

C/007/022 Incoming

#5458

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

RECEIVED

MAY 30 2017

Attn: Joe Helfrich

DIV. OF OIL, GAS & MINING

Re: Midterm Completion Response
Savage Services Corporation
Savage Coal Terminal
C/007/0022, Task #5422

Dear Mr. Haddock:

Enclosed are two redline copies of the response for the deficiencies listed in the midterm completion review of the Savage Coal Terminal MRP. The entire application has been resubmitted, as requested. Also included is a checklist indicating the response location for each original deficiency, a new checklist for the response locations for the bonding calculation deficiencies 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

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: Midterm Completion Response, Task ID #5422

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

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

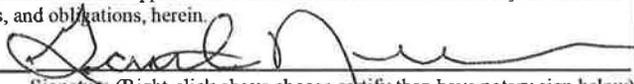
- | | | |
|---|--|---|
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ <input type="checkbox"/> increase <input type="checkbox"/> decrease. |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> 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 checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 10. Is the application submitted as a result of other laws or regulations or policies? |

Explain: Midterm Review

- | | | |
|---|--|--|
| <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? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 24. Does the application include confidential information and is it clearly marked and separated in the plan? |

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

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 Nielsen General Manager 05/25/2017 
 Print Name Position Date Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 25 day of May, 2017

Notary Public: Tami L. Mckendrick, state of Utah.

My commission Expires: 11-10-2018 }
 Commission Number: 680287 } ss:
 Address: 179 E. main }
 City: Price State: UT Zip: 84501 }



For Office Use Only: 	Assigned Tracking Number: 	Received by Oil, Gas & Mining <div style="text-align: center; font-size: 1.2em; font-weight: bold; color: blue;">RECEIVED</div> <div style="text-align: center; color: red; font-weight: bold;">MAY 30 2017</div> <div style="text-align: center; color: blue; font-weight: bold;">DIV. OF OIL, GAS & MINING</div>
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Checklist for Responses
To Mid-Term Review Deficiencies
For Bonding Estimates
Savage Coal Terminal

Demo Sheets

1 – Shop / Office 01

a – Steel Bldg. calculation okay. Dimensions corrected.

b – Concrete demo updated.

2 – Check Disposal on Site – Should be CY instead of CF.

a – Changed to CY on all sheets. Calculations were okay.

3 – Missing ECDC cost and quantity on Conveyors 8.

a – Added on items 08, 10, 11, 13, 16.

4 – Concrete Demo missing on some sheets.

a – Corrected on Conveyor 9.

5 – Verify the cost and RS Means reference for the 5000 gal. tank.

a – Same as on previous submittal.

6 – Provide RS Means, Rental Rate Blue Book or 3 bids for costs or references.

a - RS Means references used and updated throughout.

b – Non Means costs supported by written costs estimates in Attachment B.

7 – Sheet Asphalt 28 has a mix-up of CY and SY, and Parking Lot calcs. are off.

a – Corrected and updated on Asphalt 28.

8 – Verify SY Calculations on Road Surfacing Material 38.

a – Calculations checked – Okay.

b – Clarifications added.

Earthwork Sheets

All earthwork sheets need to include:

1 – Equipment over head of 0.1.

a – Added on all.

2 – Include RS Means reference, Rental Blue Book Guide or 3 bids.

a – Means reference added on all. Also see Worksheet 13.

3 – Verify Operator's Hourly Rate and Hourly Operating Rate.

a – Added operator's rate and updated all hourly rates.

4 – Use same number of hours in month or day as RS Means.

a – Checked and used same as RS Means.

5 – Include hourly wage rates from back page of RS Means book.

a – Included for operators, CLAB and foremen.

Revegetation

1 – Verify all bids are included and referenced.

a – RS Means references included where applicable.

b – Non RS Means costs supported by written estimates in Attachment B.

Total Sheet

1 – Make sure all totals are updated to correct costs.

a – All totals have been updated.

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:

<u>Directors:</u>		<u>Date:</u>
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

<u>Officers:</u>		<u>Date:</u>
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

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.

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

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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>	<u>435.60</u>
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

