

C/007/022 Incoming ✓
#5422

SAVAGE

Savage Services Corporation
Coal & Power Services Group
2025 East 5000 South
Box 1001
Price, UT 84501

(435) 637-5664
Fax (435) 637-3418

Mr. Daron R. Haddock
Coal Program Manager
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Attn: Joe Helfrich

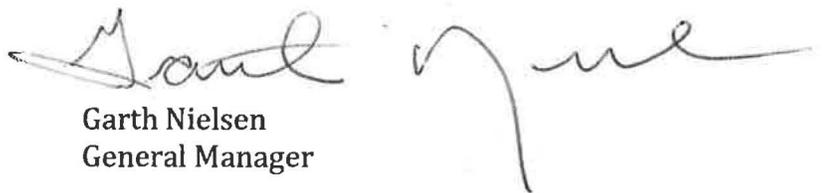
Re: Midterm Review Response
Savage Services Corporation
Savage Coal Terminal
C/007/0022, Task #5314

Dear Mr. Haddock:

Enclosed are two redline copies of the response for the midterm review of the Savage Coal Terminal MRP. Also included is a checklist indicating the response location for each deficiency and the required C1/C2 Forms.

If you have any questions, or need additional information, please let me know.

Sincerely,



Garth Nielsen
General Manager

Cc: Dan Guy
File

RECEIVED
MAR 30 2017
DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Savage Services Corporation

Mine: Savage Coal Terminal

Permit Number: C/007/0022

Title: Response to Midterm Review

Description, Include reason for application and timing required to implement:

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

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

Please attach one (1) review copy of the application.

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

Garth Nielson, General Manager

Print Name

Garth Nielson General Manager
Sign Name, Position, Date

Subscribed and sworn to before me this 27 day of March, 2017

Tami L Mckendrick
Notary Public

My commission Expires:

Attest: State of UTAH, 2018 } ss:
County of CARBO



For Office Use Only:

Assigned Tracking Number:

Received by Oil, Gas & Mining

RECEIVED

MAR 30 2017

DIV. OF OIL, GAS & MINING

Checklist for Responses
To Mid-Term Review Deficiencies
Savage Coal Terminal

R645-301-112 (ssteub)

- 1 – Chapter 1 – Cover + Pages 1-5
- 2 – Appendix 1-6

R645-301-212 and 220 (jhelfrich)

- 1 – Chapter 5 – Page 36

R645-301-121.200 (pburton)

- 1 – Chapter 2 – Pages 23 and 24
- 2 – Appendix 3-2 – Attachment 4 (New)

R645-301-244 (pburton)

- 1 – Chapter 5 – Pages 44 and 45

R645-301-243 (pburton)

- 1 – Chapter 5 – Page 50

R645-301-121.100 (pburton)

- 1 – Chapter 5 – Page 49

R645-301-830.140 (bwiser)

- 1 – Appendix 8-1

**Savage Services Corporation
Savage Coal Terminal
C/007/022**

Chapter 1

General Contents

R645-301-100

- R645. Natural Resources; Oil, Gas and Mining; Coal.
- 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
901 W. Legacy Center Way
Midvale, Utah 84047
(801) 944-6600
Employer I.D. #87-0237425
- 112.220. The applicant's resident agent is:
- Terrence Savage
901 W. Legacy Center Way
Midvale, Utah 84047
(801) 944-6600
- 112.230. The abandoned mine land reclamation fee will be paid by Savage Services Corporation.
- Savage Services Corporation
901 W. Legacy Center Way
Midvale, Utah 84047
(801) 944-6600
Employer I.D. #87-0237425
- 112.300. All stock is owned by:
- Savage Companies
901 W. Legacy Center Way
Midvale, Utah 84047
(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:
John K. Savage	Director	06/11/2007
Kirk W. Aubry	Director	10/15/2010
Curtis C. Dowd	Director	06/06/2011
Nathan Savage	Director	06/22/2015
Todd Savage	Director	06/22/2015

Officers:		Date:
Kirk Aubry	President, Chief Operation	06/22/2015
Kelly Flint	Exec. VP, Sec., Gen Counsel	10/21/15, 06/04/08
Jeffrey L. Roberts	Exec. VP, CFO	04/11/2016
Howard F. Goodman	Executive Vice President	10/21/2015
Jason Ray	Executive Vice President	10/21/2015
Nathan N. Savage	Executive Vice President	01/01/2010
John Savage	Executive Vice President	10/21/2015
Donald Alexander	Executive Vice President	10/21/2015
Curtis C. Dowd	Executive Vice President	08/23/2010
Raymond Alt	Senior Vice President	01/01/2010
Jeff M. Chesler	Senior Vice President	01/01/2010
Boyd E. Draper	Senior Vice President	01/01/2010
Ellis Edwards	Senior Vice President	01/01/2010
Mark Wehmanen	Senior Vice President	01/01/2010
Gary L. Plant	Senior Vice President	05/07/2004
Charles E. Schwab	Senior Vice President	10/21/2015
Debbie Rhodes	Senior Vice President	10/21/2015
M. Troy Savage	Senior Vice President	01/01/2010
Terrence Savage	Senior Vice President	01/01/2010
C. Fred Busch	Senior Vice President	01/20/2003

Kim F. Christensen	Senior Vice President	01/20/2003
Jack M. Cohn	Senior Vice President	01/20/2003
Kenneth W. Cooper	Senior Vice President	01/20/2003
Kenneth D. Ellzey	Senior Vice President	01/20/2003
Brian Cotton	Vice President	09/14/2012
Jerry Evenson	Vice President	01/20/2003
Gerald Ferrell	Vice President	10/01/2006
Jose L. Fernandez	Vice President	01/20/2003
Tad A. Koch	Vice President	01/20/2003
Mike Miller	Vice President	01/20/2003
Samuel A. Orme	Vice President	06/10/2003
Michelle Hollingsed	Vice President	06/04/2015
Ed Ivey	Vice President	01/01/2010
Jared Larrabee	Vice President	11/22/2013
Brad Crist	Vice President	01/20/2003
Rob Davidson	Vice President	01/20/2003
Byron Lawrence	Vice President	01/18/2011
Mike McBride	Vice President	07/08/2011
Brandi Mechling	Vice President	10/21/2015
Steve Peterson	Vice President	06/10/2016
Dan Price	Vice President	01/01/2010
Chad Richard	Vice President	04/01/2014
Erik Skoy	Vice President	01/01/2010
Steve Stewart	Vice President	09/12/2011
Chris Thomas	Vice President	09/12/2011
Sharon Broadwater	Vice President	10/30/2006
Steven J. Newman	Assistant Secretary	06/09/2014
Ben Bates	Assistant Secretary	01/03/2012
Amy Poulson	Assistant Secretary	12/01/2007

SAVAGE COMPANIES

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

Shareholders:

Class A (voting):
LaRae T. Savage Q-Tip Marital Trust

Susan A. Savage Q-Tip Marital Trust

Class C (voting):

Allen B. Alexander	33.3%	05/15/78
H. Benson Lewis	33.3%	08/01/85

Officers and Directors for Savage Companies:

Directors:

Date:

H. Benson Lewis	Non-Exec. Chairman	07/01/82
Allen B. Alexander	Non-Exec. Vice Chairman	08/22/85
Kirk W. Aubry	Director	10/25/10
Curtis C. Dowd	Director	10/25/10
Kimo Esplin	Director	10/01/16
Crystal Maggelet	Director	10/21/13
S. Craig Omer	Director	03/01/15
John K. Savage	Director	06/05/00
Nathan N. Savage	Director	05/18/04
Todd L. Savage	Director	01/03/00
David G. Wolach	Director	05/01/87

Officers:

Date:

Kirk W. Aubry	President & CEO	10/15/10
Donald W. Alexander	Exec. Vice President	02/01/83
Curtis C. Dowd	Exec. Vice President	08/30/04
Kelly J. Flint	Exec. Vice President & Secretary	01/01/03
Howard F. Goodman	Exec. Vice President	05/01/94
Jason D. Ray	Exec. Vice President	03/18/11
Jeffrey L. Roberts	Exec. Vice President & CFO	04/11/16
John K. Savage	Exec. Vice President	01/01/70
Nathan N. Savage	Exec. Vice President	06/02/86
Todd L. Savage	Exec. Vice President	09/23/76
Debbie Rhodes	Sr. Vice President	10/21/15
Charles E. Schwab	Sr. Vice President	10//21/15
Sharon Broadwater	Vice President	10/30/06
Michelle Hollingsed	Vice President	06/04/15
Tad A. Koch	Vice President	09/16/86
Samuel A. Orme	Vice President	06/10/03
Chris Thomas	Vice President	12/11/11
Benjamin Bates	Assistant Secretary	01/03/12
Steven J. Newman	Assistant Secretary	06/09/14
Amy Poulson	Assistant Secretary	12/01/07

Previous officers and end dates:

Isaac Haboucha	05/08/08	David L. Harris	10/15/16
Butch Jentzsch	12/31/07	Charles O. Monroe	06/08/16
Kevin R. Haugh	02/01/08	Neal Savage	11/27/13
Mark Andrew Nelson	02/15/06	C. Scott Smith	06/04/15
Donald Alexander	10/21/15	Mark Wehmanen	01/01/10
Boyd E. Draper	01/01/10	David G. Wolach	03/31/12
Ellis Edwards	01/01/10	Carin Crowe	06/22/09
Eric B. Adamson	06/05/12	Kent Avery	09/14/12

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
901 W. Legacy Center Way
Midvale, Utah 84047

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.

