



Alton Coal Development, LLC

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C/025/0005
Received 6/15/15
Task ID #4814

June 15, 2015

Daron R. Haddock
Coal Program Manager
Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

Subject: **Outstanding Permit Conditions and Division Order, Alton Coal Development, LLC, Coal Hollow Mine, Kane County, Utah, C/025/0005,**

Dear Mr. Haddock,

In response to the Divisions letter dated June 9, 2015, Alton Coal Development, LLC is submitting a PDF copy of items discussed in our phone conference earlier today. The first item list (GEM geotechnical report) will follow as discussed when it is made available to Alton Coal. The remaining three items have been addressed with changes to Chapter 8 that are included with this submittal.

Changes to the MRP associated with this amendment have been uploaded to the DOGM's server for review. Upon approval, 2 (two) clean hard copies of the text for insertion into the MRP will be submitted. Please do not hesitate to contact me if you have any questions 435-691-1551.

Sincerely

B. Kirk Nicholes
Environmental Specialist

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Alton Coal Development, LLC

Mine: Coal Hollow Mine

Permit Number: C/025/0005

Title: Outstanding permit conditions and Division Order requirements

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.

- Yes No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ increase decrease.
- Yes No 2. Is the application submitted as a result of a Division Order? DO# DO15-A
- Yes No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does the application require or include public notice publication?
- Yes No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes No 9. Is the application submitted as a result of a Violation? NOV # _____
- Yes No 10. Is the application submitted as a result of other laws or regulations or policies?

Explain: _____

- Yes No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes No 13. Does the application require or include collection and reporting of any baseline information?
- Yes No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 15. Does the application require or include soil removal, storage or placement?
- Yes No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes No 19. Does the application require or include certified designs, maps or calculation?
- Yes No 20. Does the application require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided?
- Yes No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes No 23. Does the application affect permits issued by other agencies or permits issued to other entities?
- Yes 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)

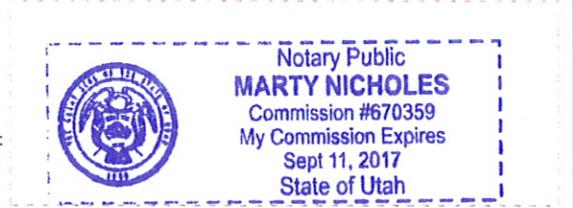
I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

B. Kirk Nicholes Environmental Specialist 06/12/2015 *B. Kirk Nicholes*
 Print Name Position Date Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 12 day of June, 2015

Notary Public: *Marty Nicholes*, state of Utah.

My commission Expires: 9-11-17
 Commission Number: 670359
 Address: 1670 E Millstone Cir
 City: Enoch State: UT Zip: 84721



For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
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R645-301-500

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CHAPTER 8

R645-301-800. BONDING AND INSURANCE

820. REQUIREMENT TO FILE A BOND

820.100 The Operator Agrees to File a Bond.

After the permit application is approved, but before the permit is issued, the applicant will file with the Division, on a form prescribed and furnished by the Division, a bond or bonds conditioned upon performance of all requirements of the State Program, the permit and the reclamation bond.

820.110-111 Area to be Covered by the Performance Bond

The disturbed area at the Coal Hollow Project will be bonded. ~~Bonding will be in Phases according to sequence of disturbance identified on Drawing 5-3~~ Bonding is representative of the full extent of current and expected disturbance for the permit area. -The areas to be mined-bonded are is-also located and identified on Drawing 5-3.

820.112-114 Incremental Bonding

Not applicable at this time.

820.120 Acceptance of Bond

The applicant agrees not to commence operations until the Division approves a performance bond for the Coal Hollow Project.

820.130 Coverage of Bond

The applicant will provide a performance bond for the disturbed area within the permit.

820.200 Form of the Performance Bond

820.223 Surety Bond

Alton Coal Development, LLC is proposing to submit a surety bond consistent with the requirements of R645-301-860.100 and any additional requirements in the State Program.

830. DETERMINATION OF BOND AMOUNT

830.100 Determined by the Division

The amount of the bond required will be determined by the Division.

830.140 Detailed Estimated Costs

The bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120). ~~The alternative highwall mining will reduce surface disturbance. Mining disturbance to the surface will be reduced along with reclamation needs. Thus, estimates have been completed for the individual mining phases shown in Drawings 5-17, 5-18 and 5-19. An estimate has been completed for the mining and reclamation scenario shown in Drawings 5-17 that will generate the largest disturbance and require the largest bond. This scenario includes completion of surface mining through HWT 3, completion of highwall holes through the same, and full mining of the currently planned underground mine as entering through portals located in Pit 10. This scenario also accounts for all Coal Hollow Mine facilities and special reclamation areas. These estimates are is provided as Appendix 8-1. These cost calculations are based on the specific details shown on these drawings, as well as the indicated plan and schedule for bond release application. As requested by the Division, a separate bond estimate is completed for all three phases shown in the drawings and in general, each stage is representative of the expected reclamation liability for Phase 1, 2 and 3, respectively. If the alternative highwall mining is selected the bond will be reduced as appropriate for the area of disturbance generated. The remaining liability bond estimate by Phaserelease stage, escalated for the 2017 (anticipated end of mining) -is the following:~~

Phase 1:	\$5,346,000
Phase 2:	\$9,888,000
Phase 3:	\$6,573,000
Ultimate Disturbance:	\$34,686,903
January 2015 Release:	\$23,938,210
May 2015 Release:	\$12,022,713
End 2015 Release:	\$5,827,402
End 2016 Release:	\$5,208,958
2017 Release:	\$4,578,779

~~This bonding and release schedule anticipates the opportunity for mining to commence on the North Private Lease as well as the potential for additional mining area to become available under the BLM's adjacent LBA tract. In both cases, the underground portals, coal facilities, and thereby Pit 10 would remain open requiring the continued surety shown at the end of 2017. As part of the application process for these additional areas, updated estimates and calculations will be provided.~~

A summary and supporting calculations for these cost estimates is provided in Appendix 8-1.

840. GENERAL TERMS AND CONDITIONS OF THE BOND

General terms and conditions of the bond as stated at R645-301-840 through R645-301-840.520 will be met by Alton Coal Development, LLC

850. BOND REQUIREMENTS FOR UNDERGROUND COAL MINING

Not Applicable

860. FORM OF BOND

860.100 Surety Bond

The applicant will submit a surety bond as defined under R645-100-200 and meet all the requirements under R645-301-860.110 to .120.