FIG. 1: LIVING COVER

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

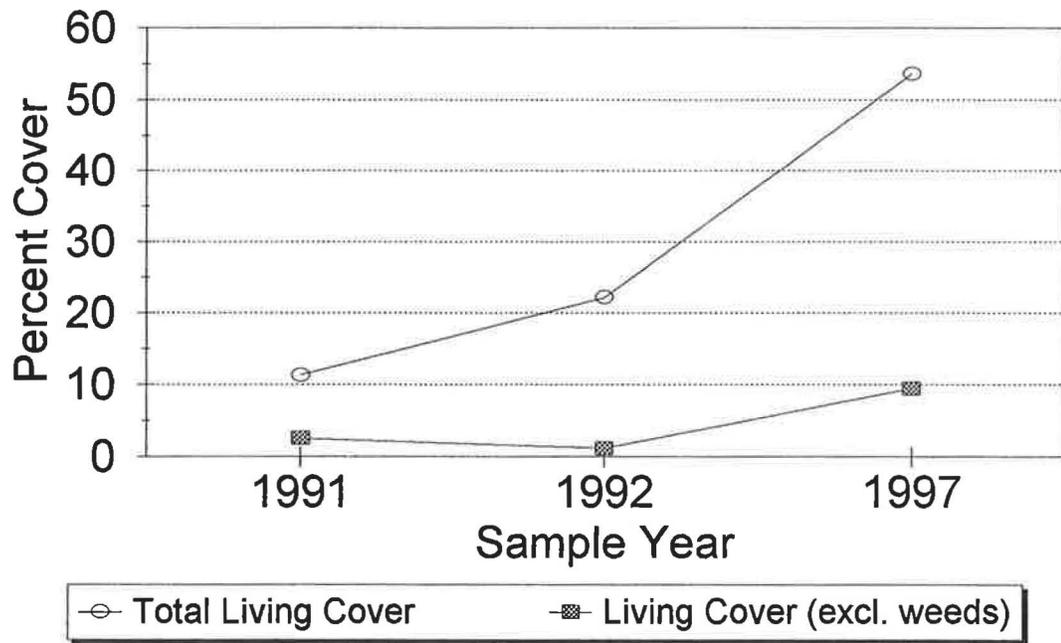


FIG. 2: LIVING COVER

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

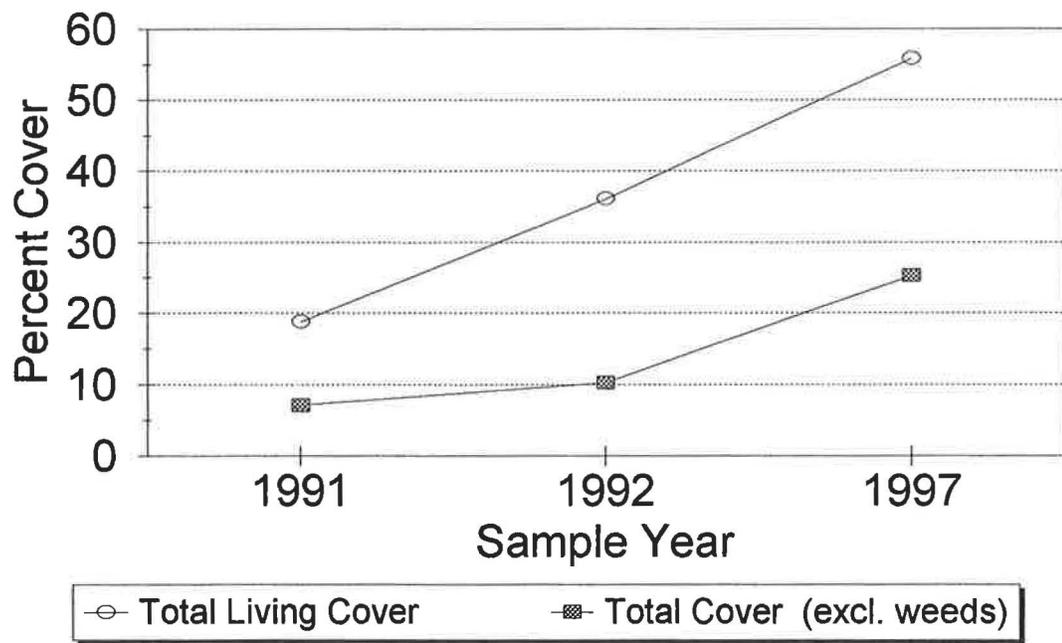


FIG. 3: WOODY SPECIES DENSITY
C.V. Spur No. 2 (West Side)