Appendix 1-6

Designation of Authorized Representatives

**Savage Services Corporation
Savage Coal Terminal**

March 21, 2017

Mr. Daron R Haddock
Coal Program Manager
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114 – 5801

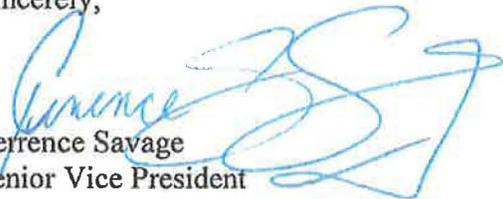
**RE: Designation of Authorized Representatives
Savage Coal Terminal
Permit Number C0070022
Carbon County, Utah**

This letter is to inform your agency that the following people have been designated “Authorized Representatives” for Savage Services Corporation (“Savage”) for matters pertaining to the Savage Coal Terminal permit and environmental monitoring:

- (1) Bill Kaiser
Environmental Director
Savage Services Corporation
- (2) Garth Nielsen
General Manager, Savage Coal Terminal
Savage Services Corporation
- (3) Dan W. Guy
President
Blackhawk Engineering, Inc.

Any of the above individuals are empowered to sign transmittal letters and C₁ Amendment forms to DOGM, and to submit required water monitoring data; however, since Dan Guy is not an employee of Savage, he may sign or submit such data only for Garth Nielsen in the name of Savage.

Sincerely,


Terrence Savage
Senior Vice President

cc: Bill Kaiser
Garth Nielsen
Dan Guy

RECEIVED

MAR 30 2017

DIV. OF OIL, GAS & MINING

Appendix 3-2

Attachment 4

Vegetation Monitoring

of the

C. V. Spur No. 2 Test Plots

VEGETATION MONITORING
OF THE
C.V. SPUR NO. 2 TEST PLOTS
1997



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

214 East 1st No.

Price, Utah 84501

Report:

Patrick Collins, Ph.D.

Fieldwork:

Patrick Collins

P. Dean Collins

Report Date:

March 1998

TABLE OF CONTENTS

INTRODUCTION	1
Section 1 (west side)	1
Section 2 (east side)	2
Section 3 (middle)	2
METHODS	2
Cover and Composition	2
Woody Species Density	3
Photographs	3
Raw Data	3
RESULTS	4
Section 1 (west side)	4
Section 2 (east side)	4
Section 3 (middle)	5
DISCUSSION	5
DATA SUMMARY TABLES	6-7
FIGURES & GRAPHS	8-13
COLOR PHOTOGRAPHS	14-15
RAW DATA	Appendix

VEGETATION MONITORING
OF THE
C.V. SPUR NO. 2 TEST PLOTS
1997

INTRODUCTION

In the fall of 1989 previous owners of the C.V. Spur site, Beaver Creek Coal Company, implemented a reclamation test plot on a disturbed area in the NE corner of the C.V. Spur Coal Processing and Loadout Facility property. *MT. NEBO SCIENTIFIC* did not construct this plot but was contracted to monitor it. Qualitative data were recorded in 1990, whereas, qualitative *and* quantitative data were compiled in the years' 1991, 1992 and 1997. This document reports the data from the 1997 sample year.

The test plot was divided into two larger sections for seeding mixtures, plus a middle section for single species. The plot was also fenced.

Section 1 (west side)

This is a 50 ft. by 100 ft. area. Design included techniques proposed for final reclamation methodologies as outlined in Chapter 3, Section 3.5 of the MRP. A species list is included in this report.

Section 2 (east side)

This area is another 50 ft. by 100 ft. section utilizing the same methods as Section 1 with the addition of 1 ton of 3rd crop alfalfa hay tilled into the top 6 inches of the soil. A species list is included in this report.

Section 3 (middle)

This section was apparently seeded with single species with two controls that were not seeded.

METHODS

Quantitative and qualitative data were taken on the subplots of the C.V. Spur No. 2 Test Plot. Sampling was accomplished on August 26-27, 1997. Sampling methods were identical to 1991 and 1992 to facilitate comparisons between sample years.

Cover and Composition

Regular placement of sample points were predetermined to provide unbiased accuracy of the data compiled. This was accomplished by establishing transect lines at regular intervals on each end of the plots. These transect lines were placed over the entire study area to adequately represent the area as a whole. Regular points on the transect lines were then marked. From these marks, the

sample points were determined by random distance numbers at right angles to the transect lines.

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows Welsh et al. (1993).

Woody Species Density

Density of woody plant species of the subplots were estimated using belt transects that were 5 ft by 25 ft (125 ft²). Total number of individuals by species were counted in each of the belt transects. The average number was then calculated followed by the number of individuals per acre.

Photographs

Color photographs were taken of the plot and are included in this report.

Raw Data

Summarized raw data were included in this report to facilitate additional statistical analyses by the reviewer if desired.

RESULTS

Section 1 (west side)

Mean total living cover of Section 1 was estimated to be 53.61% (Table 1A). Most of the living cover was comprised of forbs (82.11%; Table 1B), and most of the forbs were “weedy” species i.e. tumble mustard (*Sisymbrium altissimum*) and fivehook bassia (*Bassia hyssopifolia*). Crested wheatgrass (*Agropyron cristatum*) was the only grass species present in the plot (Table 1C).

Total woody plant density of the plot was 435.60 individuals per acre (Table 1D). The only woody plant present in the density belt transects was greasewood (*Sarcobatus vermiculatus*).

Section 2 (east side)

Total living cover of Section 2 was 55.83% (Table 2A), but was comprised of significantly more grasses in the composition (Table 2B). Crested wheatgrass made up 25.00% of the living cover in this plot, whereas, weedy species comprised most on the remaining cover (Table 2C).

Woody species density was even less than Section 1 in the test plot comprising 58.08 individuals per acre, all of which were greasewood (Table 2D).

Section 3 (middle)

As reported in previous years, the single species that were planted still show little success to date.

The only species observed this year were "weedy" species

DISCUSSION

Graphs have been prepared to plot the success of some of the parameters over time. Figure 1 shows the total living cover and total cover (excluding weeds) for the west side of C.V. Spur No. 2. As one will note, total living cover increases in time for each sample year. The cover for "desirable species" (living cover excluding weeds) also increases significantly, but remains below 10% -- a number that is still well below most standards for final revegetation success.

Total living cover for the east side of the plot also increased markedly with time (Figure 2). Furthermore, the total cover (excluding weeds) also increased each year and results for 1997 has a much more respectable final cover value of near 25%.

Woody species density was low each year but seems to be increasing, however, none of the values for either side of the plot (Figures 3 and 4) were high enough to approach acceptable levels for density in most final success standards. Figure 5 shows the species that were planted when the test plots were constructed.

TABLE 1: Section 1 (west side) - Total cover (A), composition (B), cover and frequency by species (C), and woody species density (D), summaries for the C.V. Spur No. 2 Test Plot for 1997.

A. TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Total Living Cover	53.61	13.72	18
Litter	13.00	10.96	18
Bareground	28.33	16.58	18
Rock	5.06	1.51	18
B. COMPOSITION			
Shrubs	1.22	3.62	18
Forbs	82.11	18.36	18
Grasses	16.67	17.36	18
C. COVER BY SPECIES			
	% MEAN COVER	RELATIVE FREQUENCY	SAMPLE SIZES
<u>Shrubs</u>			
<i>Sarcobatus vermiculatus</i>	0.83	11.11	18
<u>Forbs</u>			
<i>Bassia hyssopifolia</i>	0.28	5.56	18
<i>Kochia scoparia</i>	0.56	11.11	18
<i>Sisymbrium altissimum</i>	43.33	100.00	18
<u>Grasses</u>			
<i>Agropyron cristatum</i>	8.61	66.67	18
D. WOODY SPECIES DENSITY			
		NUMBER/ACRE	
<i>Sarcobatus vermiculatus</i>		435.60	
TOTAL		435.60	

TABLE 2: Section 2 (east side) - Total cover (A), composition (B), cover and frequency by species (C), and woody species density (D), summaries for the C.V. Spur No. 2 Test Plot for 1997.

A. TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Total Living Cover	55.83	15.75	18
Litter	9.72	3.52	18
Bareground	29.56	16.51	18
Rock	4.89	1.66	18

B. COMPOSITION

Shrubs	0.35	1.43	18
Forbs	55.74	28.31	18
Grasses	43.91	28.43	18

C. COVER BY SPECIES

	% MEAN COVER	RELATIVE FREQUENCY	SAMPLE SIZES
<u>Shrubs</u>			
<i>Sarcobatus vermiculatus</i>	0.28	5.56	18
<u>Forbs</u>			
<i>Bassia hyssopifolia</i>	8.08	14.54	18
<i>Halogeton glomeratus</i>	1.39	4.66	18
<i>Kochia scoparia</i>	5.28	11.60	18
<i>Sisymbrium altissimum</i>	15.83	77.78	18
<u>Grasses</u>			
<i>Agropyron cristatum</i>	25.00	15.09	18

D. WOODY SPECIES DENSITY

	NUMBER/ACRE
<i>Sarcobatus vermiculatus</i>	<u>58.08</u>
TOTAL	58.08

FIGURES & GRAPHS

14

FIG. 1: LIVING COVER

C.V. Spur No. 2 (West Side)

