**Alton Coal Development, LLC**
463 North 100 West, Suite 1
Cedar City, Utah 84720
Phone (435) 867-5311 Fax (435) 867-1192

January 25, 2018

C/025/0005
Received 1/25/18
Task #5605

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

Re: **Coal Hollow Mine and North Private Lease Bond Adjustment Permit Amendment, Alton Coal Development, LLC, Coal Hollow Mine, Kane County, Utah, C/025/0005**

Dear Mr. Haddock:

Alton Coal Development, LLC (ACD) is submitting an amendment to the MRP to adjust the calculations by which reclamation liability is determined and bonded for the Coal Hollow Mine permit areas. This adjustment is requested under Utah Code found at R645-301-830.410-430. The rules state:

> *830.410. The amount of the bond or deposit required and the terms of the acceptance of the applicant's bond will be adjusted by the Division from time to time as the area requiring bond coverage is increased or decreased or where the cost of future reclamation changes...*
>
> *830.430. A permittee may request reduction of the amount of the performance bond upon submission of evidence to the Division providing that the permittee's method of operation or other circumstances reduces the estimated cost for the Division to reclaim the bonded area...*

ACD is not requesting an immediate reduction in posted bond. ACD will continue to maintain a surety bond in the amount of $12,750,000. However, this MRP amendment does show a significant difference in the maximum bond that would have been eventually posted using the previous calculation methodology. In fact, the new methodology shows that $12,750,000 is adequate to cover continued mining in Pits 13 and 14 of the North Private Lease (NPL), as well as all remaining mining and reclamation activities between the Coal Hollow Mine (CHM) and NPL permit areas following the bond release and posting plans.

The primary and most important change to the method of calculation is the restoration of the interpretation of "Worst Case Scenario" to mean the Point of Maximum Reclamation Liability. Since early 2015, ACD has been operating under a bonding methodology that

interpreted "Worst Case Scenario" as that scenario where all surface disturbance has occurred, **all pits have been mined and left open**, and all facilities and structures have been constructed within a given permit area, mining unit, or increment. This interpretation is contrary to standard industry practice for surface coal mines in other Western states, contrary to common business sense, and directly contradicts ACD's approved MRP. Instead, the proposed amendment utilizes a methodology based on the concepts described in OSMRE's Directive 882 (Handbook for Calculation of Reclamation Bond Amounts). The directive instructs to determine a Point of Maximum Reclamation Liability **based on the approved mine plan**. If the approved MRP shows concurrent backfill and reclamation, then an interpretation that doesn't account for concurrent backfill is inappropriate.

According to this basic but important change in methodology, ACD has recalculated all liabilities associated with the CHM and NPL permit areas. A Point of Maximum Reclamation Liability has been determined for each area and bond posting and release plans have been sequenced. Above and beyond the instruction of Directive 882, ACD has also elected to post fractional Phase 1 amounts for each open pit that is expected to be disturbed within annual increments. These fractional increments will then be subject to bond release processes under the R645-301-800 rules.

Most importantly, the adjusted methodology ensures a realistic estimate of reclamation costs, while also ensuring adequate bond is held at all times through the remaining life of the CHM and NPL permit areas.

Changes to the MRP associated with this amendment have been uploaded to the DOGM's server for review. PDF versions of the drawings are not certified. Upon approval, 2 (two) clean hard copies of the text and certified drawings for insertion into the MRP will be submitted. Please do not hesitate to contact me if you have any questions 435-705-3832.

Very truly yours,

Andrew Christensen
Technical Services Manager
Alton Coal Development

# 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:** Chapter 8 Revisions

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

**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# _____
☐ 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 | 01/24/2018 KN | 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 24 day of January, 2018

Notary Public: Wendy Smith Ironco, state of Utah.

My commission Expires: Aug 21. 2018
Commission Number: 679017
Address: 377 n main Street
City: Cedar City State: UT Zip: 84721

ss:

WENDY SMITH
Notary Public
State of Utah
Comm. No. 679017
My Comm. Expires Aug 21, 2018

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

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow Mine
Title: Chapter 8 Revisions

Permit Number: C/025/0005

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

| | | | DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED |
|---|---|---|---|
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 5, Drawing 5-18 |
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 8, Text |
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 8, Appendix 8-1 |
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 8, Appendix 8-2 |
| ☐ Add | ☐ Replace | ☐ Remove | |
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| Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan. | Received by Oil, Gas & Mining |
|---|---|
| | |

Note:

- See Appendix 8-1 for Bond Posting and Bond Release plans. Plans include liability amounts and disturbance acreages for each posting and release increment.

Range 6 West
Range 5 West

Existing County Road 136

Pit B-1 Excavation is primarily contained within the final borrow volume. All Pit B-1 excavated material (except 92,000 CY placed underneath the 3:1 South slope) was directly backfilled to the intermediate surface shown on Drawing 5-35 for subsequent rehandle as part of the borrow to backfill Pits 9-C & 10. Therefore, this area was not accounted as additional excavated area and only incurred additional bond as it was covered for the 3:1 slope backfill.

Township 39 South

Contour Interval = 2'

0 500 1000 1500

15_1 RELEASE – PHASE 1
15_2 RELEASE – PHASE 1
16_1 RELEASE – PHASE 1
16_2 RELEASE – PHASE 1
17_1 RELEASE – PHASE 1
17_2 RELEASE – PHASE 2
18_1 RELEASE – PHASE 2
26_1 RELEASE – PHASE 3
END OF UG – PHASE 1, 2 & 3

LEGEND:

- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

| DRAWN BY: | CHECKED BY: |
|---|---|
| A CHRISTENSEN | DWG |
| DRAWING: 5-18 | DATE: 6/15/2015 |
| | SCALE: 1" = 500' Printed on 24" x36" |
| JOB NUMBER: 1400 | SHEET |

REVISIONS

| DATE: | BY: |
|---|---|
| 3/3/16 | AC |
| 3/22/16 | AC |
| 5/20/16 | AC |
| 8/01/16 | AC |
| 9/20/16 | AC |
| 7/31/17 | AC |
| 1/24/18 | AC |

BOND SEQUENCE

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-18

PROFESSIONAL ENGINEER 10230818 ANDREW R. CHRISTENSEN STATE OF UTAH

Alton Coal Development
Coal Hollow Project
463 North 100 West, Suite 1
Cedar City, Utah 84721
Phone (435)867-5331
Fax (435)867-1192

# 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.

820.110-114 Area to be Covered by the Performance Bond and Incremental Bond

The disturbed areas at the Coal Hollow Project will be bonded. Bonding is representative of the full extent of current and expected disturbance for the Coal Hollow Mine permit area, and representative of discrete bond increments for the North Private Lease permit area. The areas to be bonded are located, scheduled and identified on Drawings 5-19 and 5-74, respectively.

The permittee will file with the Division an additional bond or bonds to cover each increment of the North Private Lease permit in accordance with R645-301-830. Estimates for each permit area and each increment are provided in Appendices 8-1 and 8-2. North Private Lease increments are shown in Drawing 5-77.

The North Private Lease permit area bond increment areas average over 20 acres in size and are of sufficient configuration to provide for efficient reclamation operations should reclamation by the Division become necessary according to R645-301-880.900.

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

There are five major steps in the bond calculation process:

- Determine the point of maximum reclamation cost liability.
- Estimate direct reclamation costs such as earthmoving, revegetation, and the removal and demolition of structures not to be retained as part of the postmining land use.
- Adjust direct costs for inflation.
- Estimate indirect reclamation costs.
- Calculate the total bond amount.

Determining the point of maximum reclamation liability is the most important step in the cost-estimating procedure, and will differ for each operation depending on the nature and complexity of the operation. For the Coal Hollow Mine and the North Private Lease, ~~T~~the bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120).

Generally, the greatest reclamation cost liability occurs at the point in the permit term at which one or more of the following conditions exist:

- The greatest area of disturbance or the greatest area requiring final grading, topsoil placement, and revegetation.
- The largest volume of material to be backfilled and graded to establish suitable postmining contours. For multiple-seam mining operations, this is the point at which coal extraction from the lowest coal seam is complete, most of the overburden removed to that point has been placed in excess spoil fills, and little or no backfilling has occurred.
- The longest haul distance between spoil or topsoil storage areas and the final placement location.
- The greatest number of on-site structures.
- The point at which refuse piles require the largest amount of cover material.
- Maximum disturbance of areas with special reclamation needs or special materials handling plans, such as sites with prime farmland soils, acidic or toxic materials, difficult topographic situations, or underground mine workings that must be sealed.

The points of maximum reclamation liability (also referred to as the "Worst Case Scenario") based on the concepts above are detailed for the Coal Hollow Mine and North Private Lease in Appendices 8-1 and 8-2, respectively. These points, based on the mine plan detailed in Chapter 5 of this MRP (and shown graphically in Drawings 5-17 to 5-19 and 5-76A to 5-77 respectively), represent the largest liability that would ever be incurred by the Division in the event of default or forfeiture of bond. Therefore, if default occurred at any point prior to or after the point of maximum liability, bonding would be more than adequate to cover all reclamation costs.

For the Coal Hollow Mine, maximum liability is represented by the point in time where all structures and facilities are constructed, all proposed surface disturbance has occurred, and the open pit associated with the underground portals remains open and requires backfill from the borrow area. The bond liability associated with this scenario is $7,134,395.

For the North Private Lease, maximum liability is represented by the point in time where all structures and facilities are constructed, all proposed surface disturbance has occurred, and the open pit left behind after final coal removal in Pit 21 remains open and requires backfill from the borrow material originating in the HWT1 and HWT2 polygons. The bond liability associated with this scenario is $4,729,964.

In addition to the maximum liability cost, ACD has elected to post 10% incremental phase 1 bond for each individual open pit prior to mining. Following mining, backfill and regrading and the placement of subsoil, this incremental cost will be recovered through the bond release process (R645-301-880). The sequences for bond posting and release are also detailed in Appendices 8-1 and 8-2 for each permit area.

As part of determining the points of maximum liability the direct, indirect and inflation (escalation) costs were estimated and tabulated for each polygon contained in the permit areas. As shown in the Polygon Cost Estimate sheets in Appendices 8-1 and 8-2, these costs were also grouped by reclamation phase. The area totals shown at the bottom of these sheets are for illustrative purposes only and do not reflect actual liability. Instead, total liability is a function of the bond posting and release plans discussed above.

~~For the Coal Hollow Mine permit area, an estimate has been completed for the mining and reclamation scenario shown in Drawings 5-17 through 5-19 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. The last Pit B-1 is proposed to remove any coal contained within the borrow area prior to backfill borrow activities. This pit is contained entirely within the borrow area boundary and nearly all overburden excavated will be directly backfilled in place in anticipation of later rehandle as backfill for Pits 9-C and 10. As such, Pit B-1 adds around 91,000 CY of actual backfill volume required and is accounted as having only phase 1 additional bond required. This scenario also accounts for all Coal Hollow Mine facilities and special reclamation areas. This estimate 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. The remaining liability bond estimate by release stage, escalated for 2017 (anticipated end of mining) is the following:~~

| | |
|---|---|
| ~~Ultimate Disturbance:~~ | ~~$33,107,627~~ |
| ~~Release 15_1:~~ | ~~$14,157,119~~ |
| ~~Release 15_2:~~ | ~~$12, 327,175~~ |
| ~~Release 16_1:~~ | ~~$8, 296,070~~ |
| ~~Release 16_2:~~ | ~~$7,196,419~~ |
| ~~Release 17_1:~~ | ~~$7,078,557~~ |
| ~~Release 17_2:~~ | ~~$6,595,243~~ |
| ~~Release 18_1:~~ | ~~$5,875,346~~ |
| ~~Release 26_1:~~ | ~~$5,598,587~~ |
| ~~End of UG Release:~~ | ~~$ 0~~ |

The~~is~~ bonding and release schedules shown in Appendices 8-1 and 8-2 anticipate~~s 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,~~Should this occur, the underground portals, coal facilities, and thereby Pit 10 would remain open requiring the continued surety shown prior to ~~at~~ the endof underground mining ~~of 2017~~. Should these additional leases not become available, reclamation of the remaining area would be performed and the bond would be released as shown. As part of the application process for these additional areas, updated estimates and calculations will be provided.

Inspection of the bond posting plans in Appendices 8-1 and 8-2 shows that the currently posted bond amount of $12,750,000 is more than adequate for the full life of both permit areas. In fact, the overall combined liability for both areas is never expected to exceed $12,250,000.

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

~~For the North Private Lease permit area, a set of incremental estimates have been completed for the mining and reclamation scenario shown in Drawings 5-76A through 5-77 that describe the detailed areas and require the largest adequate bond. This scenario includes mining, backfilling, grading, and replacement of adequate soils and revegetation to restore all disturbed ground to approximate original contour and land use. This scenario also accounts for all North Private Lease facilities and special reclamation areas. This estimate is provided as Appendix 8-2. These cost calculations are based on the specific details shown on these drawings, as well as the indicated plan and schedule for bond posting and bond release application. The incremental bond to be posted and the remaining liability by yearly increment, escalated for 2017 (anticipated end of mining) is the following:~~

| | ~~Bond Liability (start)~~ | ~~Bond Release (—)~~ | ~~Additional Bond for Following Increment (+)~~ | ~~Bond Liability (end)~~ | ~~Bond Net Change (+/-)~~ |
|---|---|---|---|---|---|
| ~~Carryover from CHM~~ | ~~$12, 327,175~~ | ~~$0~~ | ~~$899,691~~ | ~~$13, 226,866~~ | ~~$899,691 +~~ |
| ~~Pre-Year 1~~ | ~~$13, 226,866~~ | ~~$4,031,105~~ | ~~$3,547,971~~ | ~~$12, 743,732~~ | ~~$483,134 -~~ |
| ~~Year 1 Q4~~ | ~~$12, 743,732~~ | ~~$2,985,984~~ | ~~$2,058,704~~ | ~~$11,816,451~~ | ~~$927,281 -~~ |
| ~~Year 1 End~~ | ~~$11, 816,451~~ | ~~$2,130,418~~ | ~~$3,044,462~~ | ~~$12,730,495~~ | ~~$914,044 +~~ |
| ~~Year 2~~ | ~~$12,730,495~~ | ~~$2,883,947~~ | ~~$6,699,470~~ | ~~$16,546,019~~ | ~~$3,815,524 +~~ |
| ~~Year 3~~ | ~~$16, 546,019~~ | ~~$4,853,560~~ | ~~$3,607,176~~ | ~~$15,299,634~~ | ~~$1,246,385 -~~ |
| ~~Year 4~~ | ~~$15, 299,634~~ | ~~$5,655,768~~ | ~~$8,072,751~~ | ~~$17,716,617~~ | ~~$2,416,983 +~~ |
| ~~Year 5~~ | ~~$17, 716,617~~ | ~~$1,501,290~~ | ~~$0~~ | ~~$16,215,327~~ | ~~$1,501,290 -~~ |
| ~~Year 6~~ | ~~$16, 215,327~~ | ~~$3,606,248~~ | ~~$0~~ | ~~$12,609,079~~ | ~~$3,606,248 -~~ |
| ~~Year 7~~ | ~~$12, 609,079~~ | ~~$3,897,895~~ | ~~$0~~ | ~~$8,711,184~~ | ~~$3,897,895 -~~ |
| ~~Year 8~~ | ~~$8, 711,184~~ | ~~$1,046,230~~ | ~~$0~~ | ~~$7,664,954~~ | ~~$1,046,230 -~~ |
| ~~Year 9~~ | ~~$7,664,954~~ | ~~$357,189~~ | ~~$0~~ | ~~$7,307,765~~ | ~~$357,189 -~~ |
| ~~Years 10-20~~ | ~~$7, 307,765~~ | ~~$1,432,420~~ | ~~$0~~ | ~~$5,875,346~~ | ~~$1,432,420 -~~ |

~~This bonding and release schedule assumes a carryover of liability and posted bond from the Coal Hollow Mine permit area. The posted bond amount is $12,750,000, and the liability as shown in the table above. This schedule also anticipates the continued underground mining of the Coal Hollow Mine permit area, 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 Coal Hollow Mine Pit 10 would remain open requiring the continued surety shown at the end of 2017 in Appendix 8-1. 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 8-2.~~

## 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.

# SOUTH AREA 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/sheets:

- Bond Posting Plan
- Bond Release Plan
- Point of Maximum Reclamation Liability Determination Sheet
- ~~Bond Estimate Summary and Release Application Plan~~
- Mine Facilities Line Item Reclamation Estimate
- Bond Polygon Cost Estimates

- ~~Spoil Pile, Surface Disturbance Only, and Facility and Special Area surface reclamation Estimate~~
- ~~Excavated Areas Reclamation Estimate~~
- Production Model ~~and~~ Cost Data and~~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 2018~~5~~
- RSMeans Construction Cost Data 2018~~5~~
- CostMine Coal Cost Guide 2017~~5~~ (latest version available)
- CostMine Mine and Mill Equipment Cost Data, 2017~~5~~ (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):

**Bond Posting and Release Plans**
This estimate considers the permit area on a maximum reclamation liability and incremental basis and applies successive bond additions and bond release applications as stepwise additions and subtractions from the ultimate disturbance liability. Each bond addition and release application potentially contain a combination of multiple pit & surface areas under different phases of disturbance or reclamation. These area polygons can be viewed on Drawing 5-19.