870. REPLACEMENT OF BONDS

Equivalent bond coverage will be provided if Alton Coal Development, LLC replaces the surety bond.

880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

Upon completion of reclamation operations, the applicant will apply for bond release and meet the requirements of R645-301-880.

890. TERMS AND CONDITIONS FOR LIABILITY INSURANCE

890.100 Certificate of Liability Insurance

A copy of the Certificate of Liability Insurance is provided in Appendix 1-3. Alton Coal Development, LLC will meet the requirements of R645-301-890 prior to commencing any mining operations.

BONDING

Introduction

The purpose of this appendix is to provide a reclamation bond estimate as required by R645-301-830.140.

This estimate includes liability calculations for:

- All areas of surface disturbance requiring Phase 2 and Phase 3 reclamation
- All facilities and special areas requiring demolition, demobilization, etc.
- All excavated pits requiring Phase 1 through Phase 3 reclamation
- Surface areas of the long-term excess spoil structure that require Phase 1 through Phase 3 reclamation

This appendix includes the following details:

- Bond Estimate Summary and Release Application Plan
- Mine Facilities Line Item Reclamation Estimate
- Spoil Pile, Surface Disturbance Only, and Facility and Special Area surface reclamation Estimate
- Excavated Areas Reclamation Estimate
- Production Model and Cost Model Assumptions
- Pit Backfill - Truck/Shovel, Fleet Production and Cost Analysis (FPC)
- Subsoil - Truck/Shovel, Fleet Production and Cost Analysis (FPC)
- Topsoil - Truck/Shovel, Fleet Production and Cost Analysis (FPC)

All material volume and surface area calculations were performed utilizing Carlson Civil and Mining software.

Cost data sources include:

- RSMeans Heavy Cost Construction 2015
- RSMeans Construction Cost Data 2015
- CostMine Coal Cost Guide 2014
- CostMine Mine and Mill Equipment Cost Data, 2014 (latest version available)

These sources are applied where appropriate in each of the cost estimates. Each line item in the estimate lists specifies which source is utilized for cost data.

Summary

The following is a brief summary of the information and methods used to calculate the costs for each category. The overall cost estimates below include total escalated costs applicable for all three phases of reclamation (where appropriate):

Release Application Plan

While previous estimates for the Coal Hollow Mine were constructed as incremental bond packages, this estimate considers the permit area on a total disturbance basis and applies successive bond release applications as stepwise subtractions from the ultimate disturbance liability. Each release application potentially contains a combination of multiple pit & surface areas under different phases of reclamation. These area polygons can be viewed on Drawing 5-19.

Mine Facilities

This section includes line items for the demolition, disposal, earthwork and specialized land reclamation costs for the entire facilities area, including ponds and ditches. The calculations for this section is based on the facilities and pond drawings in the current version of the Mining and Reclamation Plan. These drawings are all provided in Chapter 5 as Drawings 5-3 through 5-8C. The RSMMeans Cost data is applied to this estimate. The overall cost estimate for the facilities reclamation is approximately \$1,078,792.

Spoil Pile, Surface Disturbance Only, and Specialized Reclamation Areas

The specialized reclamation areas include areas that only require surface (Phase 2 and Phase3) reclamation, the long term excess spoil structure, ditches 2, 3 and 4, ponds 3 and 4, along with the Lower Robinson Creek reconstruction. The surface reclamation for the loadout area is also included. The Phase 1 through Phase 3 (where applicable) calculations for these specific areas are provided separately and applied as appropriate. The overall cost estimate for this category is \$1,540,753.

Excavated Areas

As shown on Drawings 5-17, 5-18, 5-19 and described in Chapter 5 text, the Coal Hollow Mine permit area is nearing completion of the open pit portion of the mining process. The mining and backfilling sequence has followed the pit progression shown in chapter 5 and the final pit void comprised of Pit 10 (including the underground portals) and a portion of the highwall trench remain to be backfilled in this last stage of surface mining. All other mined pits have currently been backfilled to Approximate Original Contour (AOC) as required by the reclamation plan in Chapter 5. While a significant portion of the required backfill and surface reclamation had been completed prior to 2015, bond release applications had not been submitted for any of this work. Therefore it is expedient to now consider the Coal Hollow Mine permit area on a total disturbance basis as opposed to the original incremental bond system. The overall cost estimate for all pits assuming total excavation is \$32,067,359.

Production Model and Cost Assumptions

Caterpillar's Fleet Production and Cost analysis software was utilized to establish a baseline cost model with inputs from the appropriate cost guides. This model provided unit costs on a \$/BCY and \$/LCY basis.

The following documentation provides the details for each section of this bond estimate.