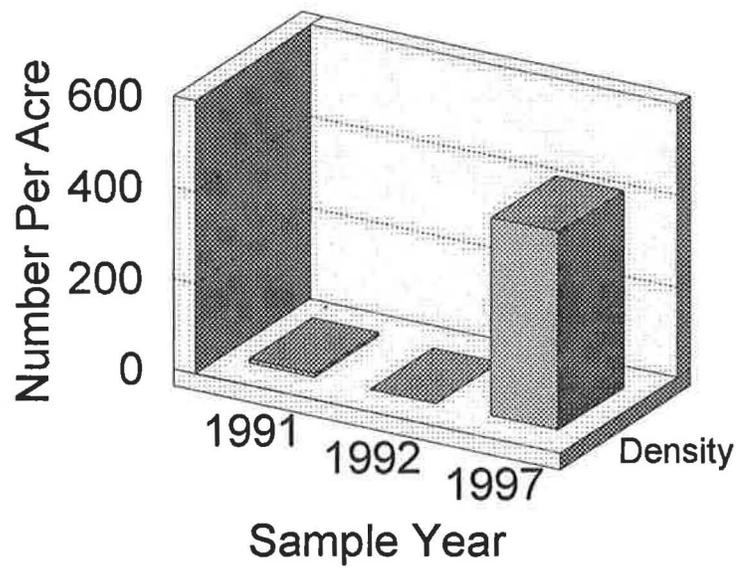


FIG. 4: WOODY SPECIES DENSITY

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

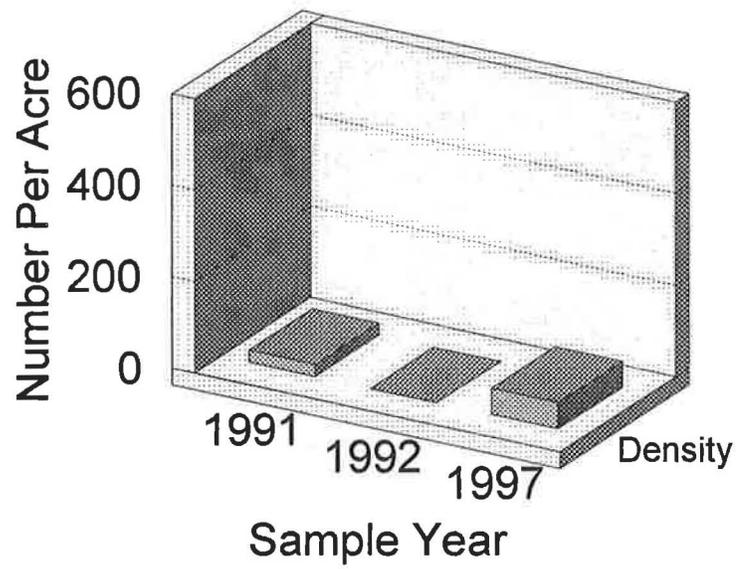


Fig. 5: Species Planted in Section 1 & 2 (East & West)
for the C.V. Spur No. 2 Test Plot

	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>Agropron 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
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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
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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
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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/>				SHRUBS
0.00	0.28	1.15	5.56	<i>Sarcobatus vermiculatu</i>
 				FORBS
15.00	8.06	14.54	33.33	<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>
 				GRASSES
10.00	25.00	15.09	88.89	<i>Agropyron cristatum</i>
 				COVER
30.00	55.83	15.75		Total Living Cover
10.00	9.72	3.52		Litter
55.00	29.56	16.51		Bareground
5.00	4.89	1.66		Rock
 				% COMPOSITION
0.00	0.35	1.43		Shrubs
66.67	55.74	28.31		Forbs
33.33	43.91	28.43		Grasses

- 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	\$	871,389.00
Subtotal Backfilling and Grading	\$	599,800.00
Subtotal Revegetation	\$	254,047.00
Direct Costs	\$	1,725,236.00

Indirect Costs

Mob/Demob	\$	172,524.00	10.0%
Contingency	\$	86,262.00	5.0%
Engineering Redesign	\$	43,131.00	2.5%
Main Office Expense	\$	117,316.00	6.8%
Project Mainagement Fee	\$	43,131.00	2.5%
Subtotal Indirect Costs	\$	462,364.00	26.8%

Total Cost 2016 Dollars	\$	2,187,600.00
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Escalation factor		0.7%
Number of years		5
Escalation	\$	77,645.00

Reclamation Cost Escalated	\$	2,265,245.00
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Bond Amount (rounded to nearest \$1,000)	\$	2,265,000.00
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Bond Posted Dollars	\$	2,525,000.00
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Difference Between Cost Estimate and Bond	\$	260,000.00
Percent Difference	\$	0.11

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																			20432
	Scale House 02																			1789
	No 1 Truck Dump 03																			5055
	No 2 Truck Dump 04																			2798
	No 3 Truck Dump 05																			1819
	No 4 Truck Dump 06																			1951
	No 5 Truck Dump 07																			1174
	Conveyors Eight 08																			9332
	Conveyor 48 inch 09																			9528
	No 4 Radial Stacker 10																			3777
	No 5 Radial Stacker 11																			1047
	Conveyor Piers 12																			2533
	Support Structure 13																			1589
	Water Tank 14																			0
	Reclaim Tunnel 15																			35051
	Portable Hopper 16																			980
	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 28																			25440
	Powerline 27																			3750
	Aphalt 28																			70505
	Pumphouse 29																			13888
	River Pump 30																			211
	Guard Rails 31																			11286
	Culverts 32																			2497
	Stacking Tube 33																			25830
	Coal Sampler Addition 34																			5946
	Conveyor Transfer 35																			17618
	New Shop Oil Storage Bld 36																			21198
	Plant Expansion 37																			8414
	Road Surfacing Material 38																			38723
	Total																			671386

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 18 13 0020	0.28	/CF	125	45	10								FT		56250	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																			16408
	Equipment's Disposal Cost	Chain link remove 8'-10'	02 41 13 80 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	13.66	/CY	125	45	0.5								FT		104	CY	1421
	Concrete's Vol. Demolished																1.3	135	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY													135	CY	228
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1014	3.09	/CY													135	CY	417
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													135	CY	1224
	Subtotal																			3290
	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																			20432

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																				964	
	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	13.68	/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 (18 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	/CY															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	18	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																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.88	/CY	30	40	1								FT		44	CY	601	
	Footer's Vol. Demolished																1.3	57	CY		
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY															98	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. tra	31 23 23 20 1014	3.09	/CY															178	
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY															517	
	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	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	36.5	/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	13.66	/CY	120	8	1								FT		38	CY	492
	Footer's Vol. Demolished																	1.3	47	CY
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														47	CY
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY														47	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														47	CY
	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 Bid. Large	02 41 16 13 0020	0.28	/CF	14	14	20								FT		3920	CF	1096
	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	13.66	/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	1.69	/CY													20	CY	34
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.08	/CY													20	CY	82
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													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																			1819