~~**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.~~

**Point of Maximum Reclamation Liability Determination**
This section details the polygons, phases and facilities included in the determination of the point in time where the permit area faces a maximum reclamation liability. This estimate is directly based on the sequence and mining and reclamation plans described in Chapter 5 of this MRP. The maximum liability amount is $7,134,395.

**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 are~~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 RSMeans Cost data is applied to this estimate. The overall cost estimate for the facilities reclamation is approximately $~~1,174,169~~1,441,365.

~~**Spoil Pile, Borrow, 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. This category also includes the borrow area. 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 $2,397,988.~~

**~~Excavated Areas~~Bond Polygon Cost Estimates**

This section tabulates the direct, indirect, and escalated reclamation costs for each polygon shown on Drawing 5-19. These costs are also grouped by phase. The area totals shown at the bottom of these sheets are for illustrative purposes only and do not reflect actual liability. Instead, total liability is a function of the bond posting and release plans discussed above. ~~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 Pits 9-C and 10 (including the underground portals) remains to be backfilled in this last stage of surface mining. The last Pit B-1 is proposed to remove any coal contained within the borrow area prior to backfill borrow activities. This pit is contained entirely within the borrow area boundary and nearly all overburden excavated will be directly backfilled in place in anticipation of later rehandle as backfill for Pits 9-C and 10. As such, Pit B-1 adds around 91,000 CY of actual backfill volume required and is accounted as having only phase 1 additional bond required. 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 $29,535,469.~~

**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.

## South Area Bond Posting Plan

| Stage of Reclamation | Included Pits / Areas | Phase 1 Bond Amount | Phase 1 Surface Area (acres) | Phase 2 Bond Amount | Phase 2 Surface Area (acres) | Phase 3 Bond Amount | Phase 3 Surface Area (acres) | Facilities Bond Amount | Total Bond Amount |
|---|---|---|---|---|---|---|---|---|---|
| ***All amounts escalated to 2019** | | | | | | | | | |
| **Point of Maximum Reclamation Liability - Initial Bond to Post** | | | | | | | | | |
| Full Phase 1 | Pit 9-C | $ 400,788 | 3.3 | | | | | | $ 400,788 |
| Full Phase 1 | Pit 10 | $ 2,053,548 | 20.7 | | | | | | $ 2,053,548 |
| Full Phase 1 | BORROW | $ 1,092,122 | 62.0 | | | | | | $ 1,092,122 |
| Phase 2 & 3 | BORROW | | - | $ 364,192 | 62.0 | $ 79,453 | 62.0 | | $ 443,644 |
| Phase 2 & 3 | SURF1 | | - | $ 39,522 | 9.8 | $ 12,552 | 9.8 | | $ 52,074 |
| Phase 2 & 3 | SURF4 | | - | $ 8,071 | 2.0 | $ 2,563 | 2.0 | | $ 10,634 |
| Phase 2 & 3 | SURF5 | | - | $ 71,831 | 17.8 | $ 22,814 | 17.8 | | $ 94,645 |
| Phase 2 & 3 | SURF6 | | - | $ 30,057 | 7.4 | $ 9,546 | 7.4 | | $ 39,603 |
| Phase 2 & 3 | SURF7 | | - | $ 4,846 | 1.2 | $ 1,539 | 1.2 | | $ 6,385 |
| Phase 2 & 3 | SURF8 HAUL & MAINT (includes Pond 2) | | - | $ 180,789 | 44.8 | $ 57,419 | 44.8 | | $ 238,209 |
| Phase 2 & 3 | DITCH 3 | | - | $ 2,129 | 0.5 | $ 676 | 0.5 | | $ 2,805 |
| Phase 2 & 3 | DITCH 2 | | - | $ 7,788 | 1.9 | $ 2,473 | 1.9 | | $ 10,261 |
| Phase 2 & 3 | POND 3 | | - | $ 16,697 | 4.1 | $ 5,303 | 4.1 | | $ 22,000 |
| Phase 2 & 3 | POND 4 (includes ditch 1) | | - | $ 29,335 | 7.3 | $ 9,317 | 7.3 | | $ 38,652 |
| Phase 2 & 3 | ROBINSON | | - | $ 21,746 | 5.4 | $ 6,907 | 5.4 | | $ 28,652 |
| Phase 2 & 3 | LOADOUT (includes Ponds 1 & 1B) | | - | $ 123,819 | 30.7 | $ 39,325 | 30.7 | | $ 163,144 |
| Phase 2 & 3 | HWT 1-A | | - | $ 12,914 | 3.2 | $ 4,101 | 3.2 | | $ 17,015 |
| Phase 2 & 3 | HWT 1-B | | - | $ 35,916 | 8.9 | $ 11,407 | 8.9 | | $ 47,323 |
| Phase 2 & 3 | HWT 2-A | | - | $ 20,984 | 5.2 | $ 6,665 | 5.2 | | $ 27,649 |
| Phase 2 & 3 | HWT 2-B | | - | $ 9,685 | 2.4 | $ 3,076 | 2.4 | | $ 12,761 |
| Phase 2 & 3 | HWT 3-A | | - | $ 9,282 | 2.3 | $ 2,948 | 2.3 | | $ 12,229 |
| Phase 2 & 3 | HWT 3-B | | - | $ 26,634 | 6.6 | $ 8,459 | 6.6 | | $ 35,093 |
| Phase 2 & 3 | Pit 1-A | | - | $ 14,528 | 3.6 | $ 4,614 | 3.6 | | $ 19,142 |
| Phase 2 & 3 | Pit 1-B | | - | $ 11,703 | 2.9 | $ 3,717 | 2.9 | | $ 15,420 |
| Phase 2 & 3 | Pit 2 | | - | $ 33,439 | 8.3 | $ 10,620 | 8.3 | | $ 44,060 |
| Phase 2 & 3 | Pit 3 | | - | $ 28,343 | 7.0 | $ 9,002 | 7.0 | | $ 37,345 |
| Phase 2 & 3 | Pit 4 | | - | $ 25,376 | 6.3 | $ 8,060 | 6.3 | | $ 33,436 |
| Phase 2 & 3 | Pit 5 | | - | $ 27,061 | 6.7 | $ 8,595 | 6.7 | | $ 35,656 |
| Phase 2 & 3 | Pit 6 | | - | $ 48,829 | 12.1 | $ 15,508 | 12.1 | | $ 64,338 |
| Phase 2 & 3 | Pit 7 | | - | $ 25,386 | 6.3 | $ 8,063 | 6.3 | | $ 33,449 |
| Phase 2 & 3 | Pit 8 | | - | $ 22,599 | 5.6 | $ 7,177 | 5.6 | | $ 29,776 |
| Phase 2 & 3 | Pit 9-A | | - | $ 17,756 | 4.4 | $ 5,639 | 4.4 | | $ 23,395 |
| Phase 2 & 3 | Pit 9-B | | - | $ 47,619 | 11.8 | $ 15,124 | 11.8 | | $ 62,742 |
| Phase 2 & 3 | Pit 9-C | | - | $ 13,317 | 3.3 | $ 4,230 | 3.3 | | $ 17,547 |
| Phase 2 & 3 | Pit 10 | | - | $ 83,534 | 20.7 | $ 26,531 | 20.7 | | $ 110,065 |
| Phase 2 & 3 | Pit 20-A | | - | $ 4,843 | 1.2 | $ 1,538 | 1.2 | | $ 6,381 |
| Phase 2 & 3 | Pit 20-B | | - | $ 23,406 | 5.8 | $ 7,434 | 5.8 | | $ 30,839 |
| Phase 2 & 3 | Pit 21-A | | - | $ 6,860 | 1.7 | $ 2,179 | 1.7 | | $ 9,039 |
| Phase 2 & 3 | Pit 21-B | | - | $ 11,299 | 2.8 | $ 3,589 | 2.8 | | $ 14,888 |
| Phase 2 & 3 | Pit 22 | | - | $ 21,473 | 5.3 | $ 6,820 | 5.3 | | $ 28,293 |
| Phase 2 & 3 | Pit 23 | | - | $ 18,337 | 4.5 | $ 5,824 | 4.5 | | $ 24,161 |
| Phase 2 & 3 | Pit 24 | | - | $ 18,474 | 4.6 | $ 5,867 | 4.6 | | $ 24,341 |
| Phase 2 & 3 | Pit 25 | | - | $ 27,319 | 6.8 | $ 8,676 | 6.8 | | $ 35,995 |
| Phase 2 & 3 | Pit 26 | | - | $ 21,112 | 5.2 | $ 6,705 | 5.2 | | $ 27,818 |
| Phase 2 & 3 | Pit 27 | | - | $ 22,151 | 5.5 | $ 7,035 | 5.5 | | $ 29,186 |
| Phase 2 & 3 | Pit 28 | | - | $ 26,346 | 6.5 | $ 8,368 | 6.5 | | $ 34,713 |
| Line Items | Facilities Concrete Demolition | | | | | | | $ 203,783 | $ 203,783 |
| Line Items | Facilities Structure Demolition | | | | | | | $ 916,828 | $ 916,828 |
| Line Items | Facilities Earthwork | | | | | | | $ 372,523 | $ 372,523 |
| **Subtotal (+)** | | **$ 3,546,457** | **86.0** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,134,395** |
| **No Applicable Release Submission (-)** | | | | | | | | | |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,134,395** |
| **2010 - 2014 Mining Bond to Post** | | | | | | | | | |
| Incremental Phase 1 | Pit 1-A | $ 58,496 | 3.6 | | | | | | $ 58,496 |
| Incremental Phase 1 | Pit 1-B | $ 47,122 | 2.9 | | | | | | $ 47,122 |
| Incremental Phase 1 | Pit 2 | $ 102,570 | 8.3 | | | | | | $ 102,570 |
| Incremental Phase 1 | Pit 3 | $ 243,315 | 7.0 | | | | | | $ 243,315 |
| Incremental Phase 1 | Pit 4 | $ 69,061 | 6.3 | | | | | | $ 69,061 |
| Incremental Phase 1 | Pit 5 | $ 142,267 | 6.7 | | | | | | $ 142,267 |
| Incremental Phase 1 | Pit 6 | $ 232,862 | 12.1 | | | | | | $ 232,862 |
| Incremental Phase 1 | Pit 7 | $ 358,479 | 6.3 | | | | | | $ 358,479 |
| Incremental Phase 1 | Pit 8 | $ 124,377 | 5.6 | | | | | | $ 124,377 |
| Incremental Phase 1 | Pit 9-A | $ 53,438 | 4.4 | | | | | | $ 53,438 |
| Incremental Phase 1 | Pit 9-B | $ 143,312 | 11.8 | | | | | | $ 143,312 |
| Incremental Phase 1 | Pit 20-A | $ 17,276 | 1.2 | | | | | | $ 17,276 |
| Incremental Phase 1 | Pit 20-B | $ 83,502 | 5.8 | | | | | | $ 83,502 |
| Incremental Phase 1 | Pit 21-A | $ 32,153 | 1.7 | | | | | | $ 32,153 |
| Incremental Phase 1 | Pit 21-B | $ 52,958 | 2.8 | | | | | | $ 52,958 |
| Incremental Phase 1 | Pit 22 | $ 112,704 | 5.3 | | | | | | $ 112,704 |
| Incremental Phase 1 | Pit 23 | $ 89,797 | 4.5 | | | | | | $ 89,797 |
| Incremental Phase 1 | Pit 24 | $ 78,221 | 4.6 | | | | | | $ 78,221 |
| Incremental Phase 1 | Pit 25 | $ 138,696 | 6.8 | | | | | | $ 138,696 |
| Incremental Phase 1 | Pit 26 | $ 97,568 | 5.2 | | | | | | $ 97,568 |
| Incremental Phase 1 | Pit 27 | $ 102,303 | 5.5 | | | | | | $ 102,303 |
| Incremental Phase 1 | Pit 28 | $ 125,563 | 6.5 | | | | | | $ 125,563 |
| **Subtotal (+)** | | **$ 2,506,042** | **125.0** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 2,506,042** |
| **No Applicable Release Submission (-)** | | | | | | | | | |
| **Cumulative Liability (=)** | | **$ 6,052,499** | **210.9** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 9,640,437** |
| **2015 Mining Bond to Post** | | | | | | | | | |
| Incremental Phase 1 | HWT 1-A | $ 55,481 | 3.2 | | | | | | $ 55,481 |
| Incremental Phase 1 | HWT 1-B | $ 154,307 | 8.9 | | | | | | $ 154,307 |
| Incremental Phase 1 | HWT 2-A | $ 86,522 | 5.2 | | | | | | $ 86,522 |
| Incremental Phase 1 | HWT 2-B | $ 39,933 | 2.4 | | | | | | $ 39,933 |
| Incremental Phase 1 | HWT 3-A | $ 29,954 | 2.3 | | | | | | $ 29,954 |
| Incremental Phase 1 | HWT 3-B | $ 85,954 | 6.6 | | | | | | $ 85,954 |
| Incremental Phase 1 | Pit B-1 (Volume backfilled under 3:1 slope) | $ 13,359 | - | | | | | | $ 13,359 |
| **Subtotal (+)** | | **$ 465,509** | **28.6** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 465,509** |
| **2015_1 & 2015_2 Release Submissions (-)** | | **$ 2,371,089** | **113.5** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 2,371,089** |
| **Cumulative Liability (=)** | | **$ 4,146,920** | **126.1** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,734,858** |
| **Cumulative Liability Calculations Transferred to North Area Bond Posting Plan from this point forward** | | | | | | | | | |
| **2016 Mining Bond to Post** | | | | | | | | | |
| None | | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2016_1 & 2016_2 Release Submissions (-)** | | **$ 587,103** | **40.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 587,103** |
| **Cumulative Liability (=)** | | **$ 3,559,816** | **86.0** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,147,754** |
| **2017 Mining Bond to Post** | | | | | | | | | |
| None | | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2017_1 & 2017_2 Release Submissions (-)** | | **$ 13,359** | **-** | **$ 312,508** | **77.4** | **$ -** | **-** | **$ -** | **$ 325,867** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 1,304,837** | **295.1** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 6,821,887** |
| **2018 Mining Bond to Post** | | | | | | | | | |
| None | | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2018_1 Release Submission (-)** | | **$ -** | **-** | **$ 465,482** | **115.3** | **$ -** | **-** | **$ -** | **$ 465,482** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 6,356,405** |
| **2026 Mining Bond to Post** | | | | | | | | | |
| None | | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2026_1 Release Submission (-)** | | **$ -** | **-** | **$ -** | **-** | **$ 240,186** | **187.4** | **$ -** | **$ 240,186** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 237,273** | **185.1** | **$ 1,493,134** | **$ 6,116,219** |
| **End of UG Mining Bond to Post** | | | | | | | | | |
| None | | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2026_1 Release Submission (-)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 237,273** | **185.1** | **$ 1,493,134** | **$ 6,116,219** |
| **Cumulative Liability (=)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |

## South Area Bond Release Plan

| Stage of Reclamation / Release Application | Areas Included in Release Application | Phase 1 Bond Amount | Phase 1 Surface Area (acres) | Phase 2 Bond Amount | Phase 2 Surface Area (acres) | Phase 3 Bond Amount | Phase 3 Surface Area (acres) | Facilities Bond Amount | Total Bond Amount |
|---|---|---|---|---|---|---|---|---|---|
| **Point of Maximum Reclamation Liability Bond Amount** | | **$ 3,546,457** | **86.0** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,134,395** |
| ***All amounts escalated to 2020** | | | | | | | | | |
| 2015_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Pit 1-A | $ 58,496 | 3.6 | | | | | | $ 58,496 |
| | Incremental Phase 1 Pit 2 | $ 102,570 | 8.3 | | | | | | $ 102,570 |
| | Incremental Phase 1 Pit 3 | $ 243,315 | 7.0 | | | | | | $ 243,315 |
| | Incremental Phase 1 Pit 4 | $ 69,061 | 6.3 | | | | | | $ 69,061 |
| | Incremental Phase 1 Pit 5 | $ 142,267 | 6.7 | | | | | | $ 142,267 |
| | Incremental Phase 1 Pit 6 | $ 232,862 | 12.1 | | | | | | $ 232,862 |
| | Incremental Phase 1 Pit 7 | $ 358,479 | 6.3 | | | | | | $ 358,479 |
| | Incremental Phase 1 Pit 8 | $ 124,377 | 5.6 | | | | | | $ 124,377 |
| | Incremental Phase 1 Pit 9-A | $ 53,438 | 4.4 | | | | | | $ 53,438 |
| | Incremental Phase 1 Pit 21-A | $ 32,153 | 1.7 | | | | | | $ 32,153 |
| | Incremental Phase 1 Pit 22 | $ 112,704 | 5.3 | | | | | | $ 112,704 |
| | Incremental Phase 1 Pit 23 | $ 89,797 | 4.5 | | | | | | $ 89,797 |
| | Incremental Phase 1 Pit 24 | $ 78,221 | 4.6 | | | | | | $ 78,221 |
| | Incremental Phase 1 Pit 25 | $ 138,696 | 6.8 | | | | | | $ 138,696 |
| | Incremental Phase 1 Pit 26 | $ 97,568 | 5.2 | | | | | | $ 97,568 |
| | Incremental Phase 1 Pit 27 | $ 102,303 | 5.5 | | | | | | $ 102,303 |
| | Incremental Phase 1 Pit 28 | $ 125,563 | 6.5 | | | | | | $ 125,563 |
| | **Subtotal** | **$ 2,161,872** | **100.5** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 2,161,872** |
| 2015_2 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Pit 20-A | $ 17,276 | 1.2 | | | | | | $ 17,276 |
| | Incremental Phase 1 Pit 20-B | $ 83,502 | 5.8 | | | | | | $ 83,502 |
| | Incremental Phase 1 Pit 21-B | $ 52,958 | 2.8 | | | | | | $ 52,958 |
| | Incremental Phase 1 HWT 1-A | $ 55,481 | 3.2 | | | | | | $ 55,481 |
| | **Subtotal** | **$ 209,217** | **13.0** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 209,217** |
| 2016_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Pit 1-B | $ 47,122 | 2.9 | | | | | | $ 47,122 |
| | Incremental Phase 1 Pit 9-B | $ 143,312 | 11.8 | | | | | | $ 143,312 |
| | Incremental Phase 1 HWT 1-B | $ 154,307 | 8.9 | | | | | | $ 154,307 |
| | Incremental Phase 1 HWT 2-A | $ 86,522 | 5.2 | | | | | | $ 86,522 |
| | Incremental Phase 1 HWT 3-A | $ 29,954 | 2.3 | | | | | | $ 29,954 |
| | **Subtotal** | **$ 461,216** | **31.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 461,216** |
| 2016_2 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 HWT 2-B | $ 39,933 | 2.4 | | | | | | $ 39,933 |
| | Incremental Phase 1 HWT 3-B | $ 85,954 | 6.6 | | | | | | $ 85,954 |
| | **Subtotal** | **$ 125,887** | **9.0** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 125,887** |
| 2017_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Pit B-1 (Volume backfilled under 3:1 slope) | $ 13,359 | - | | | | | | $ 13,359 |
| | **Subtotal** | **$ 13,359** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 13,359** |
| 2017_2 Phase 2 Release Submission | | | | | | | | | |
| | Phase 2 Pit 3 | | - | $ 28,343 | 7.0 | | - | | $ 28,343 |
| | Phase 2 Pit 5 | | - | $ 27,061 | 6.7 | | - | | $ 27,061 |
| | Phase 2 Pit 6 | | - | $ 48,829 | 12.1 | | - | | $ 48,829 |
| | Phase 2 Pit 21-A | | - | $ 6,860 | 1.7 | | - | | $ 6,860 |
| | Phase 2 Pit 21-B | | - | $ 11,299 | 2.8 | | - | | $ 11,299 |
| | Phase 2 Pit 22 | | - | $ 21,473 | 5.3 | | - | | $ 21,473 |
| | Phase 2 Pit 23 | | - | $ 18,337 | 4.5 | | - | | $ 18,337 |
| | Phase 2 Pit 24 | | - | $ 18,474 | 4.6 | | - | | $ 18,474 |
| | Phase 2 Pit 25 | | - | $ 27,319 | 6.8 | | - | | $ 27,319 |
| | Phase 2 Pit 26 | | - | $ 21,112 | 5.2 | | - | | $ 21,112 |
| | Phase 2 Pit 27 | | - | $ 22,151 | 5.5 | | - | | $ 22,151 |
| | Phase 2 Pit 28 | | - | $ 26,346 | 6.5 | | - | | $ 26,346 |
| | Phase 2 SURF6 | | - | $ 30,057 | 7.4 | | - | | $ 30,057 |
| | Phase 2 SURF7 | | - | $ 4,846 | 1.2 | | - | | $ 4,846 |
| | **Subtotal** | **$ -** | **-** | **$ 312,508** | **77.4** | **$ -** | **-** | **$ -** | **$ 312,508** |
| 2018_1 Phase 2 Release Submission | | | | | | | | | |
| | Phase 2 SURF1 | | - | $ 39,522 | 9.8 | | - | | $ 39,522 |
| | Phase 2 SURF4 | | - | $ 8,071 | 2.0 | | - | | $ 8,071 |
| | Phase 2 SURF5 | | - | $ 71,831 | 17.8 | | - | | $ 71,831 |
| | Phase 2 ROBINSON | | - | $ 21,746 | 5.4 | | - | | $ 21,746 |
| | Phase 2 HWT 1-A | | - | $ 12,914 | 3.2 | | - | | $ 12,914 |
| | Phase 2 HWT 1-B | | - | $ 35,916 | 8.9 | | - | | $ 35,916 |
| | Phase 2 HWT 2-A | | - | $ 20,984 | 5.2 | | - | | $ 20,984 |
| | Phase 2 HWT 2-B | | - | $ 9,685 | 2.4 | | - | | $ 9,685 |
| | Phase 2 HWT 3-A | | - | $ 9,282 | 2.3 | | - | | $ 9,282 |
| | Phase 2 HWT 3-B | | - | $ 26,634 | 6.6 | | - | | $ 26,634 |
| | Phase 2 Pit 1-A | | - | $ 14,528 | 3.6 | | - | | $ 14,528 |
| | Phase 2 Pit 1-B | | - | $ 11,703 | 2.9 | | - | | $ 11,703 |
| | Phase 2 Pit 2 | | - | $ 33,439 | 8.3 | | - | | $ 33,439 |
| | Phase 2 Pit 4 | | - | $ 25,376 | 6.3 | | - | | $ 25,376 |
| | Phase 2 Pit 7 | | - | $ 25,386 | 6.3 | | - | | $ 25,386 |
| | Phase 2 Pit 8 | | - | $ 22,599 | 5.6 | | - | | $ 22,599 |
| | Phase 2 Pit 9-B | | - | $ 47,619 | 11.8 | | - | | $ 47,619 |
| | Phase 2 Pit 20-A | | - | $ 4,843 | 1.2 | | - | | $ 4,843 |
| | Phase 2 Pit 20-B | | - | $ 23,406 | 5.8 | | - | | $ 23,406 |
| | **Subtotal** | **$ -** | **-** | **$ 465,482** | **115.3** | **$ -** | **-** | **$ -** | **$ 465,482** |
| 2026_1 Phase 3 Release Submission | | | | | | | | | |
| | Phase 3 SURF1 | | - | | - | $ 12,552 | 9.8 | | $ 12,552 |
| | Phase 3 SURF4 | | - | | - | $ 2,563 | 2.0 | | $ 2,563 |
| | Phase 3 SURF5 | | - | | - | $ 22,814 | 17.8 | | $ 22,814 |
| | Phase 3 SURF6 | | - | | - | $ 9,546 | 7.4 | | $ 9,546 |
| | Phase 3 SURF7 | | - | | - | $ 1,539 | 1.2 | | $ 1,539 |
| | Phase 3 HWT 1-A | | - | | - | $ 4,101 | 3.2 | | $ 4,101 |
| | Phase 3 HWT 1-B | | - | | - | $ 11,407 | 8.9 | | $ 11,407 |
| | Phase 3 HWT 2-A | | - | | - | $ 6,665 | 5.2 | | $ 6,665 |
| | Phase 3 HWT 2-B | | - | | - | $ 3,076 | 2.4 | | $ 3,076 |
| | Phase 3 HWT 3-A | | - | | - | $ 2,948 | 2.3 | | $ 2,948 |
| | Phase 3 HWT 3-B | | - | | - | $ 8,459 | 6.6 | | $ 8,459 |
| | Phase 3 Pit 1-A | | - | | - | $ 4,614 | 3.6 | | $ 4,614 |
| | Phase 3 Pit 1-B | | - | | - | $ 3,717 | 2.9 | | $ 3,717 |
| | Phase 3 Pit 2 | | - | | - | $ 10,620 | 8.3 | | $ 10,620 |
| | Phase 3 Pit 3 | | - | | - | $ 9,002 | 7.0 | | $ 9,002 |
| | Phase 3 Pit 4 | | - | | - | $ 8,060 | 6.3 | | $ 8,060 |
| | Phase 3 Pit 5 | | - | | - | $ 8,595 | 6.7 | | $ 8,595 |
| | Phase 3 Pit 6 | | - | | - | $ 15,508 | 12.1 | | $ 15,508 |
| | Phase 3 Pit 7 | | - | | - | $ 8,063 | 6.3 | | $ 8,063 |
| | Phase 3 Pit 8 | | - | | - | $ 7,177 | 5.6 | | $ 7,177 |
| | Phase 3 Pit 9-B | | - | | - | $ 15,124 | 11.8 | | $ 15,124 |
| | Phase 3 Pit 20-A | | - | | - | $ 1,538 | 1.2 | | $ 1,538 |
| | Phase 3 Pit 20-B | | - | | - | $ 7,434 | 5.8 | | $ 7,434 |
| | Phase 3 Pit 21-A | | - | | - | $ 2,179 | 1.7 | | $ 2,179 |
| | Phase 3 Pit 21-B | | - | | - | $ 3,589 | 2.8 | | $ 3,589 |
| | Phase 3 Pit 22 | | - | | - | $ 6,820 | 5.3 | | $ 6,820 |
| | Phase 3 Pit 23 | | - | | - | $ 5,824 | 4.5 | | $ 5,824 |
| | Phase 3 Pit 24 | | - | | - | $ 5,867 | 4.6 | | $ 5,867 |
| | Phase 3 Pit 25 | | - | | - | $ 8,676 | 6.8 | | $ 8,676 |
| | Phase 3 Pit 26 | | - | | - | $ 6,705 | 5.2 | | $ 6,705 |
| | Phase 3 Pit 27 | | - | | - | $ 7,035 | 5.5 | | $ 7,035 |
| | Phase 3 Pit 28 | | - | | - | $ 8,368 | 6.5 | | $ 8,368 |
| | **Subtotal** | **$ -** | **-** | **$ -** | **-** | **$ 240,186** | **187.4** | **$ -** | **$ 240,186** |
| End of Underground Mining Release Submission | | | | | | | | | |
| | Phase 2 & 3 Pit 9-A | | - | $ 17,756 | 4.4 | $ 5,639 | 4.4 | $ - | $ 23,395 |
| | Phase 1,2 & 3 Pit 9-C | $ 400,788 | 3.3 | $ 13,317 | 3.3 | $ 4,230 | 3.3 | $ - | $ 418,334 |
| | Phase 1,2 & 3 Pit 10 | $ 2,053,548 | 20.7 | $ 83,534 | 20.7 | $ 26,531 | 20.7 | $ - | $ 2,163,613 |
| | Phase 2 & 3 SURF8 HAUL & MAINT (includes Pond 2) | $ - | - | $ 180,789 | 44.8 | $ 57,419 | 44.8 | $ - | $ 238,209 |
| | Phase 1,2 & 3 BORROW | $ 1,092,122 | 62.0 | $ 364,192 | 62.0 | $ 79,453 | 62.0 | $ - | $ 1,535,766 |
| | Phase 2 & 3 DITCH 3 | $ - | - | $ 2,129 | 0.5 | $ 676 | 0.5 | $ - | $ 2,805 |
| | Phase 2 & 3 DITCH 2 | $ - | - | $ 7,788 | 1.9 | $ 2,473 | 1.9 | $ - | $ 10,261 |
| | Phase 2 & 3 POND 3 | $ - | - | $ 16,697 | 4.1 | $ 5,303 | 4.1 | $ - | $ 22,000 |
| | Phase 2 & 3 POND 4 (includes ditch 1) | $ - | - | $ 29,335 | 7.3 | $ 9,317 | 7.3 | $ - | $ 38,652 |
| | Phase 3 ROBINSON | | - | | - | $ 6,907 | 5.4 | $ - | $ 6,907 |
| | Phase 2 & 3 LOADOUT (includes Ponds 1 & 1B) | $ - | - | $ 123,819 | 30.7 | $ 39,325 | 30.7 | $ - | $ 163,144 |
| | Line Items Facilities Concrete Demolition | $ - | - | $ - | - | $ - | - | $ 203,783 | $ 203,783 |
| | Line Items Facilities Structure Demolition | $ - | - | $ - | - | $ - | - | $ 916,828 | $ 916,828 |
| | Line Items Facilities Earthwork | $ - | - | $ - | - | $ - | - | $ 372,523 | $ 372,523 |
| | **Subtotal** | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 237,273** | **185.1** | **$ 1,493,134** | **$ 6,116,219** |