Stage of Reclamation / Release Application	Pits Included in Release Application	Phase 1 Bond Amount	Phase 2 Bond Amount	Phase 3 Bond Amount	Facilities Bond Amount	Total Bond Amount	Bond Remaining After Release
Beginning Worst Case Scenario Bond Amount (all pits excavated)		\$ 30,913,431	\$ 2,189,706	\$ 504,974	\$ 1,475,265	\$ 34,686,903	
January 2015 Release Submission							
	Phase 1 Pit 3	\$ 2,366,500				\$ 2,366,500	
	Phase 1 Pit 5	\$ 1,380,489				\$ 1,380,489	
	Phase 1 Pit 6	\$ 2,500,655				\$ 2,500,655	
	Phase 1 Pit 25	\$ 1,345,551				\$ 1,345,551	
	Phase 1 Pit 26	\$ 945,973				\$ 945,973	
	Phase 1 Pit 27	\$ 991,874				\$ 991,874	
	Phase 1 Pit 28	\$ 1,217,651				\$ 1,217,651	
	Subtotal	\$ 10,748,693	\$ -	\$ -		\$ 10,748,693	\$ 23,938,210
May 2015 Release Submission							
	Phase 1 Pit 1	\$ 1,014,225				\$ 1,014,225	
	Phase 1 Pit 2	\$ 991,022				\$ 991,022	
	Phase 1 Pit 4	\$ 666,392				\$ 666,392	
	Phase 1 Pit 7	\$ 3,491,603				\$ 3,491,603	
	Phase 1 Pit 8	\$ 1,323,625				\$ 1,323,625	
	Phase 1 Pit 20	\$ 881,448				\$ 881,448	
	Phase 1 Pit 21	\$ 824,683				\$ 824,683	
	Phase 1 Pit 22	\$ 1,093,614				\$ 1,093,614	
	Phase 1 Pit 23	\$ 870,965				\$ 870,965	
	Phase 1 Pit 24	\$ 757,920				\$ 757,920	
	Subtotal	\$ 11,915,496	\$ -	\$ -		\$ 11,915,496	\$ 12,022,713
Q3/4 2015 Release Submission							
	Phase 1 Pit 9	\$ 1,603,730				\$ 1,603,730	
	Phase 1 HWT 1	\$ 2,008,641				\$ 2,008,641	
	Phase 1 HWT 2	\$ 1,405,502				\$ 1,405,502	
	Phase 1 HWT 3	\$ 1,177,439				\$ 1,177,439	
	Subtotal	\$ 6,195,312	\$ -	\$ -		\$ 6,195,312	\$ 5,827,402
2016 Release Submission							
	Phase 1 & 2 SURF1	\$ -	\$ 62,718			\$ 62,718	
	Phase 1 & 2 SURF4	\$ -	\$ 16,577			\$ 16,577	
	Phase 1 & 2 SURF5	\$ -	\$ 56,099			\$ 56,099	
	Phase 1 & 2 SURF6	\$ -	\$ 47,698			\$ 47,698	
	Phase 1 & 2 SURF7	\$ -	\$ 7,690			\$ 7,690	
	Phase 1 & 2 SPOIL1	\$ 41,774	\$ 36,329			\$ 78,102	
	Phase 1 & 2 SPOIL2	\$ 56,726	\$ 49,331			\$ 106,057	
	Phase 1 & 2 SPOIL3	\$ 16,913	\$ 14,708			\$ 31,621	
	Phase 1 & 2 SPOIL4	\$ 22,970	\$ 19,976			\$ 42,946	
	Phase 1 & 2 SPOIL5	\$ 54,957	\$ 47,794			\$ 102,751	
	Phase 1 & 2 SPOIL6	\$ 5,417	\$ 4,711			\$ 10,129	
	Phase 1 & 2 SPOIL7	\$ 14,542	\$ 12,646			\$ 27,188	
	Phase 1 & 2 SPOIL8	\$ 15,440	\$ 13,427			\$ 28,868	
	Subtotal	\$ 228,738	\$ 389,705	\$ -		\$ 618,444	\$ 5,208,958
2017 Release Submission							
	Phase 2 HWT 1		\$ 76,598			\$ 76,598	
	Phase 2 HWT 2		\$ 55,278			\$ 55,278	
	Phase 2 HWT 3		\$ 59,081			\$ 59,081	
	Phase 2 Pit 1		\$ 41,305			\$ 41,305	
	Phase 2 Pit 2		\$ 53,065			\$ 53,065	
	Phase 2 Pit 3		\$ 44,979			\$ 44,979	
	Phase 2 Pit 4		\$ 40,270			\$ 40,270	
	Phase 2 Pit 5		\$ 42,943			\$ 42,943	
	Phase 2 Pit 6		\$ 79,860			\$ 79,860	
	Phase 2 Pit 7		\$ 40,286			\$ 40,286	
	Phase 2 Pit 8		\$ 36,460			\$ 36,460	
	Phase 2 Pit 9		\$ 110,001			\$ 110,001	
	Phase 2 Pit 10		\$ 126,928			\$ 126,928	
	Phase 2 Pit 20		\$ 41,398			\$ 41,398	
	Phase 2 Pit 21		\$ 28,797			\$ 28,797	
	Phase 2 Pit 22		\$ 34,076			\$ 34,076	
	Phase 2 Pit 23		\$ 29,100			\$ 29,100	
	Phase 2 Pit 24		\$ 29,317			\$ 29,317	
	Phase 2 Pit 25		\$ 43,352			\$ 43,352	
	Phase 2 Pit 26		\$ 33,504			\$ 33,504	
	Phase 2 Pit 27		\$ 35,152			\$ 35,152	
	Phase 2 Pit 28		\$ 41,809			\$ 41,809	
	Subtotal	\$ -	\$ 630,179	\$ -		\$ 630,179	\$ 4,578,779

*All amounts escalated to 2017

Facilities Reclamation Cost Estimate

Concrete Demolition

Item	Unit	Quantity	Unit Cost (\$)	Cost	**Cost Data Reference
Office (footer)	lft	500	\$21.40	\$10,700	RSMMeans Building Constr., 02 41 16.17 1140
Shop (footer)	lft	616	\$25.68	\$15,819	RSMMeans Building Constr., 02 41 16.17 1140 & 1220
Shop (foundation)	ft ²	3,080	\$1.06	\$3,252	RSMMeans Building Constr., 02 41 16.17 2100 & 2200
Shop (floor)	ft ²	20,000	\$0.80	\$16,000	RSMMeans Building Constr., 02 41 16.17 0440
Wash Bay (footer)	lft	244	\$25.68	\$6,266	RSMMeans Building Constr., 02 41 16.17 1140 & 1220
Wash Bay (foundation)	ft ²	660	\$1.06	\$697	RSMMeans Building Constr., 02 41 16.17 2100 & 2200
Wash Bay (floor & sump)	ft ²	3,100	\$0.80	\$2,480	RSMMeans Building Constr., 02 41 16.17 0440
Fuel Storage (slab)	yd ³	111	\$109.55	\$12,172	RSMMeans Heavy Constr., 03 05 05.10 0060
Fuel Storage (containment wall)	yd ³	9	\$109.55	\$974	RSMMeans Heavy Constr., 03 05 05.10 0060
Oil Storage (slab)	yd ³	89	\$109.55	\$9,738	RSMMeans Heavy Constr., 03 05 05.10 0060
Oil Storage (containment wall)	yd ³	12	\$109.55	\$1,339	RSMMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Tunnel Access)	yd ³	95	\$109.55	\$10,387	RSMMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Hopper Supports)	yd ³	190	\$109.55	\$20,774	RSMMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Belt Tunnel)	yd ³	133	\$109.55	\$14,542	RSMMeans Heavy Constr., 03 05 05.10 0060
Crusher Building (Footer)	lft	80	\$25.68	\$2,054	RSMMeans Building Constr., 02 41 16.17 1140 & 1220
Feed Conveyor (Support Footers)	lft	30	\$25.68	\$770	RSMMeans Building Constr., 02 41 16.17 1140 & 1220
Reclaim Belt (Support Footers)	lft	25	\$25.68	\$642	RSMMeans Building Constr., 02 41 16.17 1140 & 1220
Loadout (Footers)	lft	72	\$25.68	\$1,849	RSMMeans Building Constr., 02 41 16.17 1140 & 1220
Loadout (Scale Footer)	lft	60	\$25.68	\$1,541	RSMMeans Building Constr., 02 41 16.17 1140 & 1220