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	13.68	/CY	48	4	2								FT		14	CY	191
	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 (18 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	3.08	/CY													18	CY	56
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													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																			1951

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 Bld. Large	02 41 16 13 0020	0.28	/CF	30	14	8								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						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																			990
	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	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	1.69	/CY													8	CY	14
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rmd. trip	31 23 23 20 1014	3.06	/CY													8	CY	25
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													8	CY	73
	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						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																			
	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	
	Conveyor 48 inch 09																				
	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						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	13.88	/CY	10	15	1								FT		8	CY	82	
	Floor's Vol. Demolished																	1.3	8	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														8	CY	14
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trs	31 23 23 20 1014	3.09	/CY														8	CY	25
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														8	CY	73
	Subtotal																			154	
	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																			9826	

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							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																			3777
	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																			3777

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 Bld. Large	02 41 16 13 0020	0.28	/CF	100	8	6								FT		3800	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						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																			1047
	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																			1047

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	1093
	Floor's Vol. Demolished																1.3	104	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													104	CY	176
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1614	3.09	/CY													104	CY	321
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													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						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																			1580
	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																			1580

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	6								FT		118480	CF	32614
	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	1656
	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	583
	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
	Totals																			35061

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 10 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						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																			980
	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																			980

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	1689
	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																			1768
	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	20	20	1								FT		15	CY	205
	Pad's Vol. Demolished																1.3	20	CY	
	Loading Cost	Front end loader 3 CY	31 23 18 42 1300	1.69	/CY													20	CY	34
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tm	31 23 23 20 1014	3.09	/CY													20	CY	62
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													20	CY	181
	Subtotal																			452
	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							261				CY		261	CY	10049	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			207189	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/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	1.69	/CY														424	CY	717
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	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	3846
	Subtotal																			10326	
	Pad's Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/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	1.69	/CY														98	CY	166
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tr	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																			2385	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																			219876	

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 18 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	ECDC	ECDC	38.5	/TON						64					CY		64	CY	2464
	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 equipm heavy	25 05 05 10 3600	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	13.86	/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 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	3.09	/CY													13	CY	40
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													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																			5997

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 65 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																			
	Rubble's Weight (exclude steel)																0.01	1	CY	
	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																			1270
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	30	30	0.68								4	FT		91	CY
	Concrete's Vol. Demolished																	1.3	118	CY
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY														118	CY
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY														118	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														118	CY
	Subtotal																			1070
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	30	30	0.5												
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY														22	CY
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rd. tr	31 23 23 20 1014	3.09	/CY														22	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														22	CY
	Subtotal																			200
	Total																			4738

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	13.66	/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															20
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23 20 1914	3.09	/CY															37
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY															109
	Subtotal																			288
	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																			1548

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 Bid, Large	02 41 16 13 0020	0.28	/CF	22	22	30								FT		14520	CF	4066
	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	13.88	/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															20
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.06	/CY															37
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/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		62832	CF	25781
	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	36.5	/TON						23					CY		23	CY	886
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			20647
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Pad's Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo 1	13.66	/CY					186					4	CY		744	CY	10183
	Pad's Vol. Demolished																	1.3	967	CY
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY														967	CY
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tr	31 23 23 20 1014	3.09	/CY														967	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														967	CY
	Subtotal																			23556
	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		302699	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																			166500	
	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	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY														3025	CY	
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														3025	CY	
	Subtotal																			73053	
	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 28																			
	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 28																						
	Haul road PR-1																						
	Demolition Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.12	SY	770	24	0.5		2053													
	Pavement's Vol. Demolished																		2053	SY	14517		
	Loading Cost	FEL wheeled loader 3 CY	31 23 16 42 1601	0.98	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	10.35	Ton								270						445	CY	2367		
																			270	TON	2795		
	Haul road PR-2																						
	Demolition Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.12	SY	1720	24	0.5		4587													
	Pavement's Vol. Demolished																			4587	SY	32658	
	Loading Cost	FEL wheeled loader 3 CY	31 23 16 42 1601	0.98	CY						784								784	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	10.35	Ton								464						994	CY	5288		
																			464	TON	4802		
	Subtotal																				63911		
	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		778													
	Pavement's Vol. Demolished																				778	SY	5530
	Loading Cost	FEL wheeled loader 3 CY	31 23 16 42 1601	0.98	CY						65										65	CY	0
	Transportation Cost	20 CY Dump Trailer 4 Mile Round Trip	31 23 23 20 5530	5.32	CY						84						1.3		84	CY	81		
	Disposal Costs	Asphalt crushed/45 pounds/CF	Nielson Construct	10.35	Ton								51						84	CY	447		
																			51	Ton	528		
	Subtotal																				6621		
	Concrete Demolition																						
	Demolition Cost																						
	Concrete's Vol. Demolished																						
	Loading Cost																						
	Transportation Cost																						
	Disposal Costs																						
	Subtotal																						
	Total																				70509		

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	26	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																			8422
	Pumphouse																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.26	/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					CY		5	CY	193
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			446
	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					CY		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	13.66	/CY	40	26	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	/CY													25	CY	227
	Subtotal																			606
	Total																			13888