## South Area Point of Maximum Reclamation Liability Determination

| Stage of Reclamation | Included Pits / Areas | Phase 1 Bond Amount | Phase 1 Surface Area (acres) | Phase 2 Bond Amount | Phase 2 Surface Area (acres) | Phase 3 Bond Amount | Phase 3 Surface Area (acres) | Facilities Bond Amount | Total Bond Amount |
|---|---|---|---|---|---|---|---|---|---|
| ***All amounts escalated to 2019** | | | | | | | | | |
| **Point of Maximum Reclamation Liability** | | | | | | | | | |
| Phase 1 | Pit 9-C | $ 400,788 | 3.3 | | | | | | $ 400,788 |
| Phase 1 | Pit 10 | $ 2,053,548 | 20.7 | | | | | | $ 2,053,548 |
| Phase 1 | BORROW | $ 1,092,122 | 62.0 | | | | | | $ 1,092,122 |
| Phase 2 & 3 | BORROW | | - | $ 364,192 | 62.0 | $ 79,453 | 62.0 | | $ 443,644 |
| Phase 2 & 3 | SURF1 | | - | $ 39,522 | 9.8 | $ 12,552 | 9.8 | | $ 52,074 |
| Phase 2 & 3 | SURF4 | | - | $ 8,071 | 2.0 | $ 2,563 | 2.0 | | $ 10,634 |
| Phase 2 & 3 | SURF5 | | - | $ 71,831 | 17.8 | $ 22,814 | 17.8 | | $ 94,645 |
| Phase 2 & 3 | SURF6 | | - | $ 30,057 | 7.4 | $ 9,546 | 7.4 | | $ 39,603 |
| Phase 2 & 3 | SURF7 | | - | $ 4,846 | 1.2 | $ 1,539 | 1.2 | | $ 6,385 |
| Phase 2 & 3 | SURF8 HAUL & MAINT (includes Pond 2) | | - | $ 180,789 | 44.8 | $ 57,419 | 44.8 | | $ 238,209 |
| Phase 2 & 3 | DITCH 3 | | - | $ 2,129 | 0.5 | $ 676 | 0.5 | | $ 2,805 |
| Phase 2 & 3 | DITCH 2 | | - | $ 7,788 | 1.9 | $ 2,473 | 1.9 | | $ 10,261 |
| Phase 2 & 3 | POND 3 | | - | $ 16,697 | 4.1 | $ 5,303 | 4.1 | | $ 22,000 |
| Phase 2 & 3 | POND 4 (includes ditch 1) | | - | $ 29,335 | 7.3 | $ 9,317 | 7.3 | | $ 38,652 |
| Phase 2 & 3 | ROBINSON | | - | $ 21,746 | 5.4 | $ 6,907 | 5.4 | | $ 28,652 |
| Phase 2 & 3 | LOADOUT (includes Ponds 1 & 1B) | | - | $ 123,819 | 30.7 | $ 39,325 | 30.7 | | $ 163,144 |
| Phase 2 & 3 | HWT 1-A | | - | $ 12,914 | 3.2 | $ 4,101 | 3.2 | | $ 17,015 |
| Phase 2 & 3 | HWT 1-B | | - | $ 35,916 | 8.9 | $ 11,407 | 8.9 | | $ 47,323 |
| Phase 2 & 3 | HWT 2-A | | - | $ 20,984 | 5.2 | $ 6,665 | 5.2 | | $ 27,649 |
| Phase 2 & 3 | HWT 2-B | | - | $ 9,685 | 2.4 | $ 3,076 | 2.4 | | $ 12,761 |
| Phase 2 & 3 | HWT 3-A | | - | $ 9,282 | 2.3 | $ 2,948 | 2.3 | | $ 12,229 |
| Phase 2 & 3 | HWT 3-B | | - | $ 26,634 | 6.6 | $ 8,459 | 6.6 | | $ 35,093 |
| Phase 2 & 3 | Pit 1-A | | - | $ 14,528 | 3.6 | $ 4,614 | 3.6 | | $ 19,142 |
| Phase 2 & 3 | Pit 1-B | | - | $ 11,703 | 2.9 | $ 3,717 | 2.9 | | $ 15,420 |
| Phase 2 & 3 | Pit 2 | | - | $ 33,439 | 8.3 | $ 10,620 | 8.3 | | $ 44,060 |
| Phase 2 & 3 | Pit 3 | | - | $ 28,343 | 7.0 | $ 9,002 | 7.0 | | $ 37,345 |
| Phase 2 & 3 | Pit 4 | | - | $ 25,376 | 6.3 | $ 8,060 | 6.3 | | $ 33,436 |
| Phase 2 & 3 | Pit 5 | | - | $ 27,061 | 6.7 | $ 8,595 | 6.7 | | $ 35,656 |
| Phase 2 & 3 | Pit 6 | | - | $ 48,829 | 12.1 | $ 15,508 | 12.1 | | $ 64,338 |
| Phase 2 & 3 | Pit 7 | | - | $ 25,386 | 6.3 | $ 8,063 | 6.3 | | $ 33,449 |
| Phase 2 & 3 | Pit 8 | | - | $ 22,599 | 5.6 | $ 7,177 | 5.6 | | $ 29,776 |
| Phase 2 & 3 | Pit 9-A | | - | $ 17,756 | 4.4 | $ 5,639 | 4.4 | | $ 23,395 |
| Phase 2 & 3 | Pit 9-B | | - | $ 47,619 | 11.8 | $ 15,124 | 11.8 | | $ 62,742 |
| Phase 2 & 3 | Pit 9-C | | - | $ 13,317 | 3.3 | $ 4,230 | 3.3 | | $ 17,547 |
| Phase 2 & 3 | Pit 10 | | - | $ 83,534 | 20.7 | $ 26,531 | 20.7 | | $ 110,065 |
| Phase 2 & 3 | Pit 20-A | | - | $ 4,843 | 1.2 | $ 1,538 | 1.2 | | $ 6,381 |
| Phase 2 & 3 | Pit 20-B | | - | $ 23,406 | 5.8 | $ 7,434 | 5.8 | | $ 30,839 |
| Phase 2 & 3 | Pit 21-A | | - | $ 6,860 | 1.7 | $ 2,179 | 1.7 | | $ 9,039 |
| Phase 2 & 3 | Pit 21-B | | - | $ 11,299 | 2.8 | $ 3,589 | 2.8 | | $ 14,888 |
| Phase 2 & 3 | Pit 22 | | - | $ 21,473 | 5.3 | $ 6,820 | 5.3 | | $ 28,293 |
| Phase 2 & 3 | Pit 23 | | - | $ 18,337 | 4.5 | $ 5,824 | 4.5 | | $ 24,161 |
| Phase 2 & 3 | Pit 24 | | - | $ 18,474 | 4.6 | $ 5,867 | 4.6 | | $ 24,341 |
| Phase 2 & 3 | Pit 25 | | - | $ 27,319 | 6.8 | $ 8,676 | 6.8 | | $ 35,995 |
| Phase 2 & 3 | Pit 26 | | - | $ 21,112 | 5.2 | $ 6,705 | 5.2 | | $ 27,818 |
| Phase 2 & 3 | Pit 27 | | - | $ 22,151 | 5.5 | $ 7,035 | 5.5 | | $ 29,186 |
| Phase 2 & 3 | Pit 28 | | - | $ 26,346 | 6.5 | $ 8,368 | 6.5 | | $ 34,713 |
| Line Items | Facilities Concrete Demolition | | | | | | | $ 203,783 | $ 203,783 |
| Line Items | Facilities Structure Demolition | | | | | | | $ 916,828 | $ 916,828 |
| Line Items | Facilities Earthwork | | | | | | | $ 372,523 | $ 372,523 |
| **Total** | | **$ 3,546,457** | **86.0** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,134,395** |

# South Area Facilities Reclamation Cost Estimate

## Concrete Reclamation Cost Estimate

### Concrete Demolition

| Item | Unit | Quantity | Unit Cost ($) | Cost | **Cost Data Reference |
|---|---|---|---|---|---|
| Office (footer) | lft | 500 | $20.00 | $10,000 | RSMeans Building Constr., 02 41 16.17 1140 |
| Shop (footer) | lft | 616 | $24.00 | $14,784 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |
| Shop (foundation) | $ft^2$ | 3,080 | $1.29 | $3,964 | RSMeans Building Constr., 02 41 16.17 2100 & 2200 |
| Shop (floor) | $ft^2$ | 20,000 | $0.98 | $19,600 | RSMeans Building Constr., 02 41 16.17 0440 |
| Wash Bay (footer) | lft | 244 | $24.00 | $5,856 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |
| Wash Bay (foundation) | $ft^2$ | 660 | $1.29 | $849 | RSMeans Building Constr., 02 41 16.17 2100 & 2200 |
| Wash Bay (floor & sump) | $ft^2$ | 3,100 | $0.98 | $3,038 | RSMeans Building Constr., 02 41 16.17 0440 |
| Fuel Storage (slab) | $yd^3$ | 111 | $169.00 | $18,778 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Fuel Storage (containment wall) | $yd^3$ | 9 | $169.00 | $1,502 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Oil Storage (slab) | $yd^3$ | 89 | $169.00 | $15,022 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Oil Storage (containment wall) | $yd^3$ | 12 | $169.00 | $2,066 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Coal Hopper/Feeder Breaker (Tunnel Access) | $yd^3$ | 95 | $169.00 | $16,024 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Coal Hopper/Feeder Breaker (Hopper Supports) | $yd^3$ | 190 | $169.00 | $32,047 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Coal Hopper/Feeder Breaker (Belt Tunnel) | $yd^3$ | 133 | $169.00 | $22,433 | RSMeans Heavy Constr., 03 05 05.10 0060 |
| Crusher Building (Footer) | lft | 80 | $24.00 | $1,920 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |
| Feed Conveyor (Support Footers) | lft | 30 | $24.00 | $720 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |
| Reclaim Belt (Support Footers) | lft | 25 | $24.00 | $600 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |
| Loadout (Footers) | lft | 72 | $24.00 | $1,728 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |
| Loadout (Scale Footer) | lft | 60 | $24.00 | $1,440 | RSMeans Building Constr., 02 41 16.17 1140 & 1220 |

### Concrete Disposal

| | | | | | |
|---|---|---|---|---|---|
| *Concrete Disposal (All Facilities) | $yd^3$ | 1,551 | $15.70 | $24,346 | RSMeans Building Constr., 02 41 16.17 4250 |

| | |
|---|---|
| **Subtotal Concrete Demolition & Disposal** | **$196,718** |

*Concrete is disposed of on site (in pits) within five miles of facilities

**All cost data is from the 2018 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals

(Total Cost Including O&P)

# Structures Reclamation Cost Estimate

## Structure Demolition & Disposal

| Item | *Unit | Quantity | Unit Cost ($) | Cost | **Cost Data Reference |
|---|---|---|---|---|---|
| Office | $ft^3$ | 150,000 | $0.38 | $57,000 | RSMeans Heavy Constr., 02 41 16.13 0100 |
| Office (Sewage Tank) | Ea. | 1 | $4,005.00 | $4,005 | RSMeans Heavy Constr., 02 65 10.30 1233 & 1253 |
| Shop | $ft^3$ | 1,000,000 | $0.36 | $360,000 | RSMeans Heavy Constr., 02 41 16.13 0020 |
| Wash Bay | $ft^3$ | 150,000 | $0.36 | $54,000 | RSMeans Heavy Constr., 02 41 16.13 0020 |
| Fuel Storage (3 tanks) | Ea. | 3 | $2,950.00 | $8,850 | RSMeans Heavy Constr., 02 65 10.30 0130 & 1029 |
| Coal Hopper/Feeder Breaker (Demolition) | Ton | 64 | $293.00 | $18,752 | RSMeans Heavy Constr., 05 05 05.10 0260 |
| Coal Hopper/Feeder Breaker (Disposal) | $yd^3$ | 570 | $13.40 | $7,638 | RSMeans Heavy Constr., 02 41 19.18 0200 |
| Crusher (structure) | $ft^3$ | 9,200 | $0.36 | $3,312 | RSMeans Heavy Constr., 02 41 16.13 0020 |
| Crusher (equipment demolition) | Ton | 60 | $293.00 | $17,580 | RSMeans Heavy Constr., 05 05 05.10 0260 |
| Crusher (equipment disposal) | $yd^3$ | 150 | $13.40 | $2,010 | RSMeans Heavy Constr., 02 41 19.18 0200 |
| Coal Reclaim System (demolition) | Ton | 50 | $293.00 | $14,650 | RSMeans Heavy Constr., 05 05 05.10 0260 |
| Coal Reclaim System (disposal) | $yd^3$ | 233 | $13.40 | $3,122 | RSMeans Heavy Constr., 02 41 19.18 0200 |
| Loadout (structure) | $ft^3$ | 19,000 | $0.36 | $6,840 | RSMeans Heavy Constr., 02 41 16.13 0020 |
| Loadout (equipment demolition) | Ton | 68 | $293.00 | $19,924 | RSMeans Heavy Constr., 05 05 05.10 0260 |
| Loadout (equipment disposal) | $yd^3$ | 185 | $13.40 | $2,479 | RSMeans Heavy Constr., 02 41 19.18 0200 |
| 100 lb/cu. Ft material - 48" Process Plant Conveyors (demolition) | ft | 545 | $300.75 | $163,909 | CostMine - Mine and Mill Equipment Costs 2018 (Estimated as 25% of Construction Cost) |
| 12" Drainage Culvert (demolition) | ft | 50 | $2.60 | $130 | RSMeans Heavy Constr., 02 41 13.40 0150 |
| 18" Drainage Culvert (demolition) | ft | 413 | $3.90 | $1,611 | RSMeans Heavy Constr., 02 41 13.40 0160 |
| 24" Drainage Culvert (demolition) | ft | 455 | $14.55 | $6,620 | RSMeans Heavy Constr., 02 41 13.40 0170 |
| 36" Drainage Culvert (demolition) | ft | 184 | $17.45 | $3,211 | RSMeans Heavy Constr., 02 41 13.40 0180 |
| 96" Drainage Culvert (demolition) | ft | 184 | $48.00 | $8,832 | RSMeans Heavy Constr., 02 41 13.40 0200 |
| Culvert Excavation 6' - 10' Deep | $yd^3$ | 1,485 | $4.95 | $7,351 | RSMeans Heavy Constr., 31 23 16.13 0510 |
| Culvert Excavation 14' - 20' Deep | $yd^3$ | 2,208 | $6.20 | $13,690 | RSMeans Heavy Constr., 31 23 16.13 1300 |
| Perimeter Fencing (demolition) | ft | 22,000 | $3.47 | $76,340 | RSMeans Heavy Constr., 02 41 13.60 1650 |
| Water Monitoring Wells - PVC (demolition) | VLF | 1,919 | $9.00 | $17,267 | RSMeans Heavy Constr., 02 41 13.76 0900 |
| Water Monitoring Wells - Steel (demolition) | VLF | 201 | $18.00 | $3,618 | RSMeans Heavy Constr., 02 41 13.76 1000 |
| Water System (tanks) | Ea. | 2 | $1,150.00 | $2,300 | RSMeans Heavy Constr., 02 65 10.30 1029 |
| **Subtotal Structure Demolition & Disposal** | | | | **$885,040** | |

*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 substitutues are utilized.

All cost data is from the 2018 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted (Total Cost Including O&P)

# Earthwork Reclamation Cost Estimate

## Facilities Earthwork

| Item | Unit | Quantity | Unit Cost ($) | Cost | **Cost Data Reference |
|---|---|---|---|---|---|
| Pond 1 backfill from embankment | $yd^3$ | 1,156 | $2.29 | $2,647 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 1 backfill from subsoil pile | $yd^3$ | 3,200 | $5.57 | $17,824 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 1B backfill from embankment | $yd^3$ | 146 | $2.29 | $334 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 1B backfill from subsoil pile | $yd^3$ | 794 | $5.57 | $4,423 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 2 backfill from embankment | $yd^3$ | 160 | $2.29 | $366 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 2 backfill from subsoil pile | $yd^3$ | 7,122 | $5.57 | $39,670 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 3 backfill from embankment | $yd^3$ | 4,767 | $2.29 | $10,916 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 3 backfill from subsoil pile | $yd^3$ | 6,107 | $5.57 | $34,016 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 4 backfill from embankment | $yd^3$ | 1,410 | $2.29 | $3,229 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 4 backfill from subsoil pile | $yd^3$ | 13,282 | $5.57 | $73,981 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Robinson Creek Rip-Rap | $yd^3$ | 562 | $67.50 | $37,923 | RS Means Heavy Constr., 31 37 13.10 0100 |
| Robinson Creek Grass Matting | $yd^2$ | 2,189 | $4.17 | $9,128 | RS Means Heavy Constr., 31 25 14.16 0120 |
| Ditch 1 recontouring | $yd^3$ | 3,096 | $2.29 | $7,090 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ditch 2 recontouring | $yd^3$ | 2,014 | $2.29 | $4,612 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ditch 3 recontouring | $yd^3$ | 11,556 | $2.29 | $26,463 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ditch 4 recontouring | $yd^3$ | 2,333 | $2.29 | $5,343 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ripping of haul roads and compacted surfaces (Facilities Access Haul Road & Pit B-1 Haul Road - 2 ft. Depth) | $yd^3$ | 31,161 | $2.62 | $81,642 | RSMeans Heavy Constr., 31 23 16.32 2310 |
| **Subtotal Facilities Earthwork** | | | | **$359,607** | |

** RS Means does not have direct cost data references for some specific items. Where needed, reasonable substitutues are utilized.
All cost data is from the 2018 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted (Total Cost Including O&P)

| | |
|---|---|
| **Total Facilities Reclamation Cost Estimate** | **$1,441,365** |