Concrete Disposal

*Concrete Disposal (All Facilities)	yd ³	1,551	\$15.70	\$24,346	RSMMeans Building Constr., 02 41 16.17 4250
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Subtotal Concrete Demolition & Disposal	\$156,342
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*Concrete is disposed of on site (in pits) within five miles of facilities

**All cost data is from the 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals (Total Bare Cost)

Facilities Reclamation Cost Estimate

Structure Demolition & Disposal

Item	*Unit	Quantity	Unit Cost (\$)	Cost	**Cost Data Reference
Office	ft ³	150,000	\$0.30	\$45,000	RSMMeans Heavy Constr., 02 41 16.13 0100
Office (Sewage Tank)	Ea.	1	\$3,455.00	\$3,455	RSMMeans Heavy Constr., 02 65 10.30 1233 & 1213
Shop	ft ³	1,000,000	\$0.28	\$280,000	RSMMeans Heavy Constr., 02 41 16.13 0020
Wash Bay	ft ³	150,000	\$0.28	\$42,000	RSMMeans Heavy Constr., 02 41 16.13 0020
Fuel Storage (3 tanks)	Ea.	3	\$2,370.00	\$7,110	RSMMeans Heavy Constr., 02 65 10.30 0130 & 1029
Coal Hopper/Feeder Breaker (Demolition)	Ton	64	\$186.50	\$11,936	RSMMeans Heavy Constr., 05 05 05.10 0260
Coal Hopper/Feeder Breaker (Disposal)	yd ³	570	\$10.57	\$6,025	RSMMeans Heavy Constr., 02 41 19.18 0200
Crusher (structure)	ft ³	9,200	\$0.28	\$2,576	RSMMeans Heavy Constr., 02 41 16.13 0020
Crusher (equipment demolition)	Ton	60	\$186.50	\$11,190	RSMMeans Heavy Constr., 05 05 05.10 0260
Crusher (equipment disposal)	yd ³	150	\$10.57	\$1,586	RSMMeans Heavy Constr., 02 41 19.18 0200
Coal Reclaim System (demolition)	Ton	50	\$186.50	\$9,325	RSMMeans Heavy Constr., 05 05 05.10 0260
Coal Reclaim System (disposal)	yd ³	233	\$10.57	\$2,463	RSMMeans Heavy Constr., 02 41 19.18 0200
Loadout (structure)	ft ³	19,000	\$0.28	\$5,320	RSMMeans Heavy Constr., 02 41 16.13 0020
Loadout (equipment demolition)	Ton	68	\$186.50	\$12,682	RSMMeans Heavy Constr., 05 05 05.10 0260
Loadout (equipment disposal)	yd ³	185	\$10.57	\$1,955	RSMMeans Heavy Constr., 02 41 19.18 0200
100 lb/cu. Ft material - 48" Conveyors (demolition)	ft	545	\$147.71	\$80,502	CostMine - Mine and Mill Equipment Costs 2014 (Estimated as 25% of Construction Cost)
12" Drainage Culvert (demolition)	ft	50	\$2.25	\$113	RSMMeans Heavy Constr., 02 41 13.40 0150
18" Drainage Culvert (demolition)	ft	413	\$3.37	\$1,392	RSMMeans Heavy Constr., 02 41 13.40 0160
24" Drainage Culvert (demolition)	ft	455	\$10.10	\$4,596	RSMMeans Heavy Constr., 02 41 13.40 0170
36" Drainage Culvert (demolition)	ft	184	\$12.15	\$2,236	RSMMeans Heavy Constr., 02 41 13.40 0180
96" Drainage Culvert (demolition)	ft	184	\$34.30	\$6,311	RSMMeans Heavy Constr., 02 41 13.40 0200
Culvert Excavation 6' - 10' Deep	yd ³	1,485	\$3.82	\$5,673	RSMMeans Heavy Constr., 31 23 16.13 0510
Culvert Excavation 14' - 20' Deep	yd ³	2,208	\$4.77	\$10,532	RSMMeans Heavy Constr., 31 23 16.13 1300
Perimeter Fencing (demolition)	ft	22,000	\$2.15	\$47,300	RSMMeans Heavy Constr., 02 41 13.60 1650
Water Monitoring Wells - PVC (demolition)	VLF	1,919	\$7.27	\$13,947	RSMMeans Heavy Constr., 02 41 13.76 0900
Water Monitoring Wells - Steel (demolition)	VLF	201	\$14.55	\$2,925	RSMMeans Heavy Constr., 02 41 13.76 1000
Water System (tanks)	Ea.	2	\$1,050.00	\$2,100	RSMMeans Heavy Constr., 02 65 10.30 1029

Subtotal Structure Demolition & Disposal **\$620,248**

Exact makes and models of equipment are not currently known, therefore estimates are included for weights and yardages of equipment

** RS Means does not have direct cost data references for some specific items. Where needed, reasonable substitutes are utilized.

All cost data is from the 2009 additions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted

Facilities Reclamation Cost Estimate

Facilities Earthwork

Item	*Unit	Quantity	Unit Cost (\$)	Cost	**Cost Data Reference
Pond 1 backfill from embankment	yd ³	1,156	\$1.95	\$2,254	RSMean Heavy Constr., 31 23 23.17 0020
Pond 1 backfill from subsoil pile	yd ³	3,200	\$5.88	\$18,816	RSMean Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 1B backfill from embankment	yd ³	146	\$1.95	\$285	RSMean Heavy Constr., 31 23 23.17 0020
Pond 1B backfill from subsoil pile	yd ³	794	\$5.88	\$4,669	RSMean Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 backfill from embankment	yd ³	160	\$1.95	\$312	RSMean Heavy Constr., 31 23 23.17 0020
Pond 2 backfill from subsoil pile	yd ³	7,122	\$5.88	\$41,877	RSMean Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 backfill from embankment	yd ³	4,767	\$1.95	\$9,296	RSMean Heavy Constr., 31 23 23.17 0020
Pond 3 backfill from subsoil pile	yd ³	6,107	\$5.88	\$35,909	RSMean Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 backfill from embankment	yd ³	1,410	\$1.95	\$2,750	RSMean Heavy Constr., 31 23 23.17 0020
Pond 4 backfill from subsoil pile	yd ³	13,282	\$5.88	\$78,098	RSMean Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Robinson Creek Rip-Rap	yd ³	562	\$52.90	\$33,709	RS Mean Heavy Constr., 31 37 13.10 0100
Robinson Creek Grass Matting	yd ²	2,189	\$5.08	\$17,402	RS Mean Heavy Constr., 31 25 14.16 0120
Ditch 1 recontouring	yd ³	3,096	\$1.95	\$6,037	RSMean Heavy Constr., 31 23 23.17 0020
Ditch 2 recontouring	yd ³	2,014	\$1.95	\$3,927	RSMean Heavy Constr., 31 23 23.17 0020
Ditch 3 recontouring	yd ³	11,556	\$1.95	\$22,534	RSMean Heavy Constr., 31 23 23.17 0020
Ditch 4 recontouring	yd ³	2,333	\$1.95	\$4,550	RSMean Heavy Constr., 31 23 23.17 0020
Ripping of haul roads and compacted surfaces	yd ³	9,600	\$2.06	\$19,776	RSMean Heavy Constr., 31 23 16.32 2310