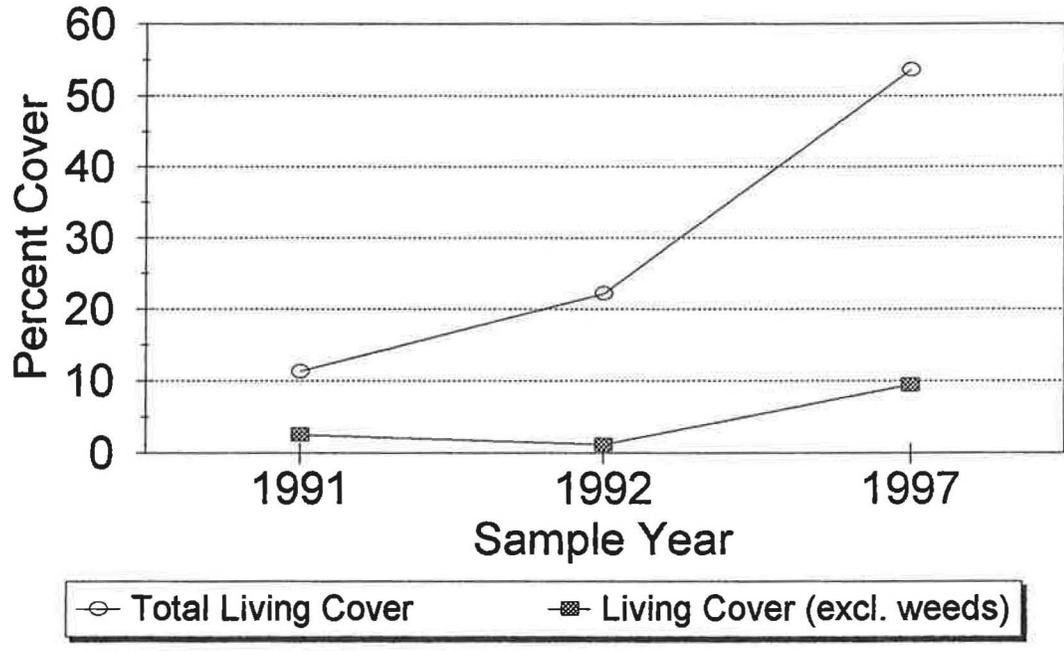


FIG. 2: LIVING COVER

C.V. Spur No. 2 (East Side)

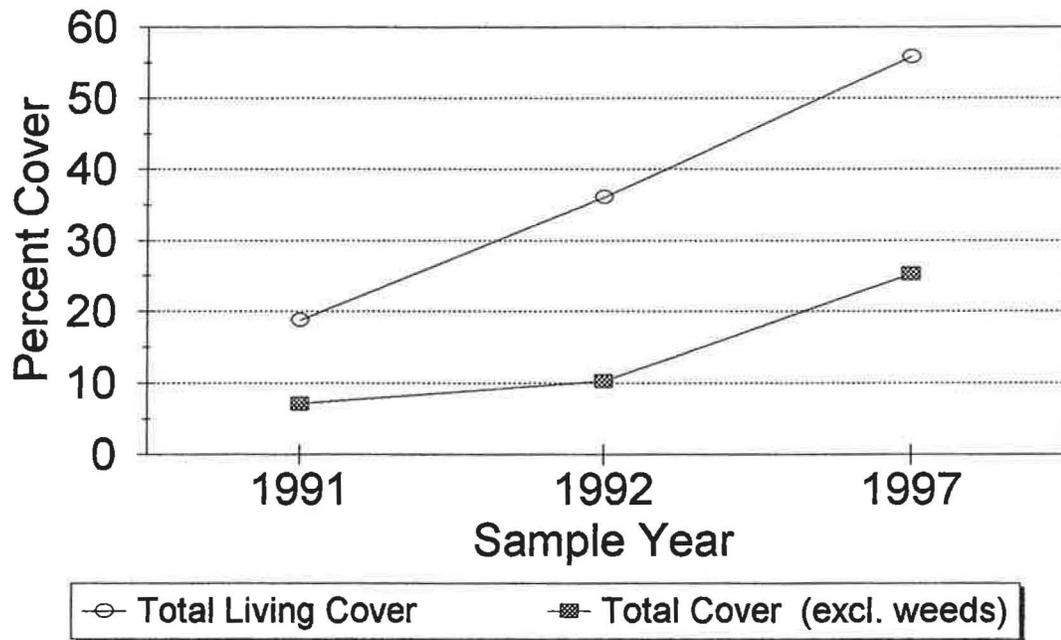


FIG. 3: WOODY SPECIES DENSITY

C.V. Spur No. 2 (West Side)

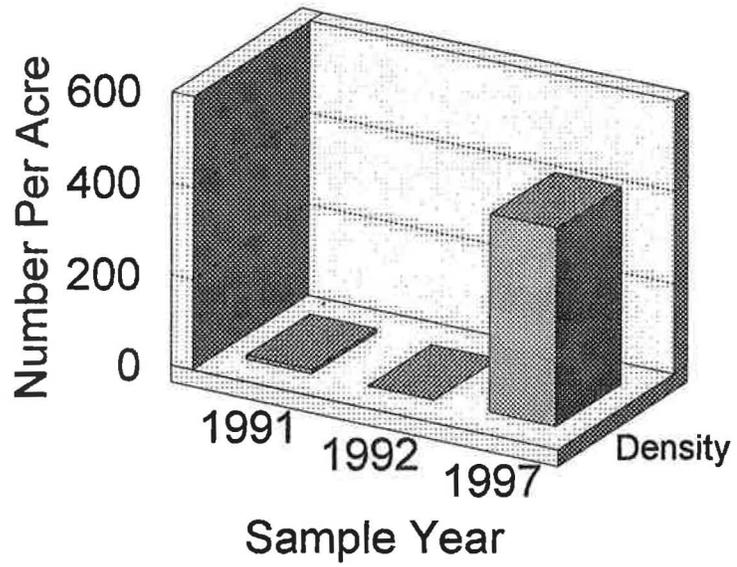


FIG. 4: WOODY SPECIES DENSITY
C.V. Spur No. 2 (East Side)

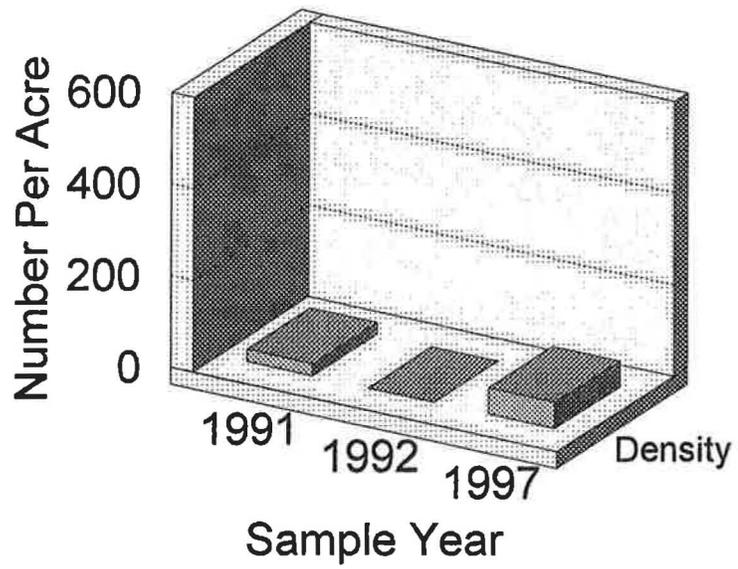


Fig. 5: Species Planted in Section 1 & 2 (East & West)
for the C.V. Spur No. 2 Test Plot

Rate #PLS/A

SHRUBS

<i>Atriplex confertifolia</i>	2.0
<i>Ceratoides lanata</i>	1.0

FORBS

<i>Helianthus annuus</i>	3.0
<i>Kochia prostrata</i>	1.0
<i>Melilotus officinalis</i>	1.0
<i>Penstemon palmeri</i>	.5
<i>Sphaeralcea grossulariaefolia</i>	.25

GRASSES

<i>Agropyron cristatum ephraim</i>	2.0
<i>Agropyron cristatum fairway</i>	2.0
<i>Elymus lanceolatus</i>	2.0
<i>Elymus elymoides</i>	.5
<i>Elymus junceus</i>	1.0
<i>Stipa hymenoides</i>	4.0

Section 3 (middle section)

Single spp. planted in 10 ft. strips: clover, winterfat, globemallow, shadscale, sunflower, kochia, Russian wildrye, crested wheatgrass, squirreltail, thickspike, Palmer penstemon, Indian ricegrass.

COLOR PHOTOGRAPHS



C V Spur No. 2
Section 1 (West Side)



C V Spur No. 2
Section 2 (East Side)

APPENDIX
Raw Data

BLACKHAWK

CV Spur - Reveg. Test Plot #2

Slope & Exp:

Section #1 (West Side)

Sample Date: 26 Aug 97

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Sarcobatus vermiculatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
--------------------------------	------	------	------	------	------	------	------

FORBS

<i>Bassia hyssopifolia</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
----------------------------	------	------	------	------	------	------	------

<i>Kochia scoparia</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00
------------------------	------	------	------	------	------	------	------

<i>Sisymbrium altissimum</i>	35.00	55.00	45.00	35.00	65.00	25.00	25.00
------------------------------	-------	-------	-------	-------	-------	-------	-------

GRASSES

<i>Agropyron cristatum</i>	5.00	0.00	15.00	0.00	5.00	20.00	10.00
----------------------------	------	------	-------	------	------	-------	-------

COVER

Total Living Cover	40.00	60.00	60.00	35.00	70.00	45.00	40.00
--------------------	-------	-------	-------	-------	-------	-------	-------

Litter	5.00	5.00	10.00	55.00	10.00	9.00	10.00
--------	------	------	-------	-------	-------	------	-------

Bareground	50.00	30.00	25.00	5.00	15.00	45.00	45.00
------------	-------	-------	-------	------	-------	-------	-------

Rock	5.00	5.00	5.00	5.00	5.00	1.00	5.00
------	------	------	------	------	------	------	------

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
--------	------	------	------	------	------	------	------

Forbs	87.50	100.00	75.00	100.00	92.86	55.56	75.00
-------	-------	--------	-------	--------	-------	-------	-------

Grasses	12.50	0.00	25.00	0.00	7.14	44.44	25.00
---------	-------	------	-------	------	------	-------	-------

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
0.00	0.00	0.00	5.00	10.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
30.00	70.00	30.00	55.00	35.00	20.00	35.00	40.00	45.00	70.00

0.00	0.00	30.00	5.00	25.00	20.00	5.00	10.00	5.00	0.00
------	------	-------	------	-------	-------	------	-------	------	------

