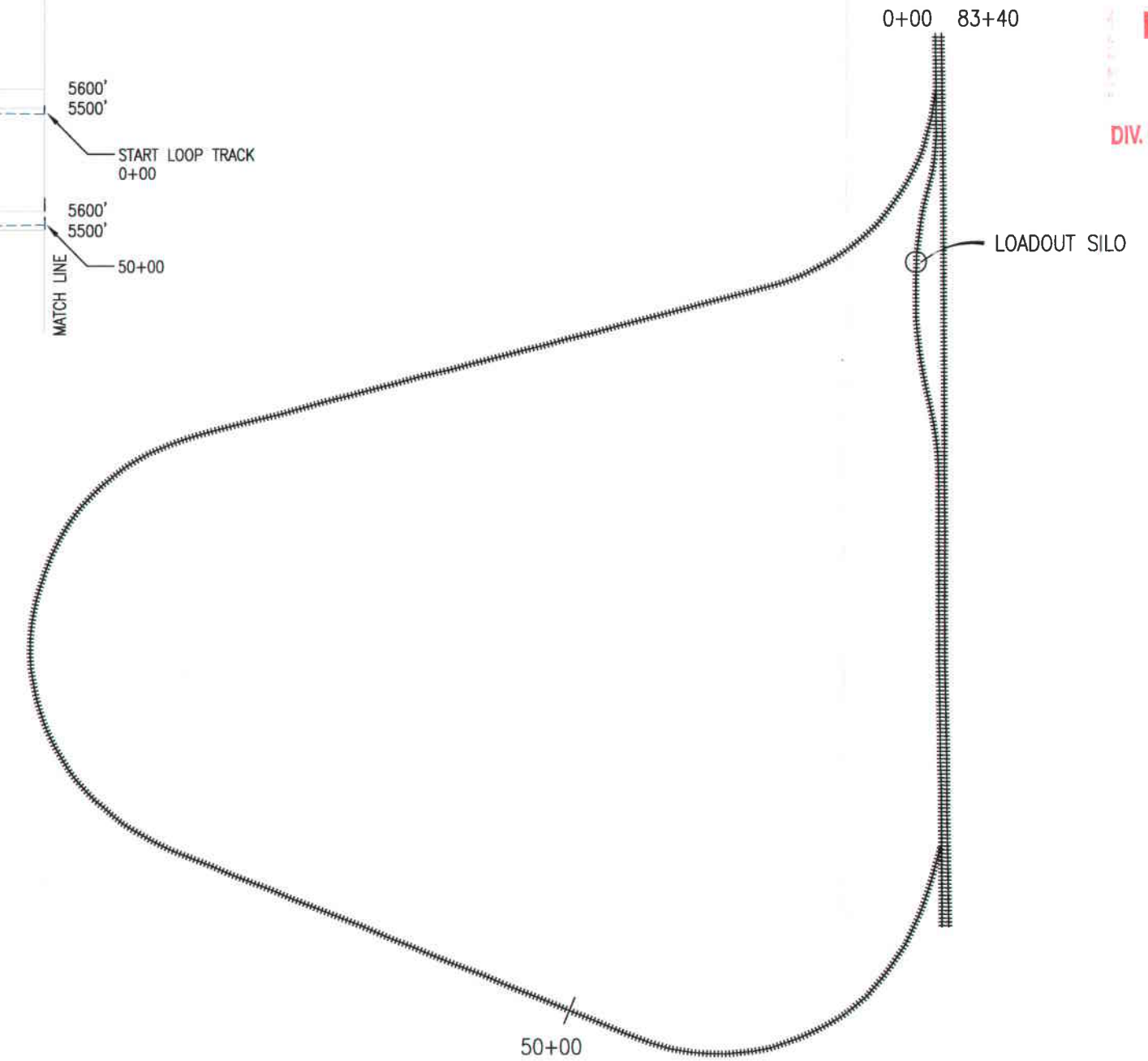
CENTERLINE AND GRADE OF RAILROAD LOOP

1" = 800'



TYPICAL CROSS SECTION

NTS



CENTERLINE RAILROAD TRACKS

1" = 400'