Subtotal Facilities Earthwork	\$302,201
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Total Facilities Reclamation Cost Estimate	\$1,078,792
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	Pit	Phase 1 Cost										Phase 2 Cost										Phase 3 Cost						Facilities Cost		Total	
		BCF	BCY	LCY	Area (sf)	Area (acres)	Backfill Cost	Subsoil Quantity (LCY)	Subsoil Cost	Total Direct Cost	Indirect Cost	Total Phase 1 Cost	Total Phase 1 Cost - Escalated	Topsoil Quantity (LCY)	Topsoil Cost	Mulching Quantity (M.S.F)	Mulching Cost	Seeding Quantity (M.S.F)	Seeding Cost	Total Direct Cost	Indirect Cost	Total Phase 2 Cost	Total Phase 2 Cost - Escalated	Re-Seed Quantity	Re-Seed Cost	Total Direct Cost	Indirect Cost	Total Phase 3 Cost	Total Phase 3 Cost - Escalated		Total Facilities Cost
Excavated Areas	HWT 1	36,433,320	1,349,382	1,494,103	521,023	12.0	\$ 1,458,682	68,955	\$ 66,897	\$ 1,525,579	\$ 408,855	\$ 1,934,434	\$ 2,008,641	13,791	\$ 13,379	521	\$ 31,381	521	\$ 13,416	\$ 58,177	\$ 15,591	\$ 73,768	\$ 76,598	521	\$ 13,416	\$ 13,416	\$ 3,596	\$ 17,012	\$ 17,665	\$ 17,665	\$ 2,102,904
	HWT 2	25,456,746	942,842	1,043,962	376,005	8.6	\$ 1,019,213	49,763	\$ 48,277	\$ 1,067,490	\$ 286,087	\$ 1,353,577	\$ 1,405,502	9,953	\$ 9,655	376	\$ 22,647	376	\$ 9,682	\$ 41,984	\$ 11,252	\$ 53,236	\$ 55,278	376	\$ 9,682	\$ 9,682	\$ 2,595	\$ 12,277	\$ 12,748	\$ 1,473,528	
	HWT 3	21,047,412	779,534	863,139	401,873	9.2	\$ 842,676	53,186	\$ 51,599	\$ 894,275	\$ 239,666	\$ 1,133,940	\$ 1,177,439	10,637	\$ 10,320	402	\$ 24,205	402	\$ 10,348	\$ 44,873	\$ 12,026	\$ 56,899	\$ 59,081	402	\$ 10,348	\$ 10,348	\$ 2,773	\$ 13,122	\$ 13,625	\$ 1,250,146	
	Pit 1	18,338,977	679,221	752,068	280,957	6.4	\$ 734,238	37,183	\$ 36,074	\$ 770,312	\$ 206,444	\$ 976,756	\$ 1,014,225	7,437	\$ 7,215	281	\$ 16,922	281	\$ 7,235	\$ 31,371	\$ 8,408	\$ 39,779	\$ 41,305	281	\$ 7,235	\$ 7,235	\$ 1,939	\$ 9,174	\$ 9,525	\$ 1,065,055	
	Pit 2	17,642,275	653,418	723,497	360,952	8.3	\$ 706,344	47,770	\$ 46,344	\$ 752,689	\$ 201,721	\$ 954,409	\$ 991,022	9,554	\$ 9,269	361	\$ 21,740	361	\$ 9,295	\$ 40,304	\$ 10,801	\$ 51,105	\$ 53,065	361	\$ 9,295	\$ 9,295	\$ 2,491	\$ 11,785	\$ 12,238	\$ 1,056,324	
	Pit 3	43,911,691	1,626,359	1,800,786	305,947	7.0	\$ 1,758,094	40,491	\$ 39,282	\$ 1,797,376	\$ 481,697	\$ 2,279,073	\$ 2,366,500	8,098	\$ 7,856	306	\$ 18,427	306	\$ 7,878	\$ 34,162	\$ 9,155	\$ 43,317	\$ 44,979	306	\$ 7,878	\$ 7,878	\$ 2,111	\$ 9,989	\$ 10,373	\$ 2,421,852	
	Pit 4	11,763,124	435,671	482,397	273,917	6.3	\$ 470,961	36,252	\$ 35,170	\$ 506,130	\$ 135,643	\$ 641,773	\$ 666,392	7,250	\$ 7,034	274	\$ 16,498	274	\$ 7,053	\$ 30,585	\$ 8,197	\$ 38,782	\$ 40,270	274	\$ 7,053	\$ 7,053	\$ 1,890	\$ 8,944	\$ 9,287	\$ 715,949	
	Pit 5	25,251,319	935,234	1,035,538	292,103	6.7	\$ 1,010,988	38,659	\$ 37,505	\$ 1,048,493	\$ 280,996	\$ 1,329,489	\$ 1,380,489	7,732	\$ 7,501	292	\$ 17,593	292	\$ 7,522	\$ 32,616	\$ 8,741	\$ 41,357	\$ 42,943	292	\$ 7,522	\$ 7,522	\$ 2,016	\$ 9,537	\$ 9,903	\$ 1,433,336	
	Pit 6	49,464,773	1,692,435	1,873,948	543,210	12.5	\$ 1,829,522	71,891	\$ 69,745	\$ 1,899,268	\$ 509,004	\$ 2,408,271	\$ 2,500,655	14,378	\$ 13,949	543	\$ 32,718	543	\$ 13,988	\$ 60,654	\$ 16,255	\$ 76,910	\$ 79,860	543	\$ 13,988	\$ 13,988	\$ 3,749	\$ 17,736	\$ 18,417	\$ 2,598,932	
	Pit 7	65,357,401	2,420,644	2,680,259	274,027	6.3	\$ 2,616,717	36,266	\$ 35,184	\$ 2,651,900	\$ 710,709	\$ 3,362,610	\$ 3,491,603	7,253	\$ 7,037	274	\$ 16,505	274	\$ 7,056	\$ 30,598	\$ 8,200	\$ 38,798	\$ 40,286	274	\$ 7,056	\$ 7,056	\$ 1,891	\$ 8,947	\$ 9,290	\$ 3,541,179	
	Pit 8	26,865,130	900,519	997,100	248,004	5.7	\$ 973,461	32,822	\$ 31,842	\$ 1,005,304	\$ 269,421	\$ 1,274,725	\$ 1,323,625	6,564	\$ 6,368	248	\$ 14,937	248	\$ 6,386	\$ 27,692	\$ 7,421	\$ 35,113	\$ 36,460	248	\$ 6,386	\$ 6,386	\$ 1,711	\$ 8,098	\$ 8,400	\$ 1,368,494	
	Pit 9	21,703,328	1,037,906	1,149,222	748,230	17.2	\$ 1,121,977	99,025	\$ 96,069	\$ 1,218,046	\$ 326,436	\$ 1,544,482	\$ 1,603,730	19,805	\$ 19,214	748	\$ 45,066	748	\$ 19,267	\$ 83,547	\$ 22,390	\$ 105,937	\$ 110,001	748	\$ 19,267	\$ 19,267	\$ 5,164	\$ 24,430	\$ 25,368	\$ 1,739,098	
	Pit 10	31,855,374	1,179,829	1,306,365	863,371	19.8	\$ 1,275,395	114,263	\$ 110,853	\$ 1,386,247	\$ 371,514	\$ 1,757,762	\$ 1,825,191	22,853	\$ 22,171	863	\$ 52,001	863	\$ 22,232	\$ 96,403	\$ 25,836	\$ 122,239	\$ 126,928	863	\$ 22,232	\$ 22,232	\$ 5,958	\$ 28,190	\$ 29,271	\$ 1,981,391	