30.00	70.00	60.00	65.00	70.00	40.00	40.00	50.00	50.00	75.00
5.00	20.00	10.00	20.00	10.00	10.00	10.00	10.00	10.00	15.00
60.00	5.00	25.00	10.00	15.00	40.00	45.00	35.00	35.00	5.00
5.00	5.00	5.00	5.00	5.00	10.00	5.00	5.00	5.00	5.00

0.00	0.00	0.00	7.69	14.29	0.00	0.00	0.00	0.00	0.00
100.00	100.00	50.00	84.62	50.00	50.00	87.50	80.00	90.00	100.00
0.00	0.00	50.00	7.69	35.71	50.00	12.50	20.00	10.00	0.00

BLACKHAWK
 CV Spur - Reveg. Test Plot #2
 Slope & Exp:
 Section #1 (West Side)
 Sample Date: 26 Aug 97

18.00	Mean	SDev	Freq	
0.00	0.83	2.50	11.11	SHRUBS <i>Sarcobatus vermiculatus</i>
0.00	0.28	1.15	5.56	FORBS <i>Bassia hyssopifolia</i>
0.00	0.56	1.57	11.11	<i>Kochia scoparia</i>
65.00	43.33	15.81	100.00	<i>Sisymbrium altissimum</i>
0.00	8.61	9.25	66.67	GRASSES <i>Agropyron cristatum</i>

65.00	53.61	13.72		COVER Total Living Cover
10.00	13.00	10.96		Litter
20.00	28.33	16.58		Bareground
5.00	5.06	1.51		Rock
0.00	1.22	3.62		% COMPOSITION Shrubs
100.00	82.11	18.36		Forbs
0.00	16.67	17.36		Grasses

BLACKHAWK

CV Spur - Test Plot #2

Slope & Exp:

Section #2 (East Side)

Sample Date: 26 Aug 97

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Sarcobatus vermiculatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
--------------------------------	------	------	------	------	------	------	------

FORBS

<i>Bassia hyssopifolia</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00
----------------------------	------	------	------	------	------	------	------

<i>Halogeton glomeratus</i>	0.00	20.00	0.00	0.00	0.00	0.00	0.00
-----------------------------	------	-------	------	------	------	------	------

<i>Kochia scoparia</i>	45.00	0.00	20.00	0.00	0.00	0.00	0.00
------------------------	-------	------	-------	------	------	------	------

<i>Sisymbrium altissimum</i>	5.00	5.00	5.00	30.00	20.00	5.00	45.00
------------------------------	------	------	------	-------	-------	------	-------

GRASSES

<i>Agropyron cristatum</i>	20.00	0.00	25.00	0.00	25.00	45.00	10.00
----------------------------	-------	------	-------	------	-------	-------	-------

COVER

Total Living Cover	70.00	30.00	50.00	30.00	45.00	50.00	55.00
--------------------	-------	-------	-------	-------	-------	-------	-------

Litter	10.00	5.00	10.00	10.00	10.00	10.00	10.00
--------	-------	------	-------	-------	-------	-------	-------

Bareground	15.00	60.00	30.00	55.00	40.00	35.00	30.00
------------	-------	-------	-------	-------	-------	-------	-------

Rock	5.00	5.00	10.00	5.00	5.00	5.00	5.00
------	------	------	-------	------	------	------	------

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
--------	------	------	------	------	------	------	------

Forbs	71.43	100.00	50.00	100.00	44.44	10.00	81.82
-------	-------	--------	-------	--------	-------	-------	-------

Grasses	28.57	0.00	50.00	0.00	55.56	90.00	18.18
---------	-------	------	-------	------	-------	-------	-------

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
0.00	40.00	50.00	15.00	0.00	0.00	0.00	20.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
25.00	0.00	10.00	15.00	0.00	30.00	30.00	10.00	50.00	0.00
15.00	40.00	20.00	30.00	55.00	30.00	20.00	30.00	25.00	50.00
50.00	80.00	80.00	60.00	55.00	60.00	70.00	60.00	80.00	50.00
10.00	10.00	5.00	10.00	10.00	10.00	20.00	5.00	15.00	5.00
35.00	5.00	14.00	25.00	30.00	25.00	5.00	30.00	3.00	40.00
5.00	5.00	1.00	5.00	5.00	5.00	5.00	5.00	2.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00
70.00	50.00	75.00	50.00	0.00	50.00	71.43	50.00	62.50	0.00
30.00	50.00	25.00	50.00	100.00	50.00	28.57	50.00	31.25	100.00

BLACKHAWK
 CV Spur - Test Plot #2
 Slope & Exp:
 Section #2 (East Side)
 Sample Date: 26 Aug 9

18.00	Mean	SDev	Freq	
<hr/>				
0.00	0.28	1.15	5.56	SHRUBS <i>Sarcobatus vermiculatu</i>
15.00	8.06	14.54	33.33	FORBS <i>Bassia hyssopifolia</i>
5.00	1.39	4.66	11.11	<i>Halogeton glomeratus</i>
0.00	5.28	11.60	22.22	<i>Kochia scoparia</i>
0.00	15.83	15.39	77.78	<i>Sisymbrium altissimum</i>
10.00	25.00	15.09	88.89	GRASSES <i>Agropyron cristatum</i>
<hr/>				
30.00	55.83	15.75		COVER Total Living Cover
10.00	9.72	3.52		Litter
55.00	29.56	16.51		Bareground
5.00	4.89	1.66		Rock
<hr/>				
0.00	0.35	1.43		% COMPOSITION Shrubs
66.67	55.74	28.31		Forbs
33.33	43.91	28.43		Grasses
<hr/>				

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 then be graded to the appropriate contour, and scarified to reduce compacted zones. If cloddy surfaces exist they can be pulverized with a disc to create 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 conducive to successful establishment of vegetation during reclamation is given in Section 240.

Test plot information for the No.1 Refuse Area Test Plots is summarized in Appendix 3-1 "Vegetation Test Plots", of this MRP. These plots were established in the fall of 1987 by the former owner, Beaver Creek Coal Company. The final sampling of these plots in 2001 indicated some success with soil/refuse mixtures, as discussed in Appendix 3-1. These plots were located on the west end of the refuse pile, which has now been removed and used as a power plant fuel. DOGM approved the removal of the test plots in a letter from Mr. Daron R. Haddock on February 6, 2001.

An additional set of test plots were established in 1989, at the request of the Division. The location and details of these plots are shown in Appendix 3-2 "Reclamation Test Plot", in this MRP. This plot was intended to be left in place for 5 years; however, since the area was not needed for the operation, it was left in place and evaluated for over 8 years. During this time, qualitative and quantitative sampling was completed on the plot 3 separate times by Mt. Nebo Scientific, Inc., in 1991, 1992 and the last in 1997. The last report indicated that the east side of the test plots, where 1 ton of 3rd crop alfalfa hay was tilled into the top 6 inches of the soil showed a final cover (excluding weeds) of nearly 25%, whereas the native soil area on the west side remained below 10%. It should be noted that each of these reports were submitted to

the Division, as required. The 1997 report has been added to the existing Appendix 3-2 in this MRP.

Based on the results of the test plot sampling, it does appear that the proposed methods described above for the amendment of substitute topsoil (in-place soils on disturbed lands) is a viable option for reclamation on this site.

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.

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 **was** approved to be removed and burned in the Sunnyside Cogeneration Power Plant, in the fall of 2000. **The entire main refuse pile has since been removed and utilized in the power plant. The plan for removal was shown in Appendix 5-1 "Proposed Removal of Main Refuse Pile". This appendix included plans and figures with proposed dates for removal. Although the dates are no longer valid, since the pile is now gone, the appendix has been left in the MRP to provide the details and history of the removal process.**

An alternative proposal **had** 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 **provided** 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 **was** not intended to replace or supercede the original plan for the refuse pile removal, but merely to supplement the original plan. **Although this procedure is no longer used, the plan details have been left in Appendix 5-2 to clarify the initial removal of up to 15,000 tons of refuse material as approved.**

Although the main refuse pile has been removed, it is still considered active since ditch, culvert and sediment pond cleanout material as well as other site cleanup material will continue to be disposed of in the approved refuse area. A large portion of the previously approved refuse area may also be utilized as a coal storage area throughout the operational life of the facility. When the area is no longer required for the operation, it will be reclaimed according to the approved reclamation plan.

The following section is the approved Coal Processing Waste Disposal Plan for this site.

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.

The proposed final reclaimed configuration is shown on Plate 5-6 "Post Mining Topography and Drainage". A commitment has been made to revise and update this Plate prior to reclamation, since changes in configuration are possible over the life of the project. Based on the contours on the existing Plate 5-6, there are no areas with final slopes of 3H:1V or steeper, either on the truck dumps or refuse areas. There is a provision under Section 542.200 of the MRP to provide for hydroseeding and broadcast seeding on areas steeper than 4H:1V and hydromulching on areas steeper than 3H:1V, in the event this would become necessary at final reclamation. At this time, there are no portions of the site projected to be reclaimed with slopes 3H:1V or steeper.

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.

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.

Plate 5-3 shows the “As-Constructed” Refuse Pile contours prior to its shipment as a power plant fuel. The refuse pile is still considered active, and may be re-established in the future as conditions warrant. Because of the possible changes to this area over time, the company will revise both Plates 5-3 “Refuse Pile As-Constructed” and Plate 5-6 “Post Mining Topography and Drainage” prior to reclamation.

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.

Pre-law disturbed and post-law topsoil samples will be analyzed to determine soil nutrients and amendments to be applied, using the following parameters: Texture, pH, EC, SAR, and plant available Nitrogen, Potassium and Phosphorus.

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.