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																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	8	8	1								FT		2	CY	27
	Pad's Vol. Demolished																1.3	3	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.69	/CY													3	CY	5
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tr	31 23 23 20 1014	3.09	/CY													3	CY	9
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													3	CY	27
	Subtotal																			96
	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	11286
	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																			11286
	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																			11286

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																			12630
	Steel Stacking Tube																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.28 /CF					80.3	10						2 FT		12613	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	13.66 /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	1.69 /CY														60	CY	101
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09 /CY														60	CY	185
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07 /CY														60	CY	544
	Subtotal																			1458
	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 Bid. Large	02 41 16 13 0020	0.28	/CF	27	26	16								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 16 42 1300	1.69	/CY														25	CY
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tri	31 23 23 20 1014	3.09	/CY														25	CY
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY														25	CY
	Subtotal																			506
	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																			5946

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 18 13 0020	0.28	/CF	1538	7	4								FT		43064	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																				16218
	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 Minimal Haul 2 1/4 CY	31 23 18 13 3060	1.79	/CY	800	2	3								FT		178	CY	319	
	Subtotal																				575
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY	8	2	2								22 FT		26	CY	355	
	Concrete's Vol. Demolished																	1.3	34	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.89	/CY														34	CY	57
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. tnc	31 23 23 20 1014	3.09	/CY														34	CY	105
	Disposal Costs	Disposal on site	02 41 18 17 4200	9.07	/CY														34	CY	308
	Subtotal																				825
	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																				17818

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 35																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 18 13 0020	0.28	/CF	40	80	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/af		28	ton	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	164	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.68	/CY													164	CY	277
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rd. In	31 23 23 20 1014	3.09	/CY													164	CY	507
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													164	CY	1487
	Subtotal																			3962
	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																			21108

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																			2638
	Plant Feed Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/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. tri	31 23 23 20 1014	3.09	/CY													55	CY	170
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													55	CY	499
	Subtotal																			1344
	Fine Raow Coal Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/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. tri	31 23 23 20 1014	3.09	/CY													43	CY	133
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													43	CY	390
	Subtotal																			1048
	Refuse Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/CY						15.3					CY		15.3	CY	208
	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. tri	31 23 23 20 1014	3.09	/CY													20	CY	62
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													20	CY	181
	Subtotal																			486
	Stacking Conveyor																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	13.66	/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. tri	31 23 23 20 1014	3.09	/CY													111	CY	343
	Disposal Costs	Disposal on site	02 41 16 17 4200	9.07	/CY													111	CY	1007
	Subtotal																			2700
	Total																			8414

Ref.	Description	Materials	Means Reference Number	Bare Unit Cost	Unit	Length	Width	Height	Area	Unit	Volume	Unit	Volume	Unit	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Road Surfacing Material 38	Remove Road Gravel (Nonsalvageable)	31 22 16 10 0100																	
	Blade Off Gravel	Motor Grader	2005 RS Means	0.72	/SY			33-5												
		PR-1				935	24	0.416	2493 SY		9335 CF		346 CY		0.72 SY			2493 SY		1795
		PR-3				1425	24	0.416	3800 SY		14227 CF		527 CY		0.72 SY			3800 SY		2736
		PR-4				3840	20	0.416	8533 SY		31949 CF		1183 CY		0.72 SY			8533 SY		6144
		PR-5				625	16	0.416	1111 SY		4160 CF		154 CY		0.72 SY			1111 SY		800
		PR-6				545	16	0.416	909 SY		3628 CF		134 CY		0.72 SY			909 SY		698
		PR-7				2170	24	0.416	5787 SY		21665 CF		802 CY		0.72 SY			5787 SY		4166
		PR-9				420	20	0.416	933 SY		3454 CF		129 CY		0.72 SY			933 SY		672
		PR-10				560	16	0.416	896 SY		3727 CF		138 CY		0.72 SY			896 SY		717
		PR-11				400	24	0.416	1067 SY		3994 CF		148 CY		0.72 SY			1067 SY		768
		PR-12				575	20	0.416	1276 SY		4784 CF		177 CY		0.72 SY			1276 SY		920
		PR-13				950	16	0.416	1889 SY		6323 CF		234 CY		0.72 SY			1889 SY		1216
	Subtotal																			20632
	Equipment 's Disposal Cost	Load Gravel into Trucks																		
	Dismantling Cost	FEL wheeled unit 3 CY	31 23 16 42 1601	0.96	/CY						3973	/CY						3973	CY	3814
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			3814
	Haulage for Disposal	Haul Gravel to Disposal																		
	Demolition Cost	12 CY Dump Truck 1/2 Mi. Round Trip	31 23 23 20 1014	3.09	/CY						3973	/CY						3973	CY	12277
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			12277
	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

	Means Reference No.	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
Savage Coal Terminal Topsoil															
D6N-SU Push Tractor	154334310	235.88	23.59	77.30		1	336.77	HR					102	HR	34350
627G Scraper	154333550	339.36	33.94	77.30		1	450.62	HR					204	HR	91926
CLAS (Common Building Labor)	Means				58.15		58.15						102	HR	5931
Foreman Average, Outside	Means				79.95	1	79.95	HR					102	HR	8155
5,000 gal H2O Truck	154336950	146.00	14.60	63.35		1	223.95	HR					102	HR	22843
Pickup Truck Crew 4x4 1 Ton	154337200	19.60	1.96			1	21.56	HR					102	HR	2199
Subtotal															165405