	Pit 20	15,818,165	585,858	648,691	281,588	6.5	\$ 633,312	37,267	\$ 36,155	\$ 669,467	\$ 179,417	\$ 848,884	\$ 881,448	7,453	\$ 7,231	282	\$ 16,960	282	\$ 7,251	\$ 31,442	\$ 8,426	\$ 39,868	\$ 41,398	282	\$ 7,251	\$ 7,251	\$ 1,943	\$ 9,194	\$ 9,547	\$ 932,393	
	Pit 21	15,016,204	556,156	615,803	195,875	4.5	\$ 601,204	25,923	\$ 25,149	\$ 626,354	\$ 167,863	\$ 794,217	\$ 824,683	5,185	\$ 5,030	196	\$ 11,798	196	\$ 5,044	\$ 21,871	\$ 5,861	\$ 27,733	\$ 28,797	196	\$ 5,044	\$ 5,044	\$ 1,352	\$ 6,396	\$ 6,641	\$ 860,121	
	Pit 22	20,002,682	740,840	820,295	231,787	5.3	\$ 800,848	30,676	\$ 29,760	\$ 830,608	\$ 222,603	\$ 1,053,211	\$ 1,093,614	6,135	\$ 5,952	232	\$ 13,961	232	\$ 5,969	\$ 25,881	\$ 6,936	\$ 32,817	\$ 34,076	232	\$ 5,969	\$ 5,969	\$ 1,600	\$ 7,568	\$ 7,858	\$ 1,135,548	
	Pit 23	15,887,560	588,428	651,537	197,937	4.5	\$ 636,091	26,196	\$ 25,414	\$ 661,505	\$ 177,283	\$ 838,788	\$ 870,965	5,239	\$ 5,083	198	\$ 11,922	198	\$ 5,097	\$ 22,101	\$ 5,923	\$ 28,025	\$ 29,100	198	\$ 5,097	\$ 5,097	\$ 1,366	\$ 6,463	\$ 6,711	\$ 906,776	
	Pit 24	13,738,342	508,827	563,399	199,413	4.6	\$ 550,043	26,391	\$ 25,604	\$ 575,646	\$ 154,273	\$ 729,919	\$ 757,920	5,278	\$ 5,121	199	\$ 12,011	199	\$ 5,135	\$ 22,266	\$ 5,967	\$ 28,234	\$ 29,317	199	\$ 5,135	\$ 5,135	\$ 1,376	\$ 6,511	\$ 6,761	\$ 793,997	
	Pit 25	24,579,611	910,356	1,007,992	294,885	6.8	\$ 984,095	39,027	\$ 37,862	\$ 1,021,957	\$ 273,884	\$ 1,295,841	\$ 1,345,551	7,805	\$ 7,572	295	\$ 17,761	295	\$ 7,593	\$ 32,927	\$ 8,824	\$ 41,751	\$ 43,352	295	\$ 7,593	\$ 7,593	\$ 2,035	\$ 9,628	\$ 9,998	\$ 1,398,901	
	Pit 26	17,214,403	637,570	705,950	227,894	5.2	\$ 689,214	30,161	\$ 29,260	\$ 718,474	\$ 192,551	\$ 911,025	\$ 945,973	6,032	\$ 5,852	228	\$ 13,726	228	\$ 5,868	\$ 25,446	\$ 6,820	\$ 32,266	\$ 33,504	228	\$ 5,868	\$ 5,868	\$ 1,573	\$ 7,441	\$ 7,726	\$ 987,203	
	Pit 27	18,049,211	668,489	740,185	239,102	5.5	\$ 722,637	31,644	\$ 30,700	\$ 753,336	\$ 201,894	\$ 955,231	\$ 991,874	6,329	\$ 6,140	239	\$ 14,401	239	\$ 6,157	\$ 26,698	\$ 7,155	\$ 33,853	\$ 35,152	239	\$ 6,157	\$ 6,157	\$ 1,650	\$ 7,807	\$ 8,106	\$ 1,035,132	
	Pit 28	22,187,018	821,741	909,873	284,384	6.5	\$ 888,302	37,637	\$ 36,513	\$ 924,816	\$ 247,851	\$ 1,172,667	\$ 1,217,651	7,527	\$ 7,303	284	\$ 17,128	284	\$ 7,323	\$ 31,754	\$ 8,510	\$ 40,264	\$ 41,809	284	\$ 7,323	\$ 7,323	\$ 1,963	\$ 9,285	\$ 9,642	\$ 1,269,101	
	Excavated Areas Totals	557,584,064	20,651,261	22,866,109	7,642,484	175.5	\$ 22,324,014	1,011,450	\$ 981,257	\$ 23,305,271	\$ 6,245,813	\$ 29,551,083	\$ 30,684,692	202,290	\$ 196,251	7,642	\$ 460,307	7,642	\$ 196,794	\$ 5,067,444	\$ 228,698	\$ 1,082,051	\$ 1,123,559	7,642	\$ 196,794	\$ 196,794	\$ 52,741	\$ 249,535	\$ 259,107	\$ 32,067,359	
Spoil Pile Areas	SPOIL1	247,108	5.7	\$ -	32,704	\$ 31,727	\$ 31,727	\$ 8,503	\$ 40,230	\$ 41,774	6,541	\$ 6,345	247	\$ 14,883	247	\$ 6,363	\$ 27,592	247	\$ 7,395	\$ 34,986	\$ 36,329	247	\$ 6,363	\$ 6,363	\$ 1,705	\$ 8,068	\$ 8,378	\$ 86,480			
	SPOIL2	335,554	7.3	\$ -	44,409	\$ 43,083	\$ 43,083	\$ 11,546	\$ 54,630	\$ 56,726	8,882	\$ 8,617	336	\$ 8,641	336	\$ 8,641	\$ 37,468	336	\$ 10,041	\$ 47,509	\$ 49,331	336	\$ 8,641	\$ 8,641	\$ 2,316	\$ 10,956	\$ 11,376	\$ 117,433			
	SPOIL3	100,047	2.3	\$ -	13,241	\$ 12,846	\$ 12,846	\$ 3,443	\$ 16,288	\$ 16,913	2,648	\$ 2,569	100	\$ 6,026	100	\$ 2,576	\$ 11,171	100	\$ 2,994	\$ 14,165	\$ 14,708	100	\$ 2,576	\$ 2,576	\$ 690	\$ 3,267	\$ 3,392	\$ 35,013			
	SPOIL4	135,878	3.1	\$ -	17,983	\$ 17,446	\$ 17,446	\$ 4,676	\$ 22,122	\$ 22,970	3,597	\$ 3,489	136	\$ 8,184	136	\$ 3,499	\$ 15,172	136	\$ 4,066	\$ 19,238	\$ 19,976	136	\$ 4,066	\$ 4,066	\$ 938	\$ 4,437	\$ 4,607	\$ 47,553			
	SPOIL5	325,093	7.5	\$ -	43,025	\$ 41,740	\$ 41,740	\$ 11,186	\$ 52,927	\$ 54,957	8,605	\$ 8,348	325	\$ 19,580	325	\$ 8,371	\$ 36,300	325	\$ 9,728	\$ 46,028	\$ 47,794	325	\$ 8,371	\$ 8,371	\$ 2,243	\$ 10,615	\$ 11,022	\$ 113,772			
	SPOIL6	32,046	0.7	\$ -	4,241	\$ 4,115	\$ 4,115	\$ 1,103	\$ 5,217	\$ 5,417	848	\$ 823	32	\$ 1,930	32	\$ 825	\$ 3,578	32	\$ 959	\$ 4,537	\$ 4,711	32	\$ 825	\$ 825	\$ 221	\$ 1,046	\$ 1,086	\$ 11,215			
	SPOIL7	86,019	2.0	\$ -	11,384	\$ 11,044	\$ 11,044	\$ 2,960	\$ 14,004	\$ 14,542	2,277	\$ 2,209	86	\$ 5,181	86	\$ 2,215	\$ 9,605	86	\$ 2,215	\$ 12,179	\$ 12,646	86	\$ 2,215	\$ 2,215	\$ 594	\$ 2,809	\$ 2,916	\$ 30,104			
	SPOIL8	91,334	2.1	\$ -	12,088	\$ 11,727	\$ 11,727	\$ 3,143	\$ 14,870	\$ 15,440	2,418	\$ 2,345	91	\$ 5,501	91	\$ 2,352	\$ 10,198	91	\$ 2,352	\$ 12,931	\$ 13,427	91	\$ 2,352	\$ 2,352	\$ 630	\$ 2,982	\$ 3,097	\$ 31,964			
	Spoil Pile Areas Totals	1,353,079	31	\$ -	179,074																										