Appendix 8-1

Reclamation Cost Estimate

**Savage Services Corporation
Savage Coal Terminal**

Bonding Calculations

Direct Costs

Subtotal Demolition and Removal	\$	839,480.00	
Subtotal Backfilling and Grading	\$	436,595.00	
Subtotal Revegetation	\$	174,647.00	
Direct Costs	\$	1,450,722.00	

Indirect Costs

Mob/Demob	\$	145,072.00	10.0%
Contingency	\$	72,536.00	5.0%
Engineering Redesign	\$	36,268.00	2.5%
Main Office Expense	\$	98,649.00	6.8%
Project Mangement Fee	\$	36,268.00	2.5%
Subtotal Indirect Costs	\$	388,793.00	26.8%

Total Cost 2016 Dollars	\$	1,839,515.00	
-------------------------	----	--------------	--

Escalation factor			0.7%
Number of years			5
Escalation	\$	65,291.00	

Reclamation Cost Escalated	\$	1,904,806.00	
----------------------------	----	--------------	--

Bond Amount (rounded to nearest \$1,000)	\$	1,905,000.00	
--	----	--------------	--

Bond Posted Dollars	\$	2,525,000.00	
---------------------	----	--------------	--

Difference Between Cost Estimate and Bond	\$	620,000.00	
---	----	------------	--

Percent Difference	\$	0.33	
--------------------	----	------	--

Note: Direct costs are based on Bare Unit Costs from RS Means
Heavy Construction Cost Data 30th Annual Edition 2016.

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Shop Office 01																			19773
	Scale House 02																			1789
	No 1 Truck Dump 03																			5055
	No 2 Truck Dump 04																			2798
	No 3 Truck Dump 05																			1619
	No 4 Truck Dump 06																			1951
	No 5 Truck Dump 07																			1174
	Conveyors Eight 08																			8670
	Conveyor 48 inch 09																			9332
	No 4 Radial Stacker 10																			3584
	No 5 Radial Stacker 11																			1008
	Conveyor Piers 12																			2533
	Support Structure 13																			1512
	Water Tank 14																			0
	Reclaim Tunnel 15																			35051
	Portable Hopper 16																			941
	Trailer 17																			0
	Transfer Bin 18																			2248
	Preparation Plant 19																			219878
	Substation 20																			5997
	Fuel Storage 21																			4738
	Reclaim Control Bld 22																			1549
	Sample House 23																			4548
	Stacking Tube 24																			50203
	Loadout Silo 25																			240273
	Railroad 26																			25440
	Powerline 27																			3750
	Asphalt 28																			40260
	Pumphouse 29																			13888
	River Pump 30																			211
	Guard Rails 31																			11296
	Culverts 32																			2497
	Stacking Tube 33																			25830
	Coal Sampler Addition 34																			5946
	Conveyor Transfer 35																			17816
	New Shop Oil Storage Bld 36																			21198
	Plant Expansion 37																			8414
	Road Surfacing Material 38																			36723
	Total																			659460

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Shop Office 01																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	100	45	10								FT		58250	CF	15750
	Structure's Vol. Demolished																0.01	21	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						17					CY		17	CY	655
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			16405
	Equipment's Disposal Cost	Chain link remove 8'-10'	02 41 13 60 1700	3.07	/LF	240										LF		240	LF	737
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			737
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	100	45	0.5								FT		83	CY	1134
	Concrete's Vol. Demolished																1.3	108	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY														108	CY
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. trip	31 23 23 20 1014	3.08	/CY														108	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														108	CY
	Subtotal																			2831
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			19773

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Scale House 02																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	12	12	8								FT		1152	CF	323
	Structure's Vol. Demolished																0.01	0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						0					CY		0	CY	
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			323
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	75	15	3								FT		3375	CF	945
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						1					CY		1	CY	39
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			984
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Footer's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY						15					CY		15	CY	205
	Footer's Vol. Demolished																1.3	20	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													20	CY	34
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	3.09	/CY													20	CY	62
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													20	CY	181
	Subtotal																			482
	Total																			1789

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 1 Truck Dump 03																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	16	16	22								FT		5632	CF	1577
	Structure's Vol. Demolished																0.01	2	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						2					CY		2	CY	77
	Subtotal																			1654
	No. 2 Truck Dump	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	16	6	8								FT		788	CF	215
	Structure's Demolition Cost																0.01	1	CY	
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						1					CY		1	CY	39
	Subtotal																			254
	No. 2 Truck Dump	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	200	30	1								FT		6000	CF	1680
	Structure's Demolition Cost																0.01	2	CY	
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						2					CY		2	CY	77
	Subtotal																			1757
	Footer's Demolition	Concrete demolition	ConcreteDemo1	13.66	/CY	30	40	1								FT		44	CY	601
	Demolition Cost																1.3			
	Footer's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.60	/CY															57
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tng	31 23 23 20 1014	3.08	/CY															57
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF															57
	Subtotal																			1390
	Total																			5055

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 2 Truck Dump 04																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	18	16	22								FT		5832	CF	1577
	Structure's Vol. Demolished																0.01	2	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						2					CY		2	CY	77
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1654
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Footer's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.86	/CY	120	8	1								FT		36	CY	492
	Footer's Vol. Demolished																1.3	47	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													47	CY	79
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY													47	CY	145
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													47	CY	428
	Subtotal																			1142
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2796

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 3 Truck Dump 05																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	14	14	20								FT		3920	CF	1098
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						1					CY		1	CY	39
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1137
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Footer's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.86	/CY	20	20	1								FT		15	CY	205
	Footer's Vol. Demolished																1.3	20	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													20	CY	34
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY													20	CY	82
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													20	CY	181
	Subtotal																			482
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1619

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 4 Truck Dump 06																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	16	16	20								FT		5120	CF	1434
	Structure's Vol. Demolished																0.01	2	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						2					CY		2	CY	77
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1511
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Footer's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	48	4	2								FT		14	CY	181
	Footer's Vol. Demolished																1.3	18	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													18	CY	30
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. hri	31 23 23 20 1014	3.09	/CY													18	CY	58
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													18	CY	163
	Subtotal																			440
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1851

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 5 Truck Dump 07																			
	Structure's Demolition Cost	Steel Bid. Large	02 41 16 13 0020	0.28	/CF	30	14	8								FT		3380	CF	941
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						1					CY		1	CY	39
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			980
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Footer's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY	10	15	1								FT		8	CY	82
	Footer's Vol. Demolished																1.3	8	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY														8	CY
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. t	31 23 23 20 1014	3.09	/CY														8	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														8	CY
	Subtotal																			194
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1174

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Conveyors Eight 08																				
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	1980	4	4								FT		31680	CF	8870	
	Structure's Vol. Demolished																0.01	12	CY		
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		0	CY	0	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			8870	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																			8870	

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Conveyor 48 inch 09																				
	Structure's Demolition Cost	Steel Bid. Large	02 41 16 13 0020	0.28	/CF	1980	4	4								FT		31680	CF	8670	
	Structure's Vol. Demolished																0.01	12	CY		
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						12					CY		12	CY	462	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				9332
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Floor Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	10	15	1								FT			0	CY	0
	Floor's Vol. Demolished																1.3		0	CY	0
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														0	CY	0
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY														0	CY	0
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														0	CY	0
	Subtotal																				0
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				9332

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 4 Radial Stacker 10																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	200	8	8								FT		12800	CF	3584
	Structure's Vol. Demolished																	0.01	5	CY
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			3584
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Floor Demolition																			
	Demolition Cost																			
	Floor's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			0
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			3584

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	No 5 Radial Stacker 11																			
	Structure's Demolition Cost	Steel Bid. Large	02 41 16 13 0020	0.28	/CF	100	6	8								FT		3600	CF	1008
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1008
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Floor Demolition																			
	Demolition Cost																			
	Floor's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			0
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1008

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor Piers 12																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Floor Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	3	3	6							40	FT		80	CY	1083
	Floor's Vol. Demolished																1.3	104	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													104	CY	176
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tng	31 23 23 20 1014	3.09	/CY													104	CY	321
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													104	CY	943
	Subtotal																			2533
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2533

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Support Structure 13																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	300	1	1							18	FT		5400	CF	1512
	Structure's Vol. Demolished																0.01	2	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1512
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Floor Demolition																			
	Demolition Cost																			
	Floor's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1512

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Water Tank 14																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Floor Demolition																			
	Demolition Cost																			
	Floor's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			

REMOVED

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Reclaim Tunnel 15																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	1040	14	8								FT		116480	CF	32814
	Structure's Vol. Demolished																0.01	43	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						43					CY		43	CY	1658
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			34270
	Escape Tunnel																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF			160	4							FT		2011	CF	563
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						1					CY		1	CY	39
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			602
	Reclaim Tunnel 15																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	4	4	4								2 FT		128	CF	36
	Structure's Vol. Demolished																0.01	0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						0					CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			36
	Escape Tunnel																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	8	8	8								FT		512	CF	143
	Structure's Vol. Demolished																0.01	0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						0					CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			143
	Total																			35051

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Portable Hopper 16																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	20	12	14								FT		3360	CF	941
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			941
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Pad's Demolition																			
	Demolition Cost																			
	Pad's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			941

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Trailer 17																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			0

REMOVED

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Transfer Bin 18																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF				30	16						FT		8032	CF	1888
	Structure's Vol. Demolished																0.01	2	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						2					CY		2	CY	77
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1705
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Pad's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	20	20	1								FT		15	CY	205
	Pad's Vol. Demolished																1.3	20	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													20	CY	34
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY													20	CY	82
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													20	CY	181
	Subtotal																			482
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2248

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Preparation Plant 19																				
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	110	80	80								FT		704000	CF	197120	
	Structure's Vol. Demolished																0.01	281	CY		
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						281					CY		281	CY	10049	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			207188	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY	110	80	1								FT		328	CY	4453	
	Concrete's Vol. Demolished																1.3	424	CY		
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													424	CY	717	
	Transportation Cost	12 CY (16 Ten) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY													424	CY	1310	
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													424	CY	3648	
	Subtotal																			10328	
	Pad's Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY						75					CY		75	CY	1025	
	Pad's Vol. Demolished																1.3	98	CY		
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													98	CY	186	
	Transportation Cost	12 CY (16 Ten) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY													98	CY	303	
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													98	CY	889	
	Subtotal																			2383	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																			219678	