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REVISION #	DESCRIPTION

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 6/5/09

N

SAVAGE

SAVAGE COAL TERMINAL
RAILROAD FACILITIES

SCALE: AS SHOWN	DRAWING BY: BLACKHAWK ENGINEERING
DATE: JANUARY 2008	PLATE 5-5

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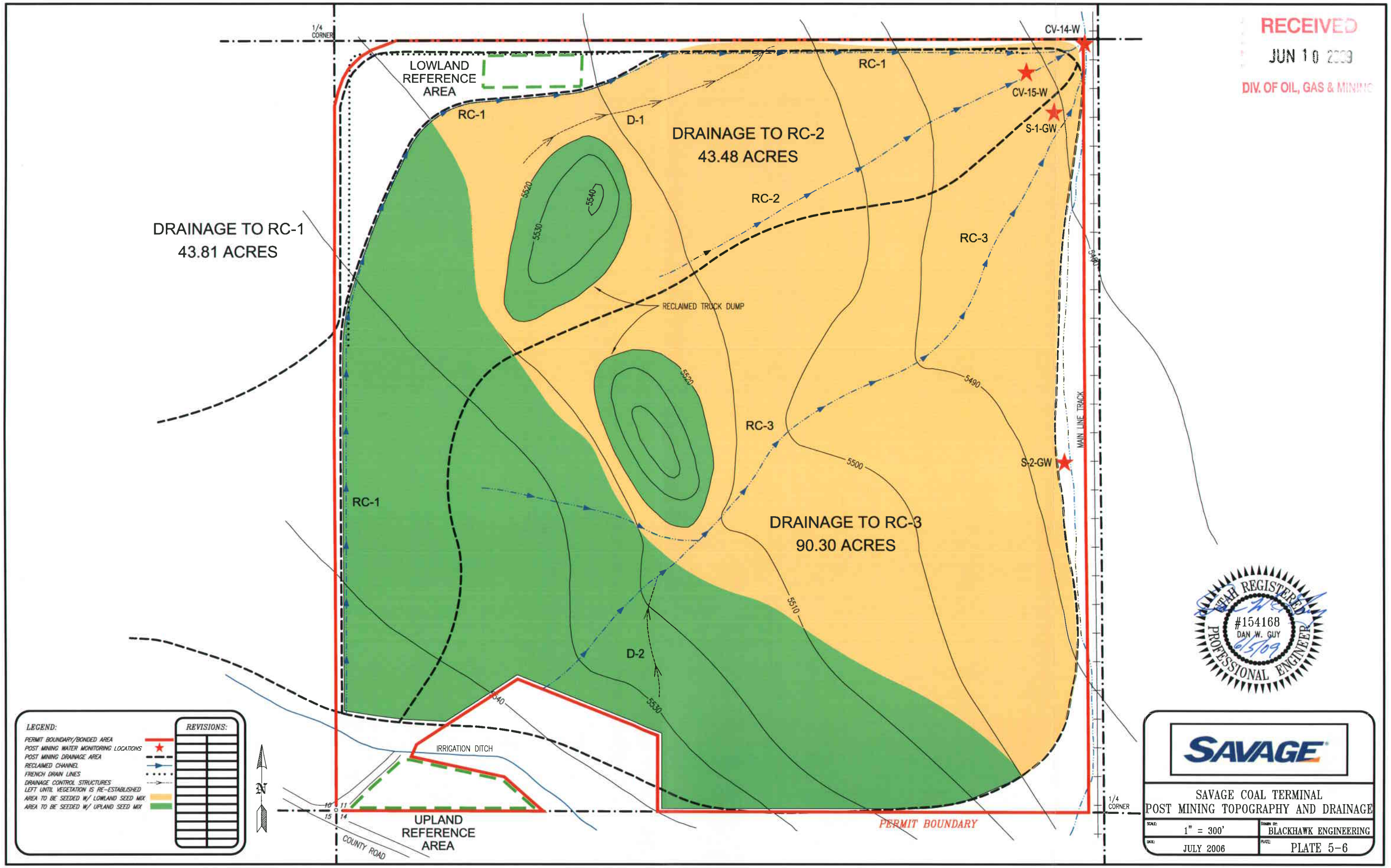