Equipment Cost Data

Equipment Description	Equipment Cost	Equip + Labor
	\$/hr	Cost \$/hr
7 yd. Excavator (385C LME)	\$97.83	\$134.32
40 Ton (30 CY) Haul Truck (769C)	\$58.88	\$94.25
5,000 Gal. Water Truck	\$37.78	\$74.27
14 Grader	\$53.34	\$89.83
D10 Dozer	\$112.03	\$148.52
D7 Dozer	\$60.46	\$96.95

Sourced from Cost Mine 2014 Coal Cost Guide and 2014 Mine and Mill Equipment Costs

Labor Cost Data

Manpower Type	Base Wage (\$/hr)	Labor Cost @ 36% burden (\$/hr)
Heavy Equipment Operator	\$26.83	\$36.49
Truck Drivers	\$26.01	\$35.37

Labor Data from 2014 Coal Cost Guide Table LA-6 for Western Surface Coal Mines (Non-Union)

Unit Cost Data

Movement Type	Cost/BCY	Cost/LCY	Unit Swell Factor
Rehandle with Truck/Shovel	\$ 1.08	\$ 0.98	10.7%
Subsoil	\$ 1.04	\$ 0.97	7.2%
Topsoil	\$ 1.04	\$ 0.97	7.2%
		Cost/M.S.F	
Mulching		\$ 60.23	
Seeding		\$ 25.75	

Indirect Cost Factor
26.8%

RS Means Heavy Constr., 32 91 13.16 0350 (2015 Bare)

RS Means Heavy Constr., 32 92 19.14 3700 (2015 Bare)

Unit Costs calculated from FPC production model using 2014 cost data and updated GEM swell factors