**South Area Bond Polygon Cost Estimates**

| | | | | | | | Phase 1 Cost | | | | | | | | Phase 2 Cost | | | | | | | | | | Phase 3 Cost | | | | | | Facilities Cost | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pit | BCF [BCY * 27] | BCY | LCY | Area (sf) [acres * 43560] | Area (acres) | Backfill Cost | Subsoil Quantity (LCY) | Subsoil Cost | Total Direct Cost | Indirect Cost | Total Phase 1 Cost | **Total Phase 1 Cost - Escalated** | **Incremental Phase 1 Cost (10%)** | 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 (M.S.F) | Re-Seed Cost | Total Direct Cost | Indirect Cost | Total Phase 3 Cost | **Total Phase 3 Cost - Escalated** | Total Facilities Cost | **Total Facilities Cost - Escalated** | **Total Bonded Amount - Escalated** |
| Excavated Areas | HWT 1-A | 9,752,043 | 361,187 | 399,924 | 139,392 | 3.2 | $ 400,917 | 18,448 | $ 21,459 | $ 422,377 | $ 113,197 | $ 535,574 | **$ 554,810** | **$ 55,481** | 3,690 | $ 4,481 | 139 | $ 2,227 | 139 | $ 3,122 | $ 9,831 | $ 2,635 | $ 12,466 | **$ 12,914** | 139 | $ 3,122 | $ 3,122 | $ 837 | $ 3,959 | **$ 4,101** | | | **$ 571,825** |
| | HWT 1-B | 27,122,871 | 1,004,551 | 1,112,289 | 387,684 | 8.9 | $ 1,115,051 | 51,308 | $ 59,684 | $ 1,174,736 | $ 314,829 | $ 1,489,565 | **$ 1,543,065** | **$ 154,307** | 10,262 | $ 12,463 | 388 | $ 6,195 | 388 | $ 8,684 | $ 27,343 | $ 7,328 | $ 34,670 | **$ 35,916** | 388 | $ 8,684 | $ 8,684 | $ 2,327 | $ 11,011 | **$ 11,407** | | | **$ 1,590,388** |
| | HWT 2-A | 15,173,962 | 561,999 | 622,273 | 226,512 | 5.2 | $ 623,818 | 29,978 | $ 34,872 | $ 658,690 | $ 176,529 | $ 835,219 | **$ 865,217** | **$ 86,522** | 5,996 | $ 7,282 | 227 | $ 3,620 | 227 | $ 5,074 | $ 15,975 | $ 4,281 | $ 20,257 | **$ 20,984** | 227 | $ 5,074 | $ 5,074 | $ 1,360 | $ 6,434 | **$ 6,665** | | | **$ 892,867** |
| | HWT 2-B | 7,003,367 | 259,384 | 287,203 | 104,544 | 2.4 | $ 287,916 | 13,836 | $ 16,095 | $ 304,011 | $ 81,475 | $ 385,486 | **$ 399,331** | **$ 39,933** | 2,767 | $ 3,361 | 105 | $ 1,671 | 105 | $ 2,342 | $ 7,373 | $ 1,976 | $ 9,349 | **$ 9,685** | 105 | $ 2,342 | $ 2,342 | $ 628 | $ 2,969 | **$ 3,076** | | | **$ 412,092** |
| | HWT 3-A | 5,171,686 | 191,544 | 212,087 | 100,188 | 2.3 | $ 212,614 | 13,259 | $ 15,424 | $ 228,038 | $ 61,114 | $ 289,152 | **$ 299,537** | **$ 29,954** | 2,652 | $ 3,221 | 100 | $ 1,601 | 100 | $ 2,244 | $ 7,066 | $ 1,894 | $ 8,960 | **$ 9,282** | 100 | $ 2,244 | $ 2,244 | $ 601 | $ 2,846 | **$ 2,948** | | | **$ 311,767** |
| | HWT 3-B | 14,840,491 | 549,648 | 608,598 | 287,496 | 6.6 | $ 610,109 | 38,049 | $ 44,260 | $ 654,369 | $ 175,371 | $ 829,740 | **$ 859,542** | **$ 85,954** | 7,610 | $ 9,242 | 287 | $ 4,594 | 287 | $ 6,440 | $ 20,277 | $ 5,434 | $ 25,711 | **$ 26,634** | 287 | $ 6,440 | $ 6,440 | $ 1,726 | $ 8,166 | **$ 8,459** | | | **$ 894,635** |
| | Pit 1-A | 10,245,166 | 379,451 | 420,147 | 156,816 | 3.6 | $ 421,190 | 20,754 | $ 24,142 | $ 445,332 | $ 119,349 | $ 564,681 | **$ 584,963** | **$ 58,496** | 4,151 | $ 5,041 | 157 | $ 2,506 | 157 | $ 3,513 | $ 11,060 | $ 2,964 | $ 14,024 | **$ 14,528** | 157 | $ 3,513 | $ 3,513 | $ 941 | $ 4,454 | **$ 4,614** | | | **$ 604,104** |
| | Pit 1-B | 8,253,050 | 305,669 | 338,451 | 126,324 | 2.9 | $ 339,292 | 16,718 | $ 19,448 | $ 358,740 | $ 96,142 | $ 454,882 | **$ 471,220** | **$ 47,122** | 3,344 | $ 4,061 | 126 | $ 2,019 | 126 | $ 2,830 | $ 8,909 | $ 2,388 | $ 11,297 | **$ 11,703** | 126 | $ 2,830 | $ 2,830 | $ 758 | $ 3,588 | **$ 3,717** | | | **$ 486,640** |
| | Pit 2 | 17,642,275 | 653,418 | 723,497 | 360,952 | 8.3 | $ 725,294 | 47,770 | $ 55,569 | $ 780,862 | $ 209,271 | $ 990,133 | **$ 1,025,696** | **$ 102,570** | 9,554 | $ 11,604 | 361 | $ 5,768 | 361 | $ 8,085 | $ 25,457 | $ 6,823 | $ 32,280 | **$ 33,439** | 361 | $ 8,085 | $ 8,085 | $ 2,167 | $ 10,252 | **$ 10,620** | | | **$ 1,069,755** |
| | Pit 3 | 43,911,690 | 1,626,359 | 1,800,786 | 305,947 | 7.0 | $ 1,805,258 | 40,491 | $ 47,101 | $ 1,852,359 | $ 496,432 | $ 2,348,791 | **$ 2,433,153** | **$ 243,315** | 8,098 | $ 9,836 | 306 | $ 4,889 | 306 | $ 6,853 | $ 21,578 | $ 5,783 | $ 27,361 | **$ 28,343** | 306 | $ 6,853 | $ 6,853 | $ 1,837 | $ 8,690 | **$ 9,002** | | | **$ 2,470,498** |
| | Pit 4 | 11,763,124 | 435,671 | 482,397 | 273,917 | 6.3 | $ 483,595 | 36,252 | $ 42,170 | $ 525,765 | $ 140,905 | $ 666,670 | **$ 690,614** | **$ 69,061** | 7,250 | $ 8,806 | 274 | $ 4,377 | 274 | $ 6,136 | $ 19,319 | $ 5,177 | $ 24,496 | **$ 25,376** | 274 | $ 6,136 | $ 6,136 | $ 1,644 | $ 7,780 | **$ 8,060** | | | **$ 724,050** |
| | Pit 5 | 25,251,319 | 935,234 | 1,035,538 | 292,103 | 6.7 | $ 1,038,110 | 38,659 | $ 44,969 | $ 1,083,079 | $ 290,265 | $ 1,373,344 | **$ 1,422,671** | **$ 142,267** | 7,732 | $ 9,391 | 292 | $ 4,668 | 292 | $ 6,543 | $ 20,601 | $ 5,521 | $ 26,123 | **$ 27,061** | 292 | $ 6,543 | $ 6,543 | $ 1,754 | $ 8,297 | **$ 8,595** | | | **$ 1,458,326** |
| | Pit 6 | 41,147,880 | 1,523,996 | 1,687,444 | 527,076 | 12.1 | $ 1,691,635 | 69,756 | $ 81,144 | $ 1,772,779 | $ 475,105 | $ 2,247,883 | **$ 2,328,620** | **$ 232,862** | 13,951 | $ 16,945 | 527 | $ 8,423 | 527 | $ 11,807 | $ 37,174 | $ 9,963 | $ 47,136 | **$ 48,829** | 527 | $ 11,807 | $ 11,807 | $ 3,164 | $ 14,971 | **$ 15,508** | | | **$ 2,392,958** |
| | Pit 7 | 65,357,399 | 2,420,644 | 2,680,259 | 274,027 | 6.3 | $ 2,686,915 | 36,266 | $ 42,187 | $ 2,729,102 | $ 731,399 | $ 3,460,501 | **$ 3,584,791** | **$ 358,479** | 7,253 | $ 8,809 | 274 | $ 4,379 | 274 | $ 6,138 | $ 19,327 | $ 5,180 | $ 24,506 | **$ 25,386** | 274 | $ 6,138 | $ 6,138 | $ 1,645 | $ 7,783 | **$ 8,063** | | | **$ 3,618,241** |
| | Pit 8 | 22,118,746 | 819,213 | 907,073 | 243,936 | 5.6 | $ 909,326 | 32,284 | $ 37,554 | $ 946,880 | $ 253,764 | $ 1,200,644 | **$ 1,243,768** | **$ 124,377** | 6,457 | $ 7,842 | 244 | $ 3,898 | 244 | $ 5,464 | $ 17,204 | $ 4,611 | $ 21,815 | **$ 22,599** | 244 | $ 5,464 | $ 5,464 | $ 1,464 | $ 6,929 | **$ 7,177** | | | **$ 1,273,544** |
| | Pit 9-A | 9,178,039 | 339,927 | 376,385 | 191,664 | 4.4 | $ 377,319 | 25,366 | $ 29,507 | $ 406,826 | $ 109,029 | $ 515,856 | **$ 534,384** | **$ 53,438** | 5,073 | $ 6,162 | 192 | $ 3,063 | 192 | $ 4,293 | $ 13,518 | $ 3,623 | $ 17,140 | **$ 17,756** | 192 | $ 4,293 | $ 4,293 | $ 1,151 | $ 5,444 | **$ 5,639** | | | **$ 557,779** |
| | Pit 9-B | 24,613,833 | 911,623 | 1,009,395 | 514,008 | 11.8 | $ 1,011,902 | 68,027 | $ 79,132 | $ 1,091,034 | $ 292,397 | $ 1,383,431 | **$ 1,433,119** | **$ 143,312** | 13,605 | $ 16,524 | 514 | $ 8,214 | 514 | $ 11,514 | $ 36,252 | $ 9,716 | $ 45,968 | **$ 47,619** | 514 | $ 11,514 | $ 11,514 | $ 3,086 | $ 14,599 | **$ 15,124** | | | **$ 1,495,862** |
| | Pit 9-C | 6,883,530 | 254,946 | 282,288 | 143,748 | 3.3 | $ 282,990 | 19,024 | $ 22,130 | $ 305,120 | $ 81,772 | $ 386,892 | **$ 400,788** | **$ 40,079** | 3,805 | $ 4,621 | 144 | $ 2,297 | 144 | $ 3,220 | $ 10,138 | $ 2,717 | $ 12,855 | **$ 13,317** | 144 | $ 3,220 | $ 3,220 | $ 863 | $ 4,083 | **$ 4,230** | | | **$ 418,334** |
| | Pit 10 | 34,651,213 | 1,283,378 | 1,421,021 | 901,692 | 20.7 | $ 1,424,550 | 119,335 | $ 138,816 | $ 1,563,366 | $ 418,982 | $ 1,982,348 | **$ 2,053,548** | **$ 205,355** | 23,867 | $ 28,988 | 902 | $ 14,409 | 902 | $ 20,198 | $ 63,595 | $ 17,043 | $ 80,638 | **$ 83,534** | 902 | $ 20,198 | $ 20,198 | $ 5,413 | $ 25,611 | **$ 26,531** | | | **$ 2,163,613** |
| | Pit 20-A | 3,003,497 | 111,241 | 123,171 | 52,272 | 1.2 | $ 123,477 | 6,918 | $ 8,047 | $ 131,524 | $ 35,249 | $ 166,773 | **$ 172,763** | **$ 17,276** | 1,384 | $ 1,680 | 52 | $ 835 | 52 | $ 1,171 | $ 3,687 | $ 988 | $ 4,675 | **$ 4,843** | 52 | $ 1,171 | $ 1,171 | $ 314 | $ 1,485 | **$ 1,538** | | | **$ 179,143** |
| | Pit 20-B | 14,516,903 | 537,663 | 595,327 | 252,648 | 5.8 | $ 596,806 | 33,437 | $ 38,895 | $ 635,701 | $ 170,368 | $ 806,069 | **$ 835,021** | **$ 83,502** | 6,687 | $ 8,122 | 253 | $ 4,037 | 253 | $ 5,659 | $ 17,819 | $ 4,775 | $ 22,594 | **$ 23,406** | 253 | $ 5,659 | $ 5,659 | $ 1,517 | $ 7,176 | **$ 7,434** | | | **$ 865,860** |
| | Pit 21-A | 5,676,782 | 210,251 | 232,801 | 74,052 | 1.7 | $ 233,379 | 9,800 | $ 11,400 | $ 244,779 | $ 65,601 | $ 310,380 | **$ 321,528** | **$ 32,153** | 1,960 | $ 2,381 | 74 | $ 1,183 | 74 | $ 1,659 | $ 5,223 | $ 1,400 | $ 6,622 | **$ 6,860** | 74 | $ 1,659 | $ 1,659 | $ 445 | $ 2,103 | **$ 2,179** | | | **$ 330,567** |
| | Pit 21-B | 9,349,995 | 346,296 | 383,436 | 121,968 | 2.8 | $ 384,389 | 16,142 | $ 18,777 | $ 403,166 | $ 108,048 | $ 511,214 | **$ 529,575** | **$ 52,958** | 3,228 | $ 3,921 | 122 | $ 1,949 | 122 | $ 2,732 | $ 8,602 | $ 2,305 | $ 10,908 | **$ 11,299** | 122 | $ 2,732 | $ 2,732 | $ 732 | $ 3,464 | **$ 3,589** | | | **$ 544,463** |
| | Pit 22 | 20,002,682 | 740,840 | 820,295 | 231,787 | 5.3 | $ 822,332 | 30,676 | $ 35,684 | $ 858,016 | $ 229,948 | $ 1,087,965 | **$ 1,127,041** | **$ 112,704** | 6,135 | $ 7,452 | 232 | $ 3,704 | 232 | $ 5,192 | $ 16,347 | $ 4,381 | $ 20,729 | **$ 21,473** | 232 | $ 5,192 | $ 5,192 | $ 1,391 | $ 6,583 | **$ 6,820** | | | **$ 1,155,334** |
| | Pit 23 | 15,887,560 | 588,428 | 651,537 | 197,937 | 4.5 | $ 653,155 | 26,196 | $ 30,473 | $ 683,628 | $ 183,212 | $ 866,840 | **$ 897,974** | **$ 89,797** | 5,239 | $ 6,363 | 198 | $ 3,163 | 198 | $ 4,434 | $ 13,960 | $ 3,741 | $ 17,701 | **$ 18,337** | 198 | $ 4,434 | $ 4,434 | $ 1,188 | $ 5,622 | **$ 5,824** | | | **$ 922,135** |
| | Pit 24 | 13,738,342 | 508,827 | 563,399 | 199,413 | 4.6 | $ 564,799 | 26,391 | $ 30,700 | $ 595,498 | $ 159,594 | $ 755,092 | **$ 782,212** | **$ 78,221** | 5,278 | $ 6,411 | 199 | $ 3,187 | 199 | $ 4,467 | $ 14,064 | $ 3,769 | $ 17,833 | **$ 18,474** | 199 | $ 4,467 | $ 4,467 | $ 1,197 | $ 5,664 | **$ 5,867** | | | **$ 806,554** |
| | Pit 27 | 24,579,611 | 910,356 | 1,007,992 | 294,885 | 6.8 | $ 1,010,495 | 39,027 | $ 45,398 | $ 1,055,893 | $ 282,979 | $ 1,338,872 | **$ 1,386,960** | **$ 138,696** | 7,805 | $ 9,480 | 295 | $ 4,712 | 295 | $ 6,605 | $ 20,798 | $ 5,574 | $ 26,371 | **$ 27,319** | 295 | $ 6,605 | $ 6,605 | $ 1,770 | $ 8,376 | **$ 8,676** | | | **$ 1,422,955** |
| | Pit 26 | 17,214,402 | 637,570 | 705,950 | 227,894 | 5.2 | $ 707,703 | 30,161 | $ 35,084 | $ 742,788 | $ 199,067 | $ 941,855 | **$ 975,683** | **$ 97,568** | 6,032 | $ 7,326 | 228 | $ 3,642 | 228 | $ 5,105 | $ 16,073 | $ 4,308 | $ 20,380 | **$ 21,112** | 228 | $ 5,105 | $ 5,105 | $ 1,368 | $ 6,473 | **$ 6,705** | | | **$ 1,003,501** |
| | Pit 27 | 18,049,211 | 668,489 | 740,185 | 239,102 | 5.5 | $ 742,023 | 31,644 | $ 36,810 | $ 778,833 | $ 208,727 | $ 987,560 | **$ 1,023,030** | **$ 102,303** | 6,329 | $ 7,687 | 239 | $ 3,821 | 239 | $ 5,356 | $ 16,863 | $ 4,519 | $ 21,383 | **$ 22,151** | 239 | $ 5,356 | $ 5,356 | $ 1,435 | $ 6,791 | **$ 7,035** | | | **$ 1,052,216** |
| | Pit 28 | 22,187,018 | 821,741 | 909,873 | 284,384 | 6.5 | $ 912,133 | 37,637 | $ 43,781 | $ 955,914 | $ 256,185 | $ 1,212,099 | **$ 1,255,634** | **$ 125,563** | 7,527 | $ 9,142 | 284 | $ 4,544 | 284 | $ 6,370 | $ 20,057 | $ 5,375 | $ 25,432 | **$ 26,346** | 284 | $ 6,370 | $ 6,370 | $ 1,707 | $ 8,077 | **$ 8,368** | | | **$ 1,290,347** |
| Phase 1 Only | Pit B-1 (Volume backfilled under 3:1 slope) | 2,473,851 | 91,624 | 101,451 | - | - | $ 101,703 | - | $ - | $ 101,703 | $ 27,256 | $ 128,959 | **$ 133,591** | **$ 13,359** | - | $ - | - | $ - | - | $ - | $ - | $ - | $ - | **$ -** | - | $ - | $ - | $ - | $ - | **$ -** | | | **$ 133,591** |
| | **Excavated Areas Totals** | **566,761,539** | **20,991,168** | **23,242,471** | **7,734,366** | **177.6** | **$ 23,300,197** | **1,023,610** | **$ 1,190,710** | **$ 24,490,907** | **$ 6,563,563** | **$ 31,054,470** | **$ 32,169,849** | **$ 3,216,985** | **204,722** | **$ 248,646** | **7,734** | **$ 123,595** | **7,734** | **$ 173,250** | **$ 545,491** | **$ 146,191** | **$ 691,682** | **$ 716,525** | **7,734** | **$ 173,250** | **$ 173,250** | **$ 46,431** | **$ 219,681** | **$ 227,571** | | | **$ 33,113,945** |
| Borrow Area (Area Requires Topsoil & Subsoil to be hauled twice) | BORROW | | | | 2,700,322 | 62.0 | $ - | 714,752 | $ 831,432 | $ 831,432 | $ 222,824 | $ 1,054,256 | **$ 1,092,122** | **$ 109,212** | 142,950 | $ 173,621 | 2,700 | $ 43,151 | 2,700 | $ 60,487 | $ 277,259 | $ 74,305 | $ 351,564 | **$ 364,192** | 2,700 | $ 60,487 | $ 60,487 | $ 16,211 | $ 76,698 | **$ 79,453** | | | **$ 1,535,766** |
| | **Borrow Area Totals** | | | | **2,700,322** | **62.0** | **$ -** | **714,752** | **$ 831,432** | **$ 831,432** | **$ 222,824** | **$ 1,054,256** | **$ 1,092,122** | **$ 109,212** | **142,950** | **$ 173,621** | **2,700** | **$ 43,151** | **2,700** | **$ 60,487** | **$ 277,259** | **$ 74,305** | **$ 351,564** | **$ 364,192** | **2,700** | **$ 60,487** | **$ 60,487** | **$ 16,211** | **$ 76,698** | **$ 79,453** | | | **$ 1,535,766** |
| Surface Disturbance Only Areas | SURF1 | | | | 426,607 | 9.8 | | | | | | | | | 11,292 | $ 13,715 | 427 | $ 6,817 | 427 | $ 9,556 | $ 30,088 | $ 8,064 | $ 38,151 | **$ 39,522** | 427 | $ 9,556 | $ 9,556 | $ 2,561 | $ 12,117 | **$ 12,552** | | | **$ 52,074** |
| | SURF4 | | | | 87,120 | 2.0 | | | | | | | | | 2,306 | $ 2,801 | 87 | $ 1,392 | 87 | $ 1,951 | $ 6,144 | $ 1,647 | $ 7,791 | **$ 8,071** | 87 | $ 1,951 | $ 1,951 | $ 523 | $ 2,474 | **$ 2,563** | | | **$ 10,634** |
| | SURF5 | | | | 775,368 | 17.8 | | | | | | | | | 20,523 | $ 24,927 | 775 | $ 12,390 | 775 | $ 17,368 | $ 54,685 | $ 14,656 | $ 69,341 | **$ 71,831** | 775 | $ 17,368 | $ 17,368 | $ 4,655 | $ 22,023 | **$ 22,814** | | | **$ 94,645** |
| | SURF6 | | | | 324,443 | 7.4 | | | | | | | | | 8,588 | $ 10,430 | 324 | $ 5,185 | 324 | $ 7,268 | $ 22,882 | $ 6,132 | $ 29,015 | **$ 30,057** | 324 | $ 7,268 | $ 7,268 | $ 1,948 | $ 9,215 | **$ 9,546** | | | **$ 39,603** |
| | SURF7 | | | | 52,309 | 1.2 | | | | | | | | | 1,385 | $ 1,682 | 52 | $ 836 | 52 | $ 1,172 | $ 3,689 | $ 989 | $ 4,678 | **$ 4,846** | 52 | $ 1,172 | $ 1,172 | $ 314 | $ 1,486 | **$ 1,539** | | | **$ 6,385** |
| | SURF8 HAUL & MAINT (includes Pond 2) | | | | 1,951,488 | 44.8 | | | | | | | | | 51,654 | $ 62,737 | 1,951 | $ 31,185 | 1,951 | $ 43,713 | $ 137,635 | $ 36,886 | $ 174,521 | **$ 180,789** | 1,951 | $ 43,713 | $ 43,713 | $ 11,715 | $ 55,429 | **$ 57,419** | | | **$ 238,209** |
| | **Surface Disturbance Only Areas Totals** | | | | **3,617,335** | **83.0** | | | | | | | | | **95,748** | **$ 116,291** | **3,617** | **$ 57,805** | **3,617** | **$ 81,028** | **$ 255,124** | **$ 68,373** | **$ 323,497** | **$ 335,116** | **3,617** | **$ 81,028** | **$ 81,028** | **$ 21,716** | **$ 102,744** | **$ 106,434** | | | **$ 441,550** |
| Facilities & Special Areas | DITCH 3 | | | | 22,976 | 0.5 | | | | | | | | | 608 | $ 739 | 23 | $ 367 | 23 | $ 515 | $ 1,620 | $ 434 | $ 2,055 | **$ 2,129** | 23 | $ 515 | $ 515 | $ 138 | $ 653 | **$ 676** | | | **$ 2,805** |
| | DITCH 2 | | | | 84,063 | 1.9 | | | | | | | | | 2,225 | $ 2,702 | 84 | $ 1,343 | 84 | $ 1,883 | $ 5,929 | $ 1,589 | $ 7,518 | **$ 7,788** | 84 | $ 1,883 | $ 1,883 | $ 505 | $ 2,388 | **$ 2,473** | | | **$ 10,261** |
| | POND 3 | | | | 180,228 | 4.1 | | | | | | | | | 4,770 | $ 5,794 | 180 | $ 2,880 | 180 | $ 4,037 | $ 12,711 | $ 3,407 | $ 16,118 | **$ 16,697** | 180 | $ 4,037 | $ 4,037 | $ 1,082 | $ 5,119 | **$ 5,303** | | | **$ 22,000** |
| | POND 4 (includes ditch 1) | | | | 316,647 | 7.3 | | | | | | | | | 8,381 | $ 10,180 | 317 | $ 5,060 | 317 | $ 7,093 | $ 22,333 | $ 5,985 | $ 28,318 | **$ 29,335** | 317 | $ 7,093 | $ 7,093 | $ 1,901 | $ 8,994 | **$ 9,317** | | | **$ 38,652** |
| | ROBINSON | | | | 234,731 | 5.4 | | | | | | | | | 6,213 | $ 7,546 | 235 | $ 3,751 | 235 | $ 5,258 | $ 16,555 | $ 4,437 | $ 20,992 | **$ 21,746** | 235 | $ 5,258 | $ 5,258 | $ 1,409 | $ 6,667 | **$ 6,907** | | | **$ 28,652** |
| | LOADOUT (includes Ponds 1 & 1B) | | | | 1,336,537 | 30.7 | | | | | | | | | 35,377 | $ 42,967 | 1,337 | $ 21,358 | 1,337 | $ 29,938 | $ 94,263 | $ 25,263 | $ 119,526 | **$ 123,819** | 1,337 | $ 29,938 | $ 29,938 | $ 8,023 | $ 37,962 | **$ 39,325** | | | **$ 163,144** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **$ -** |
| | Facilities Concrete Demolition | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **$ 196,718** | **$ 203,783** | **$ 203,783** |
| | Facilities Structure Demolition | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **$ 885,040** | **$ 916,828** | **$ 916,828** |
| | Facilities Earthwork | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **$ 359,607** | **$ 372,523** | **$ 372,523** |
| | **Facilities & Special Areas Totals** | | | | **2,175,182** | **49.9** | | | | | | | | | **$ 57,575** | **$ 69,928** | **$ 2,175** | **$ 34,759** | **$ 2,175** | **$ 48,724** | **$ 153,412** | **$ 41,114** | **$ 194,526** | **$ 201,513** | **$ 2,175** | **$ 48,724** | **$ 48,724** | **$ 13,058** | **$ 61,782** | **$ 64,001** | **$ 1,441,365** | **$ 1,493,134** | **$ 1,758,648** |
| | **South Area Totals** | **566,761,539** | **20,991,168** | **23,242,471** | **16,227,205** | **372.5** | **$ 23,300,197** | **1,738,362** | **$ 2,022,143** | **$ 25,322,340** | **$ 6,786,387** | **$ 32,108,727** | **$ 33,261,971** | **$ 3,326,197** | **500,995** | **$ 608,485** | **16,227** | **$ 259,311** | **16,227** | **$ 363,489** | **$ 1,231,285** | **$ 329,984** | **$ 1,561,269** | **$ 1,617,345** | **16,227** | **$ 363,489** | **$ 363,489** | **$ 97,415** | **$ 460,905** | **$ 477,459** | **$ 1,441,365** | **$ 1,493,134** | **$ 36,849,909** |