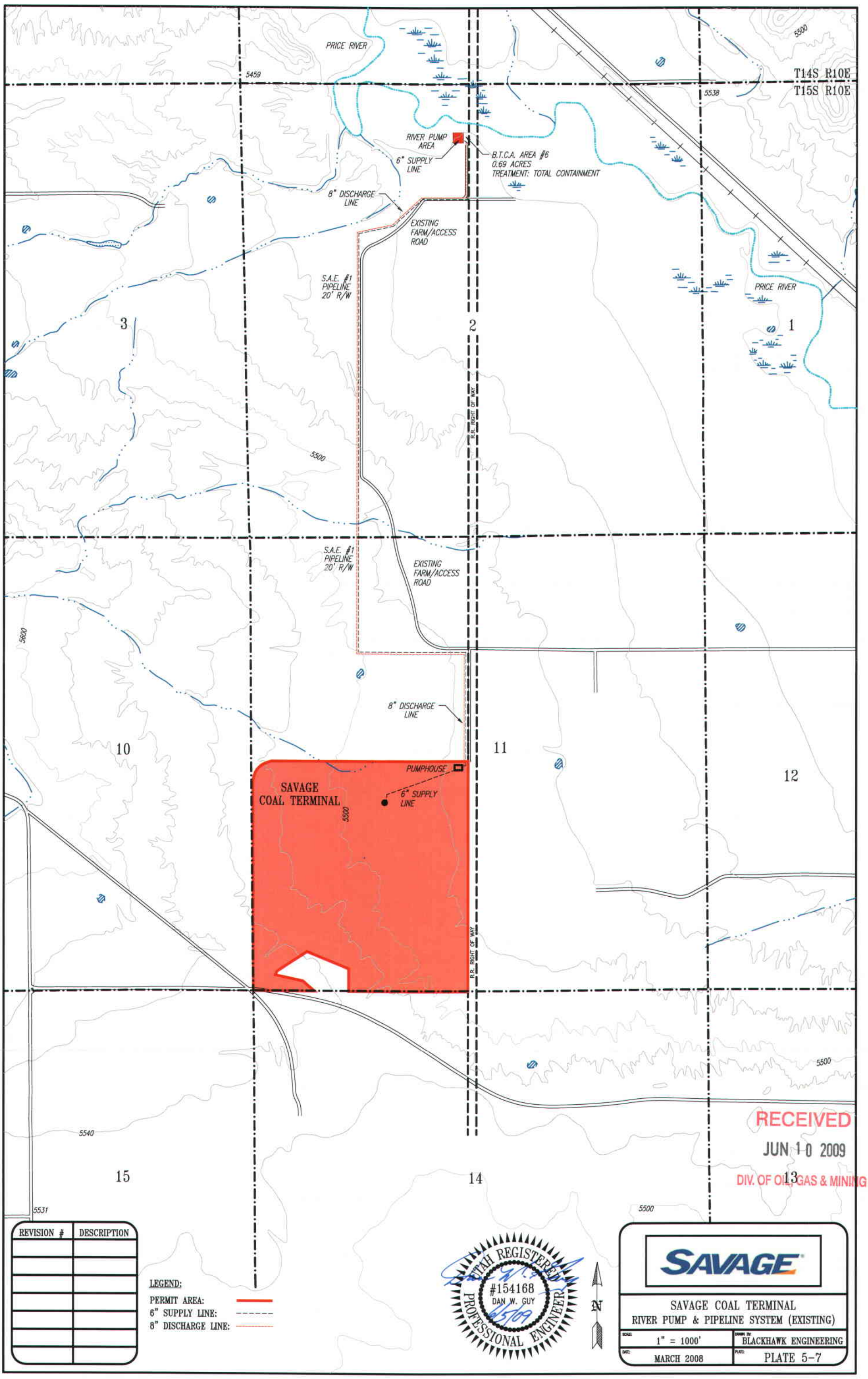

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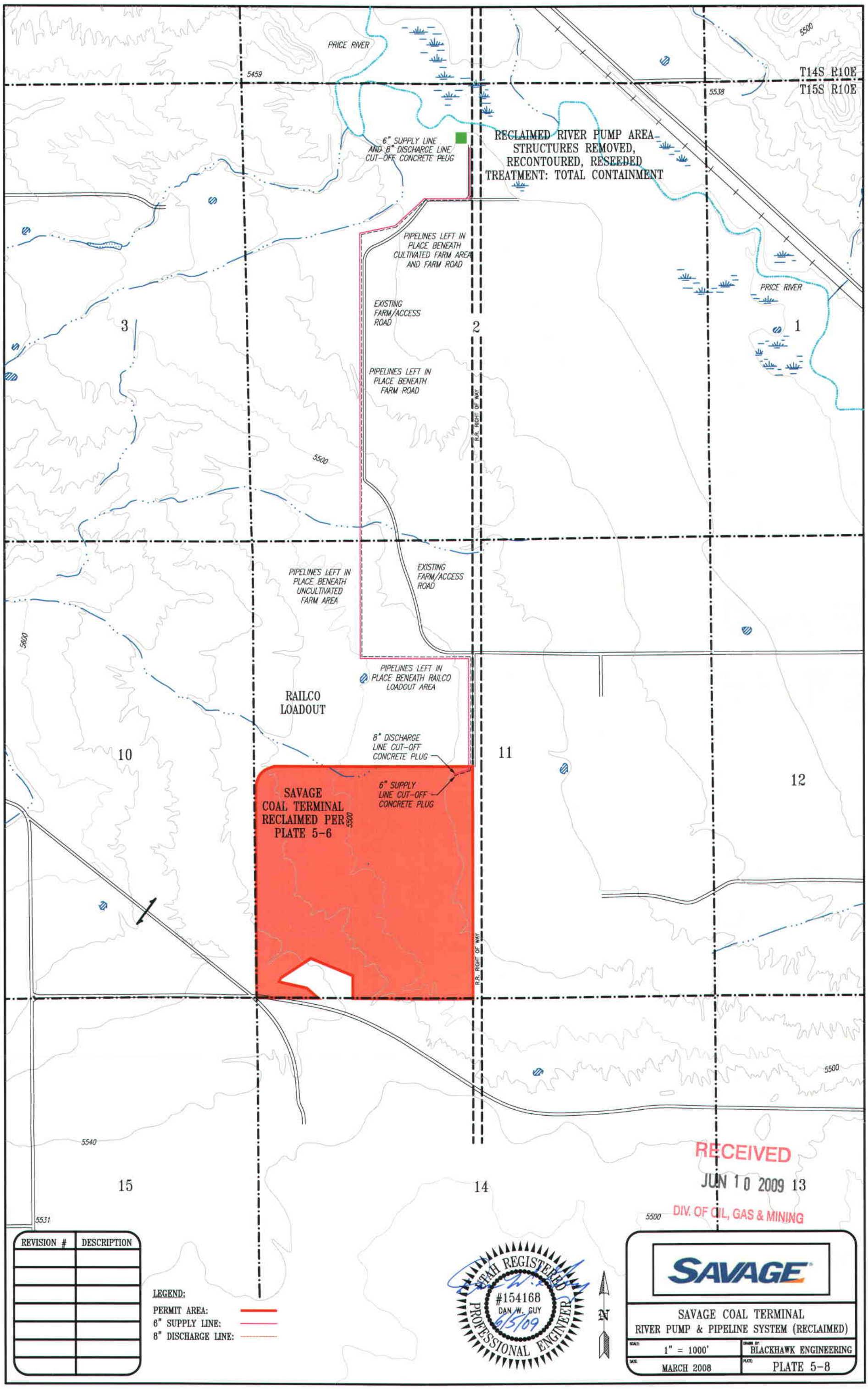
PRICE RIVER
5459
T14S R10E
T15S R10E
5538
5500
6" SUPPLY LINE
AND 8" DISCHARGE LINE
CUT-OFF CONCRETE PLUG
RECLAIMED RIVER PUMP AREA
STRUCTURES REMOVED,
RECONTOURED, RESEEDED
TREATMENT: TOTAL CONTAINMENT
PIPELINES LEFT IN
PLACE BENEATH
CULTIVATED FARM AREA
AND FARM ROAD
EXISTING
FARM/ACCESS
ROAD
PIPELINES LEFT IN
PLACE BENEATH
FARM ROAD
R.R. RIGHT OF WAY
PRICE RIVER
3
2
1
PIPELINES LEFT IN
PLACE BENEATH
UNCULTIVATED
FARM AREA
EXISTING
FARM/ACCESS
ROAD
5600
PIPELINES LEFT IN
PLACE BENEATH RAILCO
LOADOUT AREA
RAILCO
LOADOUT
8" DISCHARGE
LINE CUT-OFF
CONCRETE PLUG
10
11
12
SAVAGE
COAL TERMINAL
RECLAIMED PER
PLATE 5-6
6" SUPPLY
LINE CUT-OFF
CONCRETE PLUG
5500
R.R. RIGHT OF WAY
5500
5540
15
14
13
5531
5500
RECEIVED
JUN 10 2009
DIV. OF OIL, GAS & MINING
REVISION #
DESCRIPTION
LEGEND:
PERMIT AREA:
6" SUPPLY LINE:
8" DISCHARGE LINE:
UTAH REGISTERED
#154168
DAN W. GUY
6/5/09
PROFESSIONAL ENGINEER
N
SAVAGE
SAVAGE COAL TERMINAL
RIVER PUMP & PIPELINE SYSTEM (RECLAIMED)
SCALE:
1" = 1000'
DRAWN BY:
BLACKHAWK ENGINEERING
DATE:
MARCH 2008
PLATE:
PLATE 5-8