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Substation 20																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	20	27	8								FT		4320	CF	1210
	Structure's Vol. Demolished																0.01	2	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	EGDC	EGDC	38.5	/TON						64					CY		84	CY	2484
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			3674
	Transformers 's Disposal Cost	Mechanical equipment heavy	25 05 05 10 3800	795	/ton							2				Ton		2	Ton	1590
	Fence Cost	Chain link remove 8'-10'	02 41 13 80 1700	3.07	/LF	180										FT		180	FT	553
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			2143
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	20	27	0.5								FT		10	CY	
	Concrete's Vol. Demolished																1.3	13	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													13	CY	22
	Transportation Cost	12 CY (16 Ten) Dump Truck 1/2 mi. rd. ttr	31 23 23 20 1014	3.09	/CY													13	CY	40
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													13	CY	118
	Subtotal																			180
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			6997

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Fuel Storage 21																			
	Structure's Demolition Cost	3000 gal. to 5000 gal. tank	02 85 10 30 1023	760	EA.										2	EA		2	EA	1520
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						0					CY		0	CY	0
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1520
	Trailer:																			
	Structure's Demolition Cost	Mixed Materials Bld. Large	02 41 16 13 0100	0.31	/CF	10	50	8								FT		4000	CF	1240
	Structure's Vol. Demolished																0.01	1	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						1					CY		1	CY	38
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1279
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	30	30	0.68								FT		91	CY	
	Concrete's Vol. Demolished																1.3	118	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													118	CY	199
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY													118	CY	365
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													118	CY	1070
	Subtotal																			1694
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	30	30	0.5								FT		17	CY	
	Concrete's Vol. Demolished																1.3	22	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													22	CY	37
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY													22	CY	68
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													22	CY	200
	Subtotal																			305
	Total																			4736

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Reclaim Control Bld 22																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	0.28	/CF	22	16	12								FT		4224	CF	1183
	Structure's Vol. Demolished																	0.01	2	CY
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						2					CY		2	CY	77
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1260
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Pad's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY	22	22	0.5								FT		9	CY	123
	Pad's Vol. Demolished																1.3	12	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.68	/CY													12	CY	20
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY													12	CY	37
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													12	CY	109
	Subtotal																			289
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1549

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Sample House 23																				
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	22	22	30								FT		14520	CF	4068	
	Structure's Vol. Demolished																0.01	5	CY		
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						5					CY		5	CY	193	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			4259	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Pad's Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	22	22	0.5								FT		9	CY	123	
	Pad's Vol. Demolished																1.3	12	CY		
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														12	CY	20
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23 20 1014	3.09	/CY														12	CY	37
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														12	CY	109
	Subtotal																			289	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																			4548	

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Stacking Tube 24																			
	Structure's Demolition Cost	Concrete Bld. Large	02 41 16 13 0050	0.41	/CF			200	20						4	FT		82832	CF	25761
	Structure's Vol. Demolished																0.01	23	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						23					CY		23	CY	888
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			28847
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Pad's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY					188					4	CY		744	CY	10183
	Pad's Vol. Demolished																1.3	987	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													967	CY	1834
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY													967	CY	2888
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													967	CY	8771
	Subtotal																			23356
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			50203

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Loadout Silo 25																				
	Structure's Demolition Cost	Concrete Bld. Large	02 41 16 13 0050	0.41	/CF				200	50						4	FT		392696	CF	161007
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						145					CY		145	CY	5583	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				168600
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Pad's Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY						2327					1	CY		2327	CY	31787
	Pad's Vol. Demolished																	1.3	3025	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														3025	CY	5112
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY														3025	CY	9347
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														3025	CY	27437
	Subtotal																				73683
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				240273

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Railroad 26																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost	Rail Road Removal/Non Means	RR Contractors x 1.2	12000 /Mi		11200										LF		2.12 Mi		25440
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			25440
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			25440

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Powerline 27																				
	Structure's Demolition Cost																				
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																				
	Equipment's Disposal Cost	Powerpole	Division Estimate	150	EA										25	EA		25	EA		3750
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				3750
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				3750

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Aphalt 2B																				
	Haul road PR-1																				
	Demolition Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.12	SY	770	24	0.5		1027											
	Pavement's Vol. Demolished																	1027	SY	7310	
	Loading Cost	FEL wheeled loader 3 CY	31 23 16 42 1601	0.96	CY						342							342	CY		
	Transportation Cost	20 CY Dump Trailer 4 Mile Round Trip	31 23 23 20 5530	5.32	CY						445						1.3	445	CY	427	
	Disposal Costs	Asphalt crushed/45 pounds/CF	Nielson Construct	8.4	Ton								270					270	TON	2268	
	Haul road PR-2																				
	Demolition Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.12	SY	1720	24	0.5		2293											
	Pavement's Vol. Demolished																	2293	SY	16329	
	Loading Cost	FEL wheeled loader 3 CY	31 23 16 42 1601	0.96	CY						764							764	CY		
	Transportation Cost	20 CY Dump Trailer 4 Mile Round Trip	31 23 23 20 5530	5.32	CY						994						1.3	994	CY	954	
	Disposal Costs	Asphalt crushed/45 pounds/CF	Nielson Construct	8.4	Ton								464					464	TON	3898	
	Subtotal																			39641	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Haul Road PR-2																				
	Pavement's Demolition																				
	Demolition Cost																				
	Pavement's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																			0	
	Parking Lot																				
	Demolition Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.12	/SY	50	140	0.25		1750											
	Loading Cost	FEL wheeled loader 3 CY	31 23 16 42 1601	0.96	CY													1.3	85	CY	463
	Transportation Cost	20 CY Dump Trailer 4 Mile Round Trip	31 23 23 20 5530	5.32	CY														84	CY	81
	Disposal Costs	Asphalt crushed/45 pounds/CF	Nielson Construct	8.4	Ton								51						84	CY	447
	Subtotal																			51	428
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				40259.64

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Pumphouse 29																			
	Structure's Demolition Cost	Mixed Materials Bld. Large	02 41 16 13 0100	0.31	/CF	40	28	10								FT		10400	CF	3224
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						135					CY		135	CY	5198
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			6422
	Pumphouse																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF				8	12						1 Ft.		905	CF	253
	Structure's Vol. Demolished																0.01	5	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						5							5	CY	193
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			448
	Pumphouse																			
	Structure's Demolition Cost	Concrete Bld. Large	02 41 16 13 0050	0.41	/CF				30	21						1 Ft.		10391	CF	4260
	Structure's Vol. Demolished																0.01	4	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON						4							4	CY	154
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			4414
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Pad's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY	40	28	0.5								FT		19	CY	260
	Pad's Vol. Demolished																1.3	25	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													25	CY	42
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY													25	CY	77
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													25	CY	227
	Subtotal																			606
	Total																			13688

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	River Pump 30																				
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	8	8	8								FT		512	CF	143	
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			143	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Pad's Demolition	Concrete demolition	ConcreteDemo1	13.66	/CY	8	8	1								FT		2	CY	27	
	Demolition Cost																				
	Pad's Vol. Demolished																	1.3			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY														3	CY	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY														3	CY	
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF															3	
	Subtotal																			65	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				211

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Guard Rails 31																			
	Structure's Demolition Cost	Guard Rail Removal	02.41.13.20.0010	2.28	LF	4950										LF		4950	LF	11288
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			11288
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			11288

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Stacking Tube 33																			
	36" Conveyor																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	100	45	10								FT		45000	CF	12600
	Structure's Vol. Demolished																0.1	167	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		167	CY	6430
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			19030
	Steel Stacking Tube																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF				80.3	10						2 FT		12813	CF	3532
	Structure's Vol. Demolished																0.1	47	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON											CY		47	CY	1810
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			5342
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY							48				CY		48	CY	628
	Concrete's Vol. Demolished																1.3	60	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													60	CY	101
	Transportation Cost	12 CY (16 Ten) Dump Truck 1/2 mi. rd. trip	31 23 23 20 1014	3.09	/CY													60	CY	185
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													60	CY	544
	Subtotal																			1456
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			25830

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Coal Sampler Addition 34																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	27	26	18								FT		11232	CF	3145
	Structure's Vol. Demolished																0.1	42	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON								100			lb/cf		57	ton	2195
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			5340
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY	27	26	0.75								FT		19	CY	260
	Concrete's Vol. Demolished																1.3	25	CY	
	Loading Cost	Front end loader 3 CY	31 23 18 42 1300	1.69	/CY														26	CY
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY														25	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														25	CY
	Subtotal																			606
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			5948

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor Transfer 35																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	1538	7	4								FT		43084	CF	12058
	Structure's Vol. Demolished																0.05	80	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON								100			lb/cf		108	ton	4158
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			18216
	Excavate 18" diameter culvert	Excavation Bulk Bank 2 CY (322BL)	31 23 16 32 0260	1.44	/CY	800	2	3								FT		178	CY	256
	Backfill 18" diameter culvert	Backfill Trench Mininal Haul 2 1/4 CY	31 23 16 13 3080	1.79	/CY	800	2	3								FT		178	CY	319
	Subtotal																			575
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY	8	2	2								22 FT		28	CY	355
	Concrete's Vol. Demolished																1.3	34	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														34	CY
	Transportation Cost	12 CY (16 Ten) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY														34	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF														34	CY
	Subtotal																			625
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			17616

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	New Shop Oil Storage Bld 36																				
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	40	60	18								FT		57800	CF	16128	
	Structure's Vol. Demolished																0.01	21	CY		
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	ECDC	ECDC	38.5	/TON								100			lb/cf		28	ten	1078	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			17208	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																			0	
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY						128					CY		128	CY	1721	
	Concrete's Vol. Demolished																1.3	184	CY		
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														184	CY	277
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY														184	CY	507
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.07	/CF														184	CY	1487
	Subtotal																			3692	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																			21188	