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:

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

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

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

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:

$$\text{Operating Adjustment Factor} = \frac{\quad}{\text{operator factor}} \times \frac{\quad}{\text{material factor}} \times \frac{\quad}{\text{efficiency factor}} \times \frac{\quad}{\text{grade factor}}$$

$$\times \frac{\quad}{\text{weight correction factor}} \times \frac{\quad}{\text{production method/blade factor}} \times \frac{\quad}{\text{visibility factor}} \times \frac{\quad}{\text{elevation factor}} = \frac{\quad}{\quad}$$

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

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

* 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:

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

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

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

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:

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

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

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

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

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

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

* 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:

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

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

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

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

* 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:

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

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

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

Data Source(s):

Caterpillar Performance Handbook, Edition 28.

WORKSHEET 13
SUMMARY CALCULATION OF EARTHMOVING COSTS

EQUIPMENT	RS Means Ref. No	Rental Cost/Hr	OH Cost/Hr	*Oper Cost/Hr	Total Cost/Hr	Total Hours	Total Cost (\$)
627 G Scraper	01 54 33 3550	339.38	33.94	77.30	450.62	204	91,926.48
D8N-SU Push Tractor	01 54 33 4310	235.88	23.59	77.30	336.77	102	34,350.54
(¹) D7R-SU Dozer	01 54 33 4260	174.63	17.46	77.30	269.39	139	37,445.21
Ripper Attach.	01 54 33 0580	16.13	1.61	Included	17.74	139	2,465.86
D-9R-9U Dozer	01 54 33 4360	299.00	29.90	77.30	406.20	647	262,811.40
988G Loader	01 54 33 4810	245.50	24.55	77.30	347.35	8	2,778.80
5000 Gallon Water Truck	01 54 33 6950	146.00	14.60	63.35	223.95	438	98,090.10
4X4 Crew Pickup	01 54 33 7200	19.60	1.96	Included	21.56	438	9,443.28
CLAB	Common Bldg.	-	-	58.15	58.15	438	25,469.70
Foreman	Outside	-	-	79.95	79.95	438	35,018.10
(1) Used for Ground Prep Only – Included in Revegetation Cost.							
GRAND TOTAL:							\$ 599,799.47

Data Source(s):

Means Heavy Construction Cost Data, 30th Annual Edition.

*Back Page of RS Means Heavy Construction Cost Data, 30th Annual Edition

EQUIPMENT	COST/HR	QUANTITY	PRODUCTIVITY	HOURS	COST
CLEANUP					
D9R-9U	406.20	1500 CY	187 CY/HR	8	\$3,249.60
988 G	347.35	1500 CY	187 CY/HR	8	\$2,778.80
CLAB	58.15			16	\$930.40
Forman	79.95			16	\$1,279.20
5000 gal water truck	223.95			16	\$3,583.20
Pick Up	21.56			16	\$344.96
Total					\$12,166.16
EARTHMOVING - REGRADE					
D9R-9U	406.20	119,479 CY	187 CY/HR	639	\$259,561.80
CLAB	58.15			320	\$18,608.00
Foreman	79.95			320	\$25,584.00
5000 gal water truck	223.95			320	\$71,664.00
Pickup	21.56			320	\$6,899.20
Total					\$382,317.00
TOPSOIL					
D8N	336.77	67,592 CY		102	\$34,350.54
627 G	450.62			204	\$91,926.48
CLAB	58.15			102	\$5,931.30
Foreman	79.95			102	\$8,154.90
5000 gal water truck	223.95			102	\$22,842.90
Pickup	21.56			102	\$2,199.12
Total					\$165,405.24
REVEGETATION					
*Ground Prep D7-R w/ Ripper	287.13	132.5 AC		139	*((\$39,911.07)
Seeding Tractor/Spreader Means 32 9219 5700 B-66 Crew	884.98/Day	5772 MSF	52MSF/Day	111 Days	\$98,232.78
Mulch Power Mulcher - Large Means 32 92 13 16 0700 B-65 Crew	1596.58/Day	5772 MSF	530 MSF/Day	11 Days	\$17,562.38

Hydro Spreader Means 32 92 19 5800 B-81 Crew	2368.12/Day	230 MSF	80 MSF/Day	3 Days	\$7,104.36
Seed Mix Riparian The Maple Leaf Co.	103.40/AC	5.28 AC			\$545.95
Bare Root Seedlings The Maple Leaf Co.	1.26/EA	4963			\$6,253.38
Seed Mix General The Maple Leaf Co.	227.42/AC	132.5 AC			\$30,133.15
Hay Mulch IFA	327.59/TON	132.5 TON	1 TON/ACRE		\$43,405.08
Sub Total					\$203,237.08
+25% Revegetation					\$50,809.27
Total					\$254,046.35

*Cost included with Earthwork Total on Bond Worksheets.