## South Area Production Model Cost Data & Assumptions

| Equipment Description | Equipment Cost $/hr | Equip + Labor Cost $/hr |
|---|---|---|
| 7 yd. Excavator (385C LME) | $87.34 | $121.34 |
| 40 Ton (30 CY) Haul Truck (769C) | $51.23 | $91.47 |
| 5,000 Gal. Water Truck (35 ton articulated chassis) | $33.35 | $67.35 |
| 14 Grader | $42.31 | $76.31 |
| D10 Dozer | $98.42 | $132.42 |
| D7 Dozer | $54.21 | $88.21 |

Sourced from Cost Mine 2017 Coal Cost Guide and 2017 Mine and Mill Equipment Costs

**Labor Cost Data**

| Manpower Type | Base Wage ($/hr) | Labor Cost @ 36% burden ($/hr) |
|---|---|---|
| Heavy Equipment Operator | $25.00 | $34.00 |
| Truck Drivers | $29.59 | $40.24 |

Labor Data from 2017 Coal Cost Guide Table LA-7 for Surface Coal Mines (Non-Union)

**Unit Cost Data**

| Movement Type | Cost/BCY | Cost/LCY | Unit Swell Factor | |
|---|---|---|---|---|
| Rehandle with Truck/Shovel | $ 1.11 | $ 1.00 | 10.7% | |
| Subsoil | $ 1.25 | $ 1.16 | 7.2% | |
| Topsoil | $ 1.30 | $ 1.21 | 7.2% | |
| | | **Cost/M.S.F** | | |
| Mulching | | $ 15.98 | | Local Supplier Quote 3 yr. average |
| Seeding | | $ 22.40 | | Local Supplier Quote 3 yr. average |

Unit Costs calculated from Caterpillar Inc. FPC production model (v. 5.3.0.6) using 2017 cost data

| Indirect Cost Factor |
|---|
| 26.8% |

| Escalation Factor 2018 to 2019 |
|---|
| 1.03591684 |

## South Area and North Area Actual Cost of Reclamation Per Acre

| North Pasture | 2017 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $161.60 | $ 3.71 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 17.69** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $ 105.00 | $ 2.41 | | |
| Straw Mulch (2,000 lbs) | $ 135.00 | $ 3.10 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 16.67** | **Mulching Subtotal** |
| **Total** | **$1,496.60** | **$34.36** | **$34.36** | |

**Doesn't include shipping

| North Pasture | 3 Yr Average | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $148.20 | $ 3.40 | | |
| Drill Seeding Cost | $609.00 | $ 13.98 | **$ 17.38** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $81.67 | $ 1.87 | | |
| Straw Mulch (2,000 lbs) | $128.33 | $ 2.95 | | |
| Spreading Mulch | $486.00 | $ 11.16 | **$ 15.98** | **Mulching Subtotal** |
| **Total** | **$1,453.20** | **$33.36** | **$33.36** | |

**Doesn't include shipping

| Sage Grass Mix | 2017 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $311.75 | $ 7.16 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 21.14** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $ 105.00 | $ 2.41 | | |
| Straw Mulch (2,000 lbs) | $ 135.00 | $ 3.10 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 16.67** | **Mulching Subtotal** |
| **Total** | **$1,646.75** | **$37.80** | **$37.80** | |

**Doesn't include shipping

| Sage Grass Mix | 3 Yr Average | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $366.92 | $ 8.42 | | |
| Drill Seeding Cost | $609.00 | $ 13.98 | **$ 22.40** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $81.67 | $ 1.87 | | |
| Straw Mulch (2,000 lbs) | $128.33 | $ 2.95 | | |
| Spreading Mulch | $486.00 | $ 11.16 | **$ 15.98** | **Mulching Subtotal** |
| **Total** | **$1,671.92** | **$38.38** | **$38.38** | |

**Doesn't include shipping

| North Pasture | 2016 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $177.00 | $ 4.06 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 18.04** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,467.00** | **$33.68** | **$33.68** | |

**Includes Shipping

| Sage Grass Mix | 2016 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $385.00 | $ 8.84 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 22.82** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,675.00** | **$38.45** | **$38.45** | |

**Includes Shipping

| Pasture | 2015 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $106.00 | $ 2.43 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 16.41** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,396.00** | **$32.05** | **$32.05** | |

**Includes Shipping

| Sage Grass Mix | 2015 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $404.00 | $ 9.27 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 23.26** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,694.00** | **$38.89** | **$38.89** | |

**Includes Shipping

FPC_2018_January_South Area_Truck-Shovel_Backfill

**Cycle Times**

Hauler Cycle Time

| | | |
|---|---|---|
| | 6 769C | |
| Load with Exchange (min) | 1.25 | |
| Haul (min) | 1.81 | |
| Dump and Maneuver (min) | 1.2 | |
| Return (min) | 1.62 | |
| Potential Cycle Time (min) | 5.88 | |
| Wait on Slow Hauler (min) | 0 | |
| Wait to Load (min) | 1.62 | |
| Additional Bunching (min) | 0.44 | |
| Wait to Dump (min) | 0 | |
| TMPH Wait (min) | | |
| Total Cycle Time (min) | 7.94 | |
| Bunching | Avg | |
| Haul Start mph | 0 | |
| Haul End mph | 0 | |
| Return Start mph | 0 | |
| Return End mph | 0 | |

Loader Cycle Time

| | | |
|---|---|---|
| | 6 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 | | |
| Operator Efficiency | 90 | % |
| Schedule Period | Shift | |
| Scheduled Hours | 10.5 | |
| Fleet Estimates | | |
| Fleet Availability | 87.49 | % |
| Production per Sched Hr | 693.54 | BCY |
| Total Production | 1,540,000 | BCY |
| Sched Hrs Required | 2,220.49 | |
| Total Cost ($) | 1,786,945 | |
| Cost per BCY ($) | 1.16 | |
| Production per Shift | 7,282 | BCY |
| Shifts Required | 211.48 | |

Theoretical Production

| | Quantity | Model | BCY per Hour | Cycles per Hour |
|---|---|---|---|---|
| 1 | 1 | 385C LME | 932 | |
| 2 | 6 | 769C | 1,188 | 10.2 |

Actual Production

| | Quantity | Model | Cycles per Hour | Payload in Tons | Tons per Hour |
|---|---|---|---|---|---|
| 1 | 5 | 769C | 7.56 | 27.17 | 1,026.87 |
| Fleet Tons per Operating Hour | | | | | 1,026.87 |
| x 90.00% Operator Efficiency = | | | | | 924.18 |
| x 87.49% Fleet Availability = | | | | | 808.55 |

**Cost**

| | Qty | Model | Machine Code | Hourly Cost Each Unit | Operating Hours | Total $ | $ per BCY |
|---|---|---|---|---|---|---|---|
| Loaders | 1 | 385C LME | | 124.78 | 1,998 | 249,366 | 0.162 |
| Haulers: | 6 | 769C | C202 | 93.51 | 11,656 | 1,089,947 | 0.708 |
| Totals | 6 | | | | 11,656 | 1,089,947 | 0.708 |
| Support | 1 | 5,000 Gal. Water Truck | | 66.58 | 1,457 | 97,008 | 0.063 |
| | 1 | 14 Grader | | 82.84 | 971 | 80,466 | 0.052 |
| | 1 | D10 Dozer | | 132.42 | 1,457 | 192,937 | 0.125 |
| Totals | 3 | | | | 3,885 | 370,411 | 0.241 |
| Fleet Totals | 10 | | | | 17,540 | 1,709,723 | 1.11 |