Escalation Factor 2014 to 2017
1.038361

Cycle Times

Hauler Cycle Time	
	5 769C
Load with Exchange (min)	1.25
Haul (min)	1.12
Dump and Maneuver (min)	1.2
Return (min)	1.33
Potential Cycle Time (min)	4.9
Wait on Slow Hauler (min)	0
Wait to Load (min)	1.35
Additional Bunching (min)	0.36
Wait to Dump (min)	0
TMPH Wait (min)	
Total Cycle Time (min)	6.61
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time	
	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	2,498
Tons per Pass	9.06
System Passes per Hauler	3
Hauler Payload (Tons)	27.17
% of Max GVW	103.52
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0.25
First Bucket Dump (min)	0.05
Hauler Exchange Time (min)	0.7

Fleet Production

Fleet Estimates	
Operating Schedule	90 %
Operator Efficiency	
Schedule Period	Shift
Scheduled Hours	2,000.00
Fleet Estimates	
Fleet Availability	87.87 %
Production per Sched Hr	696.55 BCY
Total Production	20,651,261 BCY
Sched Hrs Required	29,648.01
Total Cost (\$)	22,982,038
Cost per BCY (\$)	1.113
Production per Shift	1,393,096 BCY
Shifts Required	14.82

Theoretical Production				
	Quantity	Model	BCY per Hour	Cycles per Hour
	1	1 385C LME	932	
	2	5 769C	1,188	12.2

Actual Production					
	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
	1	5 769C	9.07	27.17	1,232.24
Fleet Tons per Operating Hour					1,232.24
x 90.00% Operator Efficiency =					1,109.01
x 87.87% Fleet Availability =					974.47

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total \$	\$ per BCY	
Loaders	1	385C LME		134.32	26,683	3,584,088	0.174	
Haulers:	5	769C	C202	107.26	130,256	0	0.677	
Totals	5				130,256	0	0.677	
Support	1	5,000 Gal. Water Truck		74.27	19,538	1,451,115	0.07	
		1 14 Grader		89.83	13,026	1,170,088	0.057	
		1 D7 Dozer		96.95	22,143	2,146,811	0.104	
Totals	3				54,707	4,768,013	0.231	
Fleet Totals	9				211,646	8,352,101	1.081	

Cycle Times

Hauler Cycle Time

5 769C

Load with Exch:	1.25
Haul (min)	1.11
Dump and Man	1.2
Return (min)	1.33
Potential Cycle	4.9
Wait on Slow H	0
Wait to Load (n	1.35
Additional Bunc	0.36
Wait to Dump (0
TMPH Wait (min)	
Total Cycle Tim	6.61
Bunching Avg	
Haul Start mph	0
Haul End mph	0
Return Start m	0
Return End mpl	0

Loader Cycle Time

5 769C

Loader Model 385C LME

Loader Quantit	1
Bucket Capacity	7.25
Loader Fill Fact	100
Loose Density (2,143
Tons per Pass	7.77
System Passes j	3
Hauler Payload	23.31
% of Max GVW	97.21
Hauler Volume	21.75
% of Body Fill	70
Loader Cycle Ti	0.25
First Bucket Du	0.05
Hauler Exchang	0.7

Fleet Production

Fleet Estimates

Operating Schedule	
Operator Efficie	90 %
Schedule Period Shift	
Scheduled Hour	2,000.00
Fleet Estimates	
Fleet Availabilit	87.87 %
Production per	724.11 BCY
Total Productio	1,190,524 BCY
Sched Hrs Requ	1,644.12
Total Cost (\$)	1,274,461
Cost per BCY (\$	1.071
Production per	1,448,220 BCY
Shifts Required	0.82

Theoretical Production

Quantity	Model	BCY per Hour	Cycles per Hour
1	1 385C LME	969	
2	5 769C	1,237	12.3

Actual Production

Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5 769C	9.07	23.31	1,057.12
Fleet Tons per Operating Hour				1,057.12
x 90.00% Operator Efficiency =				951.41
x 87.87% Fleet Availability =				835.99

Cost

Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total \$	\$ per BCY
Loaders	1 385C LME		134.32	1,480	198,754	0.167
Haulers:	5 769C	C202	107.26	7,223	0	0.651
Totals	5			7,223	0	0.651
Support	1 5,000 Gal. Water Truck		74.27	1,083	80,471	0.068
	1 14 Grader		89.83	722	64,887	0.055
	1 D7 Dozer		96.95	1,228	119,051	0.1
Totals	3			3,034	264,409	0.222
Fleet Totals	9			11,737	463,163	1.04

Cycle Times

Hauler Cycle Time

5 769C

Load with Exch:	1.25
Haul (min)	1.11
Dump and Man	1.2
Return (min)	1.33
Potential Cycle	4.9
Wait on Slow H	0
Wait to Load (n	1.35
Additional Bunc	0.36
Wait to Dump (0
TMPH Wait (min)	
Total Cycle Tim	6.61
Bunching Avg	
Haul Start mph	0
Haul End mph	0
Return Start m	0
Return End mpl	0

Loader Cycle Time

5 769C

Loader Model 385C LME

Loader Quantit	1
Bucket Capacity	7.25
Loader Fill Fact	100
Loose Density (2,143
Tons per Pass	7.77
System Passes	3
Hauler Payload	23.31
% of Max GVW	97.21
Hauler Volume	21.75
% of Body Fill	70
Loader Cycle Ti	0.25
First Bucket Du	0.05
Hauler Exchang	0.7

Fleet Production

Fleet Estimates

Operating Schedule	
Operator Efficie	90 %
Schedule Period Shift	
Scheduled Hour	2,000.00
Fleet Estimates	
Fleet Availabilit	87.87 %
Production per	724.11 BCY
Total Productio	336,238 BCY
Sched Hrs Requ	464.35
Total Cost (\$)	359,944
Cost per BCY (\$	1.071
Production per	1,448,220 BCY
Shifts Required	0.23

Theoretical Production

Quantity	Model	BCY per Hour	Cycles per Hour
1	1 385C LME	969	
2	5 769C	1,237	12.3

Actual Production

Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5 769C	9.07	23.31	1,057.12
Fleet Tons per Operating Hour				1,057.12
x 90.00% Operator Efficiency =				951.41
x 87.87% Fleet Availability =				835.99

Cost

Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total \$	\$ per BCY
Loaders	1 385C LME		134.32	418	56,134	0.167
Haulers:	5 769C	C202	107.26	2,040	0	0.651
Totals	5			2,040	0	0.651
Support	1 5,000 Gal. Water Truck		74.27	306	22,727	0.068
	1 14 Grader		89.83	204	18,326	0.055
	1 D7 Dozer		96.95	347	33,623	0.1
Totals	3			857	74,677	0.222
Fleet Totals	9			3,315	130,810	1.04