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Plant Expansion 37																			
	Plant Feed Conveyor																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	233	4	4								FT		3728	CF	1044
	Structure's Vol. Demolished																0.01	1	CY	
	Fine Raow Coal Conveyor																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	200	4	4								FT		3200	CF	896
	Structure's Vol. Demolished																0.01	1	CY	
	Refuse Conveyor																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	100	4	4								FT		1600	CF	448
	Structure's Vol. Demolished																0.01	1	CY	
	Stacking Conveyor																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28	/CF	100	4	4								FT		1600	CF	448
	Structure's Vol. Demolished																0.01	1	CY	
	Subtotal																			2836
	Plant Feed Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY						42.6					CY		42.6	CY	582
	Concrete's Vol. Demolished																1.3	55	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													55	CY	93
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY													55	CY	170
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													55	CY	498
	Subtotal																			1344
	Fine Raow Coal Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY						33.1					CY		33.1	CY	452
	Concrete's Vol. Demolished																1.3	43	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													43	CY	73
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY													43	CY	133
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													43	CY	390
	Subtotal																			1048
	Refuse Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY						15.3					CY		15.3	CY	209
	Concrete's Vol. Demolished																1.3	20	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													20	CY	34
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY													20	CY	62
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													20	CY	181
	Subtotal																			486
	Stacking Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.68	/CY						85.1					CY		85.1	CY	1162
	Concrete's Vol. Demolished																1.3	111	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													111	CY	188
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY													111	CY	343
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CF													111	CY	1007
	Subtotal																			2700
	Total																			8414

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Area	Unit	Volume	Unit	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Road Surfacing Material 38	Remove Road Gravel (Nonsalvageable)	31 22 18 10 0100																
	Blade Off Gravel	Motor Grader	2005 RS Means	0.72	/SY			33-5											
		PR-1				935	24	0.418	2493	SY	9335	CF		0.72	SY		2493	SY	1795
		PR-3				1425	24	0.418	3800	SY	14227	CF		0.72	SY		3800	SY	2738
		PR-4				3840	20	0.418	6533	SY	31949	CF		0.72	SY		6533	SY	6144
		PR-5				825	16	0.418	1111	SY	4160	CF		0.72	SY		1111	SY	800
		PR-6				545	18	0.418	989	SY	3828	CF		0.72	SY		989	SY	688
		PR-7				2170	24	0.418	5787	SY	21685	CF		0.72	SY		5787	SY	4188
		PR-9				420	20	0.418	933	SY	3494	CF		0.72	SY		933	SY	672
		PR-10				580	16	0.418	996	SY	3727	CF		0.72	SY		996	SY	717
		PR-11				400	24	0.418	1067	SY	3994	CF		0.72	SY		1067	SY	788
		PR-12				575	20	0.418	1278	SY	4784	CF		0.72	SY		1278	SY	920
		PR-13				950	16	0.418	1889	SY	6323	CF		0.72	SY		1889	SY	1216
	Subtotal																		20832
		Load Gravel into Trucks																	
	Equipment's Disposal Cost	FEL wheeled unit 3 CY	31 23 18 42 1801	0.98	/CY						3973						3973	CY	3814
	Dismantling Cost																		
	Equipment's Vol. Demolished																		
	Loading Costs																		
	Transport Costs																		
	Disposal Costs																		
	Subtotal																		3814
		Haul Gravel to Disposal																	
	Haulage for Disposal	12 CY Dump Truck 1/2 Mi. Round Trip	31 23 23 20 1014	3.09	/CY						3973						3973	CY	12277
	Demolition Cost																		
	Concrete's Vol. Demolished																		
	Loading Cost																		
	Transportation Cost																		
	Disposal Costs																		
	Subtotal																		12276.57
	Concrete Demolition																		
	Demolition Cost																		
	Concrete's Vol. Demolished																		
	Loading Cost																		
	Transportation Cost																		
	Disposal Costs																		
	Subtotal																		
	Concrete Demolition																		
	Demolition Cost																		
	Concrete's Vol. Demolished																		
	Loading Cost																		
	Transportation Cost																		
	Disposal Costs																		
	Subtotal																		
	Total																		36723

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Ripping															
D7R Series II w/ Ripper					195.63	1	195.63	HR					139	HR	27193
Subtotal															27193

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Vegetation																				
	General Area																				
	Seeding Equipment and Labor	Tractor Spreader (equip. & labor) B-66	Reveg004	14.34	/MSF					132.5						AC		5772	MSF	82770	
	Seeding Material	General Seed Mix	Savage07221	181.38	/AC					132.5						AC		132.5	AC	24033	
	Mulch	Crew B 65	Reveg008	1208.59	/Day										11	Days			11	Day	13272
		Hay bale	Reveg007	73.92	/ton					132.5						AC			132.5	AC	9794
	Riparian																				
	Seeding Equipment and Labor	Hydro Spreader (equip. & labor) B-81 60MS	Reveg002	23.75	/MSF					5.28						AC		230	MSF	5484	
	Seeding Material	Riparian Seed Mix	Savage07222	59.4	/AC					5.28						AC		5.28	AC	314	
	Area									5.28											
		Bare root seedlings, 11" to 16" med. soil	32 83 43 10 0130	0.82	Ea					5.28						AC					
															4983	EA		4983	EA	4070	
	Subtotal																			139717	
	Revegetation																				
	25% Revegetation Rate																				34030
	Subtotal																				34030
	Subtotal																				
	Subtotal																				
	Subtotal																				
	Total																				174847

ATTACHMENT A

Bond Calculation Worksheets

March 2017

**WORKSHEET 3
MATERIAL HANDLING PLAN SUMMARY**

Earthmoving Activity	Volume (LCY)	Origin	Destination	Haul Distance (ft)	Grade* (%)	Equipment To Be Used
1- Site Grading	119,479		Backfill/Contour	300 Avg.	+5	D9R-9U Dozer (2)
2- Topsoil	67,592	Stockpile	Disturbed Area	2000 Avg.	0 Avg.	627 F Scraper (2) w/D8N Push Tractor
3- Ripping/Roughening	132.5 ac.		Disturbed Area			D7R-SU Dozer w/3 Shank Ripper
4- Clean-Up Coal Piles	3000	Coal Piles	Ship	300 Avg.	+5 Avg.	D9R-9U Dozer 988 F - Loader
* Record grade resistance (% grade) here.						

**WORKSHEET 4B
EARTHWORK QUANTITY**

Site Grading

Earthwork Volume -119,479 LCY (See Worksheet 4A)

Estimate all moved by dozers.

Topsoil Replacement

Topsoil Volume = 67,592 LCY
(To be moved by scraper)

Ripping

Ripping depth for 132.5 ac. disturbed area = 1.5 ft.

Volume = $(132.5 \text{ ac} \times 43,560 \text{ SF/ac} \times 1.5 \text{ ft}) / 27 \text{ CF/CY} = \underline{\underline{320,650 \text{ BCY}}}$

Data Source(s):

Mine Plan

**WORKSHEET 5A
PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE**

Earthmoving Activity: (119,479 CY)

Recontour and rough grade disturbed areas.

Characterization of Dozer Used (type, size, etc.):

D9R-9U Dozer

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

300 LF push distance @ +5% effective grade.

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} = & \frac{0.75}{\text{operator factor}} \times \frac{0.80}{\text{material factor}} \times \frac{0.83}{\text{efficiency factor}} \times \frac{0.90}{\text{grade factor}} \\ & \times \frac{0.87}{\text{weight correction factor}} \times \frac{1.0}{\text{production method/blade factor}} \times \frac{1.0}{\text{visibility factor}} \times \frac{1.0}{\text{elevation factor}} = \frac{0.39}{\text{}} \end{aligned}$$

$$\text{Net Hourly Production} = \frac{480}{\text{normal hourly production}} \text{ LCY/hr} \times \frac{0.39}{\text{operating adjustment factor}} = \frac{187}{\text{}} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{119,479}{\text{volume to be moved}} \text{ LCY} \div \frac{187}{\text{net hourly production}} \text{ LCY/hr} = \frac{639}{\text{}} \text{ hr}$$

Note: Minimum of 2 dozers will be used.

Data Source(s):

Caterpillar Performance Handbook, Edition 28.

**WORKSHEET 5B
PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE**

Earthmoving Activity:

Push tractor to assist loading scrapers.

Characterization of Dozer Used (type, size, etc.):

D8N dozer with a "SU" Blade.

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

Scrapers loaded with Back-track Loading Method.

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} = & \frac{\quad}{\text{operator factor}} \times \frac{\quad}{\text{material factor}} \times \frac{\quad}{\text{efficiency factor}} \times \frac{\quad}{\text{grade factor}} \\ & \times \frac{\quad}{\text{weight correction factor}} \times \frac{\quad}{\text{production method/blade factor}} \times \frac{\quad}{\text{visibility factor}} \times \frac{\quad}{\text{elevation factor}} = \frac{\quad}{\quad} \end{aligned}$$

$$\text{Net Hourly Production} = \frac{\quad}{\text{normal hourly production}} \text{ LCY/hr} \times \frac{\quad}{\text{operating adjustment factor}} = \frac{\quad}{\quad} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{\quad}{\text{volume to be moved}} \text{ LCY} + \frac{\quad}{\text{net hourly production}} \text{ LCY/hr} = \frac{\quad}{\quad} * 102 \text{ hr}$$

* See Worksheet 11B-1.

Data Source(s):

Caterpillar Performance Handbook, Edition 28.

**WORKSHEET 5C
PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE**

Earthmoving Activity: (1,500 CY)

Clean-Up of Coal Storage Areas.