FPC_2018_January_South Area_Truck-Shovel_Subsoil

**Cycle Times**

Hauler Cycle Time

| | 5 769C |
|---|---|
| Load with Exchange (min) | 1.25 |
| Haul (min) | 1.05 |
| Dump and Maneuver (min) | 1.2 |
| Return (min) | 1.02 |
| Potential Cycle Time (min) | 4.53 |
| Wait on Slow Hauler (min) | 0 |
| Wait to Load (min) | 1.72 |
| Additional Bunching (min) | 0.22 |
| Wait to Dump (min) | 0 |
| TMPH Wait (min) | |
| Total Cycle Time (min) | 6.47 |
| 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) | 1,601 |
| Tons per Pass | 5.8 |
| System Passes per Hauler | 3 |
| Hauler Payload (Tons) | 17.41 |
| % of Max GVW | 87.58 |
| 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 | | |
| Operator Efficiency | 90 | % |
| Schedule Period | Shift | |
| Scheduled Hours | 10.5 | |
| Fleet Estimates | | |
| Fleet Availability | 87.87 | % |
| Production per Sched Hr | 553.28 | BCY |
| Total Production | 850,000 | BCY |
| Sched Hrs Required | 1,536.30 | |
| Total Cost ($) | 1,107,857 | |
| Cost per BCY ($) | 1.303 | |
| Production per Shift | 5,809 | BCY |
| Shifts Required | 146.31 | |

Theoretical Production

| | Quantity | Model | BCY per Hour | Cycles per Hour |
|---|---|---|---|---|
| 1 | 1 | 385C LME | 724 | |
| 2 | 5 | 769C | 1,000 | 13.3 |

Actual Production

| | Quantity | Model | Cycles per Hour | Payload in Tons | Tons per Hour |
|---|---|---|---|---|---|
| 1 | 5 | 769C | 9.28 | 17.41 | 807.73 |
| Fleet Tons per Operating Hour | | | | | 807.73 |
| x 90.00% Operator Efficiency = | | | | | 726.95 |
| x 87.87% Fleet Availability = | | | | | 638.76 |

**Cost**

| | Qty | Model | Machine Code | Hourly Cost Each Unit | Operating Hours | Total $ | $ per BCY |
|---|---|---|---|---|---|---|---|
| Loaders | 1 | 385C LME | | 124.78 | 1,383 | 172,529 | 0.203 |
| Haulers: | 5 | 769C | C202 | 93.35 | 6,750 | 630,090 | 0.741 |
| Totals | 5 | | | | 6,750 | 630,090 | 0.741 |
| Support | 1 | 5,000 Gal. Water Truck | | 66.58 | 1,012 | 67,408 | 0.079 |
| | 1 | 14 Grader | | 82.84 | 675 | 55,914 | 0.066 |
| | 1 | D10 Dozer | | 132.42 | 1,012 | 134,067 | 0.158 |
| Totals | 3 | | | | 2,700 | 257,388 | 0.303 |
| Fleet Totals | 9 | | | | 10,832 | 1,060,008 | 1.247 |

FPC_2018_January_South Area_Truck-Shovel_Topsoil

**Cycle Times**

Hauler Cycle Time

| | | |
|---|---|---|
| | 5 769C | |
| Load with Exchange (min) | | 1.25 |
| Haul (min) | | 1.51 |
| Dump and Maneuver (min) | | 1.2 |
| Return (min) | | 1.57 |
| Potential Cycle Time (min) | | 5.53 |
| Wait on Slow Hauler (min) | | 0 |
| Wait to Load (min) | | 0.72 |
| Additional Bunching (min) | | 0.68 |
| Wait to Dump (min) | | 0 |
| TMPH Wait (min) | | |
| Total Cycle Time (min) | | 6.93 |
| 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) | | 1,601 |
| Tons per Pass | | 5.8 |
| System Passes per Hauler | | 3 |
| Hauler Payload (Tons) | | 17.41 |
| % of Max GVW | | 87.58 |
| 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 | | |
| Operator Efficiency | 90 | % |
| Schedule Period | Shift | |
| Scheduled Hours | 10.5 | |
| Fleet Estimates | | |
| Fleet Availability | 87.87 | % |
| Production per Sched Hr | 516.36 | BCY |
| Total Production | 500,000 | BCY |
| Sched Hrs Required | 968.33 | |
| Total Cost ($) | 678,986 | |
| Cost per BCY ($) | 1.358 | |
| Production per Shift | 5,422 | BCY |
| Shifts Required | 92.22 | |

Theoretical Production

| | Quantity | | Model | BCY per Hour | Cycles per Hour |
|---|---|---|---|---|---|
| 1 | | 1 | 385C LME | 724 | |
| 2 | | 5 | 769C | 818 | 10.8 |

Actual Production

| | Quantity | | Model | Cycles per Hour | Payload in Tons | Tons per Hour |
|---|---|---|---|---|---|---|
| 1 | | 5 | 769C | 8.66 | 17.41 | 753.82 |
| Fleet Tons per Operating Hour | | | | | | 753.82 |
| x 90.00% Operator Efficiency = | | | | | | 678.44 |
| x 87.87% Fleet Availability = | | | | | | 596.13 |

**Cost**

| | Qty | Model | Machine Code | Hourly Cost Each Unit | Operating Hours | Total $ | $ per BCY |
|---|---|---|---|---|---|---|---|
| Loaders | 1 | 385C LME | | 124.78 | 871 | 108,745 | 0.217 |
| Haulers: | 5 | 769C | C202 | 93.35 | 4,254 | 397,145 | 0.794 |
| Totals | 5 | | | | 4,254 | 397,145 | 0.794 |
| Support | 1 | 5,000 Gal. Water Truck | | 66.58 | 638 | 42,487 | 0.085 |
| | 1 | 14 Grader | | 82.84 | 425 | 35,242 | 0.07 |
| | 1 | D7 Dozer | | 88.21 | 766 | 67,548 | 0.135 |
| Totals | 3 | | | | 1,829 | 145,278 | 0.291 |
| Fleet Totals | 9 | | | | 6,955 | 651,167 | 1.302 |

# NORTH AREA BONDING

## Introduction

The purpose of this appendix is to provide a reclamation bond estimate for the North Private Lease permit area~~s~~ 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/sheets:

- Bond Posting Plan
- Bond Release Plan
- Point of Maximum Reclamation Liability Determination Sheet
- ~~Bond Estimate Summary and Release Application Plan~~
- Mine Facilities Line Item Reclamation Estimate
- Bond Polygon Cost Estimates
- ~~Spoil Pile, Surface Disturbance Only, and Facility and Special Area surface reclamation Estimate~~
- ~~Excavated Areas Reclamation Estimate~~
- Production Model~~ and~~ Cost Data and~~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 2018~~5~~
- RSMeans Construction Cost Data 2018~~5~~
- CostMine Coal Cost Guide 2017~~5~~ (latest version available)
- CostMine Mine and Mill Equipment Cost Data, 2017~~5~~ (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):

**Bond ~~Addition~~ Posting and Release ~~Application~~ Plans**

This estimate considers the permit area on a maximum reclamation liability and ~~an~~ incremental basis and applies successive bond additions and bond release applications as stepwise additions and subtractions from the ultimate disturbance liability. Each bond addition and release application potentially contain a combination of multiple pit & surface areas under different phases of disturbance or reclamation. These area polygons can be viewed on Drawing 5-77. ~~The table below details this schedule:~~

| | ~~Bond Liability (start)~~ | ~~Bond Release (—)~~ | ~~Additional Bond for Following Increment (+)~~ | ~~Bond Liability (end)~~ | ~~Bond Net Change (+/-)~~ |
|---|---|---|---|---|---|
| ~~Carryover from CHM~~ | ~~$12, 327,175~~ | ~~$0~~ | ~~$899,691~~ | ~~$13, 226,866~~ | ~~$899,691 +~~ |
| ~~Pre-Year 1~~ | ~~$13, 226,866~~ | ~~$4,031,105~~ | ~~$3,547,971~~ | ~~$12, 743,732~~ | ~~$483,134 -~~ |
| ~~Year 1 Q4~~ | ~~$12, 743,732~~ | ~~$2,985,984~~ | ~~$2,058,704~~ | ~~$11,816,451~~ | ~~$927,281 -~~ |
| ~~Year 1 End~~ | ~~$11, 816,451~~ | ~~$2,130,418~~ | ~~$3,044,462~~ | ~~$12,730,495~~ | ~~$914,044 +~~ |
| ~~Year 2~~ | ~~$12,730,495~~ | ~~$2,883,947~~ | ~~$6,699,470~~ | ~~$16,546,019~~ | ~~$3,815,524 +~~ |
| ~~Year 3~~ | ~~$16, 546,019~~ | ~~$4,853,560~~ | ~~$3,607,176~~ | ~~$15,299,634~~ | ~~$1,246,385 -~~ |
| ~~Year 4~~ | ~~$15, 299,634~~ | ~~$5,655,768~~ | ~~$8,072,751~~ | ~~$17,716,617~~ | ~~$2,416,983 +~~ |
| ~~Year 5~~ | ~~$17, 716,617~~ | ~~$1,501,290~~ | ~~$0~~ | ~~$16,215,327~~ | ~~$1,501,290 -~~ |
| ~~Year 6~~ | ~~$16, 215,327~~ | ~~$3,606,248~~ | ~~$0~~ | ~~$12,609,079~~ | ~~$3,606,248 -~~ |
| ~~Year 7~~ | ~~$12, 609,079~~ | ~~$3,897,895~~ | ~~$0~~ | ~~$8,711,184~~ | ~~$3,897,895 -~~ |
| ~~Year 8~~ | ~~$8, 711,184~~ | ~~$1,046,230~~ | ~~$0~~ | ~~$7,664,954~~ | ~~$1,046,230 -~~ |
| ~~Year 9~~ | ~~$7,664,954~~ | ~~$357,189~~ | ~~$0~~ | ~~$7,307,765~~ | ~~$357,189 -~~ |
| ~~Years 10-20~~ | ~~$7, 307,765~~ | ~~$1,432,420~~ | ~~$0~~ | ~~$5,875,346~~ | ~~$1,432,420 -~~ |

~~Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in Permit Area 1, development of the mining pits must follow a rigid sequence. As depicted in the following tables, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of chapter 5 and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second bond increment will then allow continued excavation of Pits 2-6 to the initial Permit Area 1 boundary. Although the topsoil stockpile shown in Drawing 5-48 rests above a portion of the expected excavation~~

~~limit of Pit 11 (shown on Drawing 5-57), this stockpile is planned to be placed directly on top of native topsoil so no disturbance of the surface above Pit 11 is expected. Therefore, no bond costs for Pit 11 are projected until the third bond increment. During mining and backfill of Pits 5 and 6, the third North Private Lease bond increment will allow construction of the Permit Area 1 extension facilities and structures shown on Drawing 5-48A. Depending on the timing of approval for Areas 2 and 3, mining in the extension of Area 1 may be limited as shown in Drawing 5-57 by Pond T1 and the geologic contact between Tropic Shale and Quaternary Alluvium in Pits 8 and 9. Pond T1 must remain in place until Pond 7 has been constructed and no alluvium will be mined until the hydrologic analysis of Areas 2 and 3 has been performed and approved. As long as Areas 2 and 3 are available, the third bond increment through the fourth, fifth and sixth will also allow for steady state mining and backfill from Pit 7 through Pit 21. Then, during mining and backfill of Pits 20 and 21 the seventh North Private Lease bond increment will be posted to allow construction of the Permit Area 3 facilities and structures shown on Drawing 5-50. The seventh bond increment also allows for mining and backfill of both of the Highwall trench pits in Permit Area 3.Following excavation of Pit 9, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.~~

**Point of Maximum Reclamation Liability Determination**

This section details the polygons, phases and facilities included in the determination of the point in time where the permit area faces a maximum reclamation liability. This estimate is directly based on the sequence and mining and reclamation plans described in Chapter 5 of this MRP. The maximum liability amount is $4,729,964.

**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 are 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 5-47 through 5-51B, and 5-58 through 5-77. The RSMeans Cost data is applied to this estimate. The overall ~~escalated~~ cost estimate for the facilities reclamation is approximately $~~1,100,328~~1,078,750. ~~This amount is separated into the years where the respective areas are disturbed.~~

~~**Surface Disturbance Only Areas**~~

~~These reclamation areas include areas that only require surface (Phase 2 and Phase 3) reclamation, and include all ditches, ponds, roads, and other facilities that fall outside of the open pit boundaries shown on Drawing 5-77. The overall cost estimate for this category is $358,676. This amount is separated into the years where the respective areas are disturbed.~~

**Bond Polygon Cost Estimates~~Excavated Areas~~**

This section tabulates the direct, indirect, and escalated reclamation costs for each polygon shown on Drawing 5-77. These costs are also grouped by phase. The area totals shown at the bottom of these sheets are for illustrative purposes only and do not reflect actual liability. Instead, total liability is a function of the bond posting and release plans discussed above.~~As shown on Drawings 5-74 through 5-77 and described in Chapter 5, Chapter 8, and the table above, the North Private Lease permit area will progress through eleven incremental stages of Bonding. Of these, excavation will occur in the first six, with reclamation activities and bond releases occurring thereafter. The total liability for all excavated areas is $26,471,221.~~

**Production Model and Cost Assumptions**

Caterpillar's Fleet Production and Cost analysis software (v. 5.2.0.2) 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.