ATTACHMENT B

Non-Means Prices

May 2017

Non-Means Pricing

<u>Item</u>	<u>Company</u>	<u>Date</u>	<u>Response</u>
Disposal	ECDC	3/16/17	Verbal Price of \$38.50/t Called for Written on 5/9, 5/11, 5/16 - No Response
Asphalt	Nielson Const.	5/9/17	Price Estimate Rec'd.
	Nelco Const.	5/16/17	Left Message - No Resp.
Seed	Maple Leaf	5/10/17	Price Estimate Rec'd.
	Stevenson	5/16/17	Price Estimate Rec'd.
	Utah Seed	5/16/17	No Response
Hay	IFA	5/9/17	Price Estimate Rec'd. Only known local supplier of certified hay.

Subject: Asphalt demo pricing
From: Luke, Eric (Nielson Construction) (eric.luke@nielsonconstruction.com)
To: blackhawk2422@yahoo.com;
Date: Tuesday, May 9, 2017 11:17 AM

Dan, nice to speak with you again. I did some calculations on the asphalt removal that we spoke about.

Use a price of \$10.35 per ton for both the 6" and 3" depth.

This covers the cost of rubblizing the asphalt and loading it in a truck for haul. It does not include the cost of the haul or dump fees.

Carbon county now charges \$20.00 per ton for dump fees. This was just changed this year. They did not charge any dump fees prior to this year.

Best regards

Eric Luke

Estimator

Direct office: 435-687-0113

Cell Number: 435-749-0432

Nielson Construction & Materials



Nielson Construction & Materials
1811 North Loop Rd
Huntington, WI 53031
435-687-0113 Fax: 435-749-0432



Attachments



THE MAPLE LEAF CO.
SEED DIVISION

450 South 50 East
Ephraim, Utah, 84627
P) 435.283.4400
F) 435.283.6872
maplelf@cut.net

5-10-17

Dan Guy
Blackhawk Engineering

Follows are current prices on seed you requested. If you need any other information let me know. Prices are PLS per lb.

Castle Valley saltbush	\$16.00	$\times 2/ac = 32.00$
Shadscale	\$11.50	$\times 4/ac = 46.00$
Rubber rabbit brush	\$42.00	$\times .3/ac = 12.60$
Winterfat	\$21.00	$\times 4/ac. = 84.00$
Matt Saltbrush	\$12.00	$\times 3/ac. = 36.00$
Greasewood	\$16.50	$\times .5/ac. = 8.25$
Desert Trumpet	N/A	-
Annual Sunflower	\$9.25	$\times 4/ac. = 37.00$
Evening Primrose	\$37.00	$\times .3/ac. = 11.10$
Scarlet Globemallow	\$120.00	$\times .5/ac. = 60.00$
Munro Globemallow	\$65.00	Not in Mix
Blue Grama	\$9.60	$\times .3/ac. = 2.88$
Thickspike wheatgrass	\$5.75	$\times 1/ac. = 5.75$
Galleta Grass	\$27.00	$\times 1.5/ac. = 40.50$
Alkali Sacaton	\$25.00	$\times .1/ac. = 2.50$
Needle and Thread	\$32.00	$\times 3/ac. = 96.00$

Indian rice grass	\$6.75	$\times 2/ac. = 13.50$
Inland Saltgrass	\$34.00	$\times .5/ac. = 17.00$
Great Basin WR	\$9.50	$\times 2/ac. = 19.00$
Streambank Wheatgrass	\$5.50	$\times 5/ac. = 27.50$
Tall Wheatgrass	\$2.40	$\times 3/ac. = 7.20$
Crested Wheatgrass	\$3.40	$\times 3/ac. = 10.20$
Yellow Clover	\$2.25	$\times 2/ac. = 4.50$

We do not carry root stock or container plants

Lloyd Stevens
Maple Leaf Seed
Ephraim, Utah

Subject: Re: Seed Price Estimate for Dan Guy
From: Ronald Stevenson (ron@siseed.com)
To: blackhawk2422@yahoo.com;
Date: Tuesday, May 16, 2017 4:52 PM

Dan, Here is the price list.

Have a good day.

Jeff

Stevenson Intermountain Seed, Inc.
488 S 100 E
Ephraim, UT 84627
PH: 435-283-6639
Fax: 435-283-4155

On 2017-05-16 12:29 pm, Dan Guy wrote:

Attn: Jeff

Per my conversation with Jeff this morning, I have attached the proposed seed mixes for which I have requested price estimates. These estimates are only for bonding calculations which are required for the company's mining and reclamation plan. I would appreciate it if you could provide pricing per pound of the listed seeds.

Thank you for your consideration and taking time to discuss this with me. If you have any questions, please call me at (435) 216-7912 or e-mail me at blackhawk2422@yahoo.com.