Characterization of Dozer Used (type, size, etc.):

D9R-9U Dozer

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

300 LF push distance @ +5% effective grade.

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} = & \frac{0.75}{\text{operator factor}} \times \frac{0.80}{\text{material factor}} \times \frac{0.83}{\text{efficiency factor}} \times \frac{0.90}{\text{grade factor}} \\ & \times \frac{0.87}{\text{weight correction factor}} \times \frac{1.0}{\text{production method/blade factor}} \times \frac{1.0}{\text{visibility factor}} \times \frac{1.0}{\text{elevation factor}} = \frac{0.39}{\text{}} \end{aligned}$$

$$\text{Net Hourly Production} = \frac{480}{\text{normal hourly production}} \text{ LCY/hr} \times \frac{0.39}{\text{operating adjustment factor}} = \frac{187}{\text{}} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{1,500}{\text{volume to be moved}} \text{ LCY} \div \frac{187}{\text{net hourly production}} \text{ LCY/hr} = \frac{8}{\text{}} \text{ hr}$$

Data Source(s):

Caterpillar Performance Handbook, Edition 28

WORKSHEET 7
PRODUCTIVITY AND HOURS REQUIRED FOR RIPPER-EQUIPPED DOZER USE

Ripping Activity: Unit will be used for ripping and roughening the site.

The activity will involve 132.5 acres.

Characterization of Dozer and Ripper Use:

D7R w/SU blade and 3-shank adjustable ripper.

Description of Ripping (ripping depth, cut spacing, cut length, and material to be ripped):

Ripping depth = 1.5 ft.
 Ripping width = 9.75 ft.

Productivity Calculation:

$$\text{Cycle Time} = \left(\frac{1,000 \text{ ft}}{\text{cut length}} \div \frac{88 \text{ ft/min}}{[\text{speed}]} \right) + \frac{0.3 \text{ min}}{\text{fixed turn time}^*} = 11.66 \text{ min/pass}$$

$$\text{Passes/Hour} = 60 \text{ min/hr} \div \frac{11.66 \text{ min/pass}}{\text{cycle time}} \times \frac{.83}{\text{efficiency factor}} = 4.27 \text{ passes/hr}$$

$$\text{Volume Cut/Pass} = \left(\frac{1.5 \text{ ft}}{\text{tool penetration}} \times \frac{9.75 \text{ ft}}{\text{cut spacing}} \times \frac{1,000 \text{ ft}}{\text{cut length}} \right) \div 27 \text{ ft}^3/\text{yd}^3$$

$$= 541.7 \text{ BCY/pass}$$

$$\text{Hourly Production} = 541.7 \text{ BCY/pass} \times 4.27 \text{ passes/hr} = 2,313.1 \text{ BCY/hr}$$

$$\text{Hours Required} = \frac{320,650 \text{ BCY}}{\text{bank volume to be ripped}} \div \frac{2,313.1 \text{ BCY/hr}}{\text{hourly production}} = 138.62 \text{ hr}$$

* Fixed turn time depends upon dozer used. 0.25 min/turn is normal.

** Remember to use the swell factor to convert from bank cubic yards to loose cubic yards when applying these data to Worksheet 5. Calculate separate dozer hauling of ripped material for each lift on that worksheet.

Data Source(s):

Caterpillar Performance Handbook, Edition 28.

**WORKSHEET 8
PRODUCTIVITY AND HOURS REQUIRED FOR LOADER USE**

Earthmoving Activity: (1,500 CY)

Clean-up of Coal Storage Areas.

Characterization of Loader Use (type, size, etc.):

988 F Front End Loader

Description of Loader Use (origin, destination, grade, haul distance, etc.):

300 LF haul distance @ +5% effective grade.
Working with D9N Dozer.

Productivity Calculations:

$$\text{Cycle Time} = \frac{\text{haul time (loaded)}}{\text{min}} + \frac{\text{return time (empty)}}{\text{min}} + \frac{\text{basic cycle time}}{\text{min}} = \text{min}$$

$$\text{Net Bucket Capacity} = \frac{\text{heaped bucket capacity}}{\text{LCY}} \times \frac{\text{bucket fill factor}^*}{\text{LCY}} = \text{LCY}$$

$$\text{Hourly Production} = \frac{\text{net bucket capacity}}{\text{LCY}} \div \frac{\text{cycle time}}{\text{min}} \times \frac{\text{efficiency factor}}{\text{min}} \times 60 \text{ min/hr} = \text{* 187} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{1,500 \text{ LCY}}{187 \text{ LCY/hr}} = 8 \text{ hr}$$

* Productivity assumed same as dozer, since both are working together.

Data Source(s):

See Worksheet 5C.

WORKSHEET 11B -1
PRODUCTIVITY OF DOZER PUSH-LOADED SCRAPER USE

Earthmoving Activity: (67,592 CY)

Haul and Spread Topsoil.

Characterization of Scraper Used (type, capacity, etc.):

Cat 627 F Non-push pull 14 CY (struck) + 20 CY (heaped) = 17 CY Average Capacity.

Description of Scraper Use (origin, destination, grade, haul distance, capacity, etc.):

1000' avg. haul @ 0% effective grade; 1000' return @ +5% effective grade.

List Pusher Tractor(s) Used:

D8N dozer.

Describe Push Tractor Loading Method (see figure on next page):

Back-track loading method with 1 push tractor.

Scraper Productivity Calculations:

$$\text{Cycle Time} = \frac{0.5}{\text{load time}} \text{ min} + \frac{0.50}{\text{loaded trip time}} \text{ min} + \frac{0.6}{\text{maneuver and spread time}} \text{ min} + \frac{0.70}{\text{return trip time}} \text{ min} = \underline{2.30} \text{ min}$$

$$\text{Hourly Production} = \frac{17}{\text{capacity}^*} \text{ LCY} \times 60 \text{ min/hr} \div \frac{2.30}{\text{cycle time}} \text{ min} \times \frac{.75}{\text{efficiency factor}} = \underline{332.6} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{67,592}{\text{volume to be handled}} \text{ LCY} \div \frac{332.6}{\text{hourly production}} \text{ LCY/hr} = \underline{203} \text{ hr}$$

* Use the average of the struck and heaped capacities.

Push Tractor Productivity Calculations:

$$\text{Pusher Cycle Time} = \frac{0.5}{\text{scraper load time}} \text{ min} \times \frac{1.5}{\text{pusher factor}} = \underline{0.75} \text{ min}$$

$$\text{Scrapers/Pusher} = \frac{2.30}{\text{scraper cycle time}} \text{ min} \div \frac{0.75}{\text{pusher cycle time}} \text{ min} = \underline{1.7} \text{ scrapers} \text{ (Use } \underline{2} \text{)}$$

$$\text{Pusher Hours Required} = \frac{203}{\text{scraper hours}} \text{ hr} \div \frac{2}{\text{scraper per pusher}} = \underline{102} \text{ hr} \text{ (round up)}$$

Data Source(s):

Caterpillar Performance Handbook, Edition 28.

WORKSHEET 13
SUMMARY CALCULATION OF EARTHMOVING COSTS

Equipment	Ownership & Operation Cost Total (\$/hr)	Labor Cost (\$/hr)	Total Hours Required	Total Cost (\$)
627 G Scraper	339.38	-	204	69,234.00
D8N-SU Push Tractor	235.88	-	102	24,060.00
(1) D7R-SU Dozer/Ripper	195.63	-	139	27,193.00
D9R-9U Dozer	299.00	-	647	193,453.00
988 G Loader	245.50	-	8	1,964.00
5000 G. Water Truck	146.00	-	438	63,948.00
4 x 4 Crew Pickup	19.60	-	438	8,585.00
CLAB	-	45.73	438	20,030.00
Foreman	-	64.22	438	28,128.00
(1) Used for Ground Prep Only - Included in Revegetation Cost.				
Grand Total				\$436,595.00

Data Source(s):

Means Heavy Construction Cost Data, 30th Annual Edition.

EQUIPMENT	COST/HR	QUANTITY	PRODUCTIVITY	HOURS	COST
CLEANUP					
D9R-9U	299.00	1500 CY	187 CY/HR	8	\$2,392.00
988 G	245.50	1500 CY	187 CY/HR	8	\$1,961.60
CLAB	45.73			16	\$731.68
Forman	64.22			16	\$1,027.52
5000 gal water truck	146.00			16	\$2,336.00
Pick Up	19.60			16	\$308.80
Total					\$8,757.60
EARTHMOVING - REGRADE					
D9R-9U	299.00	119,479 CY	187 CY/HR	639	\$191,061.00
CLAB	45.73			320	\$14,633.60
Foreman	64.22			320	\$20,550.40
5000 gal water truck	146.00			320	\$46,720.00
Pickup	19.60			320	\$6,272.00
Total					\$279,237.00
TOPSOIL					
D8N	235.88	67,592 CY		102	\$24,059.76
627 G	339.39			204	\$69,235.56
CLAB	45.73			102	\$4,664.46
Foreman	64.22			102	\$6,550.44
5000 gal water truck	146.00			102	\$14,892.00
Pickup	19.60			102	\$1,999.20
Total					\$121,401.42
REVEGETATION					
*Ground Prep D7-R w/ Ripper	195.63	132.5 AC		139	*(27,192.57)
Seeding Tractor/Spreader	14.34	5772 MSF			\$82,770.48
Mulch Power Mulcher/Crew	1206.60/Day	5772 MSF	530 MSF/DAY	11 DAYS	\$13,272.60
Seed Mix Riparian	59.40/AC	5.28 AC			\$313.63
Hydro Spreader/	23.76/MSF	230 MSF			\$5,464.80
Bare Root Seedlings	0.82/EA	4963			\$4,069.66
Seed Mix General	181.38/AC	132.5 AC			\$24,032.86

Hay Mulch	73.92/TON	132.5 TON	1 TON/ACRE		\$9,794.40
Sub Total					\$139,718.43
+25% Revegetation					\$34,929.61
Total					\$174,648.04

*Cost included with Earthwork Total on Bond Worksheets.