Dan Guy

Attachments

- img121.pdf (1.64MB)
- Stevenson Seed price list 5-16-17.PDF (709.00KB)

**TABLE 5-3
SEED MIX FOR THE GREASEWOOD (LOWLAND AREAS)**

SCIENTIFIC NAME	COMMON NAME	PLS/Acre	Seeds/Ft ²	
SHRUBS				
<i>Atriplex confertifolia</i>	Fourwing saltbush	4.00	5.88	\$12.00
<i>Atriplex corrugata</i>	Mat saltbush	3.00	4.13	15.00
<i>Atriplex gardneri</i> var. <i>cuneata</i>	Castle Valley saltbush	2.00	5.10	13.00
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	0.50	4.59	49.00
<i>Sarcobatus vermiculatus</i>	Greasewood	0.50	3.28	25.00
FORBS				
<i>Eriogonum inflatum</i>	Desert trumpet	1.00	4.80	N/A
<i>Helianthus annuus</i>	Annual sunflower	4.00	5.33	10.00
<i>Oenothera caespitosa</i>	Evening primrose	0.30	6.20	60.00
<i>Sphaeralcea coccinea</i>	Globemallow	0.50	5.74	112.00
GRASSES				
<i>Bouteloua gracilis</i>	Blue grama	0.30	4.90	15.00
<i>Distichlis spicata</i>	Saltgrass	0.50	5.97	35.00
<i>Elymus cinereus</i>	Gt. Basin wildrye	2.00	4.36	9.00
<i>Elymus smithii</i>	Western wheatgrass	1.00	2.89	7.00
<i>Hilaria jamesii</i>	Galleta	1.50	5.48	25.00
<i>Sporobolus airoides</i>	Alkali sacaton	0.10	4.02	24.00
TOTALS		21.20	72.65	
* Based on broadcast seeding methods.				

Price/ PLS lb.

\$12.00

15.00

13.00

49.00

25.00

N/A

10.00

60.00

112.00

15.00

35.00

9.00

7.00

25.00

24.00

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**TABLE 5-2
SEED MIX FOR THE SHADSCALE (UPLAND AREAS)**

Price/ PLS lb.

SCIENTIFIC NAME	COMMON NAME	PLS/Acre*	Seeds/Ft ²	
SHRUBS				
<i>Atriplex gardneri</i> var. <i>cuneata</i>	Castle Valley saltbush	2.00	5.10	#13.00
<i>Atriplex confertifolia</i>	Shadscale	4.00	5.88	9.00
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	0.30	2.75	49.00
<i>Ceratoides lanata</i>	Winterfat	4.00	5.05	28.00
FORBS				
<i>Eriogonum inflatum</i>	Desert trumpet	1.00	4.80	N/A
<i>Helianthus annuus</i>	Annual sunflower	4.00	5.33	10.00
<i>Oenothera caespitosa</i>	Evening primrose	0.30	6.20	60.00
<i>Sphaeralcea coccinea</i>	Globemallow	0.50	5.74	112.00
GRASSES				
<i>Bouteloua gracilis</i>	Blue grama	0.50	8.16	15.00
<i>Elymus lanceolatus</i>	Thickspike wheatgrass	2.00	7.07	6.00
<i>Hilaria jamesii</i>	Galleta	2.00	7.30	25.00
<i>Sporobolus airoides</i>	Alkali sacaton	0.20	8.03	24.00
<i>Stipa comata</i>	Needle-and-thread	3.00	7.92	28.00
<i>Stipa hymenoides</i>	Indian ricegrass	2.00	8.63	12.00
TOTALS		25.80	87.96	
* Based on broadcast seeding methods.				

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**TABLE 5-4
PERMANENT RECLAMATION SEED MIXTURE
PRICE RIVER SYSTEM
(5.28 Acres)**

Name	Acreage 1 Pounds PLS/Acre	Price/#	# Seeds/Pound	Total
Steambank Wheat Grass	5	\$3.25	137,830	16.25
Tall Wheat Grass	3	\$0.80	76,805	2.40
Alkali Sacaton	2	\$3.00		6.60
Crested Wheat Grass Fairway	3	\$1.20	319,660	3.60
Yellow Sweet Clover	2	\$0.40	258,560	.80
Total	15			\$29.65

*Price/
PLS lb.*

*4.50
2.90
24.00
2.25
2.50*

Containerized of Bare Root Stock	Number Per Acre
Rubber Rabbitbrush	200 - \$158 (@ .79 per plant)
Sandbar Willow	150 - \$118
	\$279/Acre
Fourwing Salt Brush Winter Fat Shadscale	May be utilized to supplement the shrub density as containerized stock depending on the success of the seeding effort.

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Price Country Store & Agronomy
 240 W. 1st North
 PRICE UT 84501-2425
 USA

Page 1 of 1
 05/09/2017 10:41:12

Order Confirmation

PRICE CUSTOMER 240 WEST 1ST NORTH PRICE UT 84501-2425 USA
PRICE CUSTOMER 240 WEST 1ST NORTH PRICE UT 84501-2425 USA

Document Number	
Document Date	05/09/2017
Customer No.	93075
Customer Phone No.	435-637-0652
Currency	USD
Sales Rep	

Purchase Order No.		Purchase Order Date	05/09/2017
Gross Weight	1,872.000 LB	Net Weight	1,872.000 LB
Volume	128.160 FT3		
Delivery Date	05/15/2017		
Terms of payment :	Payable immediately without deduction Baseline date on day 1 of month		
Terms of Delivery :	CFR Cost and Freight		
Header Text	:		
Pesticide License Info :			

Item	Material	Quantity	Price	Price Unit	Amount
10	67445 STRAW COMPRESSED BALE CERT STANDLEE	36.00 BA	7.99 BAL	1	287.64
Items total:					287.64
Sales Tax					18.98
Final amount:					306.62