## North Area Bond Posting Plan

| Stage of Reclamation | Included Pits / Areas | Phase 1 Bond Amount | Phase 1 Surface Area (acres) | Phase 2 Bond Amount | Phase 2 Surface Area (acres) | Phase 3 Bond Amount | Phase 3 Surface Area (acres) | Facilities Bond Amount | Total Bond Amount |
|---|---|---|---|---|---|---|---|---|---|
| *All amounts escalated to 2019 | | | | | | | | | |
| **Carryover Bond Liability (covering Coal Hollow Mine - Portals still open - Following Releases 15_1 & 15_2)** | | **$ 4,146,920** | **126.1** | **$ 1,617,345** | **372.5** | **$ 477,459** | **372.5** | **$ 1,493,134** | **$ 7,734,858** |
| **Point of Maximum Reclamation Liability - Initial Bond to Post** | | | | | | | | | |
| | Full Phase 1 N Pit 20 | $ 1,029,516 | 7.4 | | | | | | $ 1,029,516 |
| | Full Phase 1 N Pit 21 | $ 1,000,096 | 16.9 | | | | | | $ 1,000,096 |
| | Full Phase 1 N HWT1BORROW | $ 121,755 | 11.6 | | | | | | $ 121,755 |
| | Full Phase 1 N HWT2BORROW | $ 276,570 | 26.4 | | | | | | $ 276,570 |
| | Phase 2 & 3 N Pit 01 | | | $ 11,667 | 2.9 | $ 3,751 | 2.9 | | $ 15,418 |
| | Phase 2 & 3 N Pit 02 | | | $ 15,954 | 4.0 | $ 5,130 | 4.0 | | $ 21,083 |
| | Phase 2 & 3 N Pit 03 | | | $ 21,219 | 5.3 | $ 6,823 | 5.3 | | $ 28,042 |
| | Phase 2 & 3 N Pit 04 | | | $ 22,477 | 5.6 | $ 7,227 | 5.6 | | $ 29,705 |
| | Phase 2 & 3 N Pit 05 | | | $ 22,995 | 5.8 | $ 7,394 | 5.8 | | $ 30,389 |
| | Phase 2 & 3 N Pit 06 | | | $ 19,307 | 4.8 | $ 6,208 | 4.8 | | $ 25,515 |
| | Phase 2 & 3 N Pit 07 | | | $ 18,033 | 4.5 | $ 5,798 | 4.5 | | $ 23,831 |
| | Phase 2 & 3 N Pit 08 | | | $ 19,162 | 4.8 | $ 6,161 | 4.8 | | $ 25,324 |
| | Phase 2 & 3 N Pit 09 | | | $ 23,645 | 5.9 | $ 7,603 | 5.9 | | $ 31,247 |
| | Phase 2 & 3 N Pit 10 | | | $ 35,253 | 8.8 | $ 11,336 | 8.8 | | $ 46,589 |
| | Phase 2 & 3 N Pit 11 | | | $ 20,918 | 5.2 | $ 6,726 | 5.2 | | $ 27,644 |
| | Phase 2 & 3 N Pit 12 | | | $ 23,533 | 5.9 | $ 7,567 | 5.9 | | $ 31,099 |
| | Phase 2 & 3 N Pit 13 | | | $ 23,353 | 5.9 | $ 7,509 | 5.9 | | $ 30,862 |
| | Phase 2 & 3 N Pit 14 | | | $ 28,375 | 7.1 | $ 9,124 | 7.1 | | $ 37,498 |
| | Phase 2 & 3 N Pit 15 | | | $ 27,684 | 6.9 | $ 8,901 | 6.9 | | $ 36,585 |
| | Phase 2 & 3 N Pit 16 | | | $ 31,096 | 7.8 | $ 9,999 | 7.8 | | $ 41,095 |
| | Phase 2 & 3 N Pit 17 | | | $ 31,869 | 8.0 | $ 10,247 | 8.0 | | $ 42,116 |
| | Phase 2 & 3 N Pit 18 | | | $ 36,142 | 9.1 | $ 11,621 | 9.1 | | $ 47,763 |
| | Phase 2 & 3 N Pit 19 | | | $ 29,901 | 7.5 | $ 9,614 | 7.5 | | $ 39,515 |
| | Phase 2 & 3 N Pit 20 | | | $ 29,563 | 7.4 | $ 9,506 | 7.4 | | $ 39,069 |
| | Phase 2 & 3 N Pit 21 | | | $ 67,478 | 16.9 | $ 21,697 | 16.9 | | $ 89,175 |
| | Phase 2 & 3 N HWT1 | | | $ 46,296 | 11.6 | $ 14,886 | 11.6 | | $ 61,183 |
| | Phase 2 & 3 N HWT2 | | | $ 105,163 | 26.4 | $ 33,815 | 26.4 | | $ 138,978 |
| | Phase 2 & 3 SURF 1 | | | $ 49,926 | 12.5 | $ 16,053 | 12.5 | | $ 65,979 |
| | Phase 2 & 3 SURF 2 | | | $ 58,650 | 14.7 | $ 18,858 | 14.7 | | $ 77,508 |
| | Phase 2 & 3 SURF 3 | | | $ 44,245 | 11.1 | $ 14,227 | 11.1 | | $ 58,472 |
| | Phase 2 & 3 SURF 4 | | | $ 32,421 | 8.1 | $ 10,425 | 8.1 | | $ 42,846 |
| | Phase 2 & 3 SURF CROSSING | | | $ - | - | $ - | - | | $ - |
| | Line Items Facilities Concrete Demolition | | | | | | | $ 29,964 | $ 29,964 |
| | Line Items Facilities Structure Demolition | | | | | | | $ 130,274 | $ 130,274 |
| | Line Items Facilities Earthwork | | | | | | | $ 957,257 | $ 957,257 |
| **Subtotal (+)** | | **$ 2,427,938** | **62.3** | **$ 896,324** | **224.9** | **$ 288,207** | **224.9** | **$ 1,117,495** | **$ 4,729,964** |
| **2016_1 Coal Hollow (CHM) Release Submission (-)** | | **$ 461,216** | **31.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 461,216** |
| **Cumulative Liability (=)** | | **$ 6,113,641** | **157.3** | **$ 2,513,669** | **597.4** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 12,003,605** |
| **2016 Mining Bond to Post** | | | | | | | | | |
| | Incremental Phase 1 N Pit 01 | $ 46,938 | 2.9 | | | | | | $ 46,938 |
| | Incremental Phase 1 N Pit 02 | $ 98,717 | 4.0 | | | | | | $ 98,717 |
| | Incremental Phase 1 N Pit 03 | $ 106,020 | 5.3 | | | | | | $ 106,020 |
| | Incremental Phase 1 N Pit 04 | $ 85,629 | 5.6 | | | | | | $ 85,629 |
| | Incremental Phase 1 N Pit 05 | $ 84,483 | 5.8 | | | | | | $ 84,483 |
| | Incremental Phase 1 N Pit 06 | $ 98,983 | 4.8 | | | | | | $ 98,983 |
| **Subtotal (+)** | | **$ 520,769** | **28.5** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 520,769** |
| **2016_2 CHM & Incremental Phase 1 Release Submission (-)** | | **$ 377,562** | **21.3** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 377,562** |
| **Cumulative Liability (=)** | | **$ 6,256,849** | **164.6** | **$ 2,513,669** | **597.4** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 12,146,813** |
| **2017 Mining Bond to Post** | | | | | | | | | |
| | Incremental Phase 1 N Pit 07 | $ 96,598 | 4.5 | | | | | | $ 96,598 |
| | Incremental Phase 1 N Pit 08 | $ 81,061 | 4.8 | | | | | | $ 81,061 |
| | Incremental Phase 1 N Pit 09 | $ 81,780 | 5.9 | | | | | | $ 81,780 |
| | Incremental Phase 1 N Pit 10 | $ 62,405 | 8.8 | | | | | | $ 62,405 |
| | Incremental Phase 1 N Pit 11 | $ 90,955 | 5.2 | | | | | | $ 90,955 |
| | Incremental Phase 1 N Pit 12 | $ 119,419 | 5.9 | | | | | | $ 119,419 |
| | Incremental Phase 1 N Pit 13 | $ 154,334 | 5.9 | | | | | | $ 154,334 |
| **Subtotal (+)** | | **$ 686,552** | **41.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 686,552** |
| **2017_1 CHM & Incremental Phase 1 & 2017_2 CHM Phase 2 Release Submission (-)** | | **$ 282,454** | **16.3** | **$ 312,508** | **77.4** | **$ -** | **-** | **$ -** | **$ 594,962** |
| **Cumulative Liability (=)** | | **$ 6,660,947** | **189.5** | **$ 2,201,161** | **520.0** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 12,238,403** |
| **2018 Mining Bond to Post** | | | | | | | | | |
| | Incremental Phase 1 N Pit 14 | $ 186,310 | 7.1 | | | | | | $ 186,310 |
| | Incremental Phase 1 N Pit 15 | $ 194,006 | 6.9 | | | | | | $ 194,006 |
| | Incremental Phase 1 N Pit 16 | $ 181,103 | 7.8 | | | | | | $ 181,103 |
| | Incremental Phase 1 N Pit 17 | $ 140,216 | 8.0 | | | | | | $ 140,216 |
| | Incremental Phase 1 N Pit 18 | $ 127,083 | 9.1 | | | | | | $ 127,083 |
| **Subtotal (+)** | | **$ 828,717** | **38.9** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 828,717** |
| **2018_0 Adjustment, 2018_1 CHM Phase 2 & 2018_1&2 Incremental Phase 1 Release Submissions (-)** | | **$ 872,862** | **48.2** | **$ 465,482** | **115.3** | **$ -** | **-** | **$ -** | **$ 1,338,344** |
| **Cumulative Liability (=)** | | **$ 6,616,802** | **180.1** | **$ 1,735,679** | **404.6** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 11,728,776** |
| **2019 Mining Bond to Post** | | | | | | | | | |
| | Incremental Phase 1 N Pit 19 | $ 112,655 | 7.5 | | | | | | $ 112,655 |
| | Incremental Phase 1 N HWT1 | $ 478,994 | 11.6 | | | | | | $ 478,994 |
| | Incremental Phase 1 N HWT2 | $ 520,251 | 26.4 | | | | | | $ 520,251 |
| **Subtotal (+)** | | **$ 1,111,900** | **45.5** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 1,111,900** |
| **2019_1 Incremental Phase 1 Release Submission (-)** | | **$ 642,407** | **31.8** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 642,407** |
| **Cumulative Liability (=)** | | **$ 7,086,295** | **193.8** | **$ 1,735,679** | **404.6** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 12,198,269** |
| **2020 Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2020_1 Incremental Phase 1 Release Submission (-)** | | **$ 1,111,900** | **45.5** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 1,111,900** |
| **Cumulative Liability (=)** | | **$ 5,974,395** | **148.3** | **$ 1,735,679** | **404.6** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 11,086,369** |
| **2021 Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **No Applicable Release Submission (-)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **Cumulative Liability (=)** | | **$ 5,974,395** | **148.3** | **$ 1,735,679** | **404.6** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 11,086,369** |
| **2022 Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2022_1 &2 Phase 1 and Phase 2 Release Submissions (-)** | | **$ 2,427,938** | **62.3** | **$ 668,198** | **167.6** | **$ -** | **-** | **$ -** | **$ 3,096,135** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 1,067,481** | **237.0** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 7,990,233** |
| **2023 Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2023_1 Phase 2 Release Submission (-)** | | **$ -** | **-** | **$ 228,126** | **57.2** | **$ -** | **-** | **$ -** | **$ 228,126** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 765,666** | **597.4** | **$ 2,610,629** | **$ 7,762,107** |
| **2026 Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2026_1 CHM Phase 3 Release Submission (-)** | | **$ -** | **-** | **$ -** | **-** | **$ 240,186** | **187.4** | **$ -** | **$ 240,186** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 525,480** | **410.0** | **$ 2,610,629** | **$ 7,521,921** |
| **2024 - 2034 Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2024 - 2034 Phase 3 Release Submissions (-)** | | **$ -** | **-** | **$ -** | **-** | **$ 288,207** | **224.9** | **$ 1,117,495** | **$ 1,405,702** |
| **Cumulative Liability (=)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 237,273** | **185.1** | **$ 1,493,134** | **$ 6,116,219** |
| **End of UG Mining Bond to Post** | | | | | | | | | |
| | None | $ - | - | | | | | | $ - |
| **Subtotal (+)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |
| **2024 - 2034 Phase 3 Release Submissions (-)** | | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 237,273** | **185.1** | **$ 1,493,134** | **$ 6,116,219** |
| **Cumulative Liability (=)** | | **$ -** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ -** |

## North Area Bond Release Plan

| Stage of Reclamation / Release Application | Pits Included in Release Application | Phase 1 Bond Amount | Phase 1 Surface Area (acres) | Phase 2 Bond Amount | Phase 2 Surface Area (acres) | Phase 3 Bond Amount | Phase 3 Surface Area (acres) | Facilities Bond Amount | Total Bond Amount |
|---|---|---|---|---|---|---|---|---|---|
| **Point of Maximum Reclamation Liability Bond Amount** | | **$ 2,427,938** | **62.3** | **$ 896,324** | **224.9** | **$ 288,207** | **224.9** | **$ 1,117,495** | **$ 4,729,964** |
| ***All amounts escalated to 2020** | | | | | | | | | |
| 2016_1 CHM Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Various - See Appendix 8-1 | $ 461,216 | 31.1 | $ - | - | $ - | - | $ - | $ 461,216 |
| | **Subtotal** | **$ 461,216** | **31.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 461,216** |
| 2016_2 CHM Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Various - See Appendix 8-1 | $ 125,887 | 9.0 | $ - | - | $ - | - | $ - | $ 125,887 |
| | **Subtotal** | **$ 125,887** | **9.0** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 125,887** |
| 2016_2 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 N Pit 01 | $ 46,938 | 2.9 | | | | | | $ 46,938 |
| | Incremental Phase 1 N Pit 02 | $ 98,717 | 4.0 | | | | | | $ 98,717 |
| | Incremental Phase 1 N Pit 03 | $ 106,020 | 5.3 | | | | | | $ 106,020 |
| | **Subtotal** | **$ 251,675** | **12.3** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 251,675** |
| 2017_1 CHM Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Pit B-1 | $ 13,359 | - | $ - | - | $ - | - | $ - | $ 13,359 |
| | **Subtotal** | **$ 13,359** | **-** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 13,359** |
| 2017_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 N Pit 04 | $ 85,629 | 5.6 | | | | | | $ 85,629 |
| | Incremental Phase 1 N Pit 05 | $ 84,483 | 5.8 | | | | | | $ 84,483 |
| | Incremental Phase 1 N Pit 06 | $ 98,983 | 4.8 | | | | | | $ 98,983 |
| | **Subtotal** | **$ 269,095** | **16.3** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 269,095** |
| 2017_2 CHM Phase 2 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Various - See Appendix 8-1 | $ - | - | $ 312,508 | 77.4 | $ - | - | $ - | $ 312,508 |
| | **Subtotal** | **$ -** | **-** | **$ 312,508** | **77.4** | **$ -** | **-** | **$ -** | **$ 312,508** |
| 2018_0 Phase 1 Bond Adjustment - Reserve Loss | | | | | | | | | |
| | Incremental Phase 1 - 16% Reserve Loss N Pit 11 | $ 14,553 | 0.8 | | | | | | $ 14,553 |
| | Incremental Phase 1 - 21% Reserve Loss N Pit 12 | $ 25,078 | 1.2 | | | | | | $ 25,078 |
| | **Subtotal** | **$ 39,631** | **2.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 39,631** |
| 2018_1 CHM Phase 2 Release Submission | | | | | | | | | |
| | Incremental Phase 1 Various - See Appendix 8-1 | $ - | - | $ 465,482 | 115.3 | $ - | - | $ - | $ 465,482 |
| | **Subtotal** | **$ -** | **-** | **$ 465,482** | **115.3** | **$ -** | **-** | **$ -** | **$ 465,482** |
| 2018_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 N Pit 07 | $ 96,598 | 4.5 | | | | | | $ 96,598 |
| | Incremental Phase 1 N Pit 08 | $ 81,061 | 4.8 | | | | | | $ 81,061 |
| | Incremental Phase 1 N Pit 09 | $ 81,780 | 5.9 | | | | | | $ 81,780 |
| | Incremental Phase 1 N Pit 10 | $ 62,405 | 8.8 | | | | | | $ 62,405 |
| | **Subtotal** | **$ 321,844** | **24.1** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 321,844** |
| 2018_2 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 N Pit 11 | $ 76,402 | 4.4 | | | | | | $ 76,402 |
| | Incremental Phase 1 N Pit 12 | $ 94,341 | 4.7 | | | | | | $ 94,341 |
| | Incremental Phase 1 N Pit 13 | $ 154,334 | 5.9 | | | | | | $ 154,334 |
| | Incremental Phase 1 N Pit 14 | $ 186,310 | 7.1 | | | | | | $ 186,310 |
| | **Subtotal** | **$ 511,387** | **22.0** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 511,387** |
| 2019_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 N Pit 15 | $ 194,006 | 6.9 | | | | | | $ 194,006 |
| | Incremental Phase 1 N Pit 16 | $ 181,103 | 7.8 | | | | | | $ 181,103 |
| | Incremental Phase 1 N Pit 17 | $ 140,216 | 8.0 | | | | | | $ 140,216 |
| | Incremental Phase 1 N Pit 18 | $ 127,083 | 9.1 | | | | | | $ 127,083 |
| | **Subtotal** | **$ 642,407** | **31.8** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 642,407** |
| 2020_1 Incremental Phase 1 Release Submission | | | | | | | | | |
| | Incremental Phase 1 N Pit 19 | $ 112,655 | 7.5 | | | | | | $ 112,655 |
| | Incremental Phase 1 N HWT1 | $ 478,994 | 11.6 | | | | | | $ 478,994 |
| | Incremental Phase 1 N HWT2 | $ 520,251 | 26.4 | | | | | | $ 520,251 |
| | **Subtotal** | **$ 1,111,900** | **45.5** | **$ -** | **-** | **$ -** | **-** | **$ -** | **$ 1,111,900** |
| 2022_1 Phase 1 & 2 Release Submission | | | | | | | | | |
| | Phase 1 & 2 N Pit 20 | $ 1,029,516 | 7.4 | $ 29,563 | 7.4 | | | | $ 1,059,079 |
| | Phase 1 & 2 N Pit 21 | $ 1,000,096 | 16.9 | $ 67,478 | 16.9 | | | | $ 1,067,574 |
| | Phase 1 N HWT1BORROW | $ 121,755 | 11.6 | | | | | | $ 121,755 |
| | Phase 1 N HWT2BORROW | $ 276,570 | 26.4 | | | | | | $ 276,570 |
| | **Subtotal** | **$ 2,427,938** | **62.3** | **$ 97,041** | **24.3** | **$ -** | **-** | **$ -** | **$ 2,524,979** |
| 2022_2 Phase 2 Release Submission | | | | | | | | | |
| | Phase 2 N Pit 01 | | | $ 11,667 | 2.9 | | | | $ 11,667 |
| | Phase 2 N Pit 02 | | | $ 15,954 | 4.0 | | | | $ 15,954 |
| | Phase 2 N Pit 03 | | | $ 21,219 | 5.3 | | | | $ 21,219 |
| | Phase 2 N Pit 04 | | | $ 22,477 | 5.6 | | | | $ 22,477 |
| | Phase 2 N Pit 05 | | | $ 22,995 | 5.8 | | | | $ 22,995 |
| | Phase 2 N Pit 06 | | | $ 19,307 | 4.8 | | | | $ 19,307 |
| | Phase 2 N Pit 07 | | | $ 18,033 | 4.5 | | | | $ 18,033 |
| | Phase 2 N Pit 08 | | | $ 19,162 | 4.8 | | | | $ 19,162 |
| | Phase 2 N Pit 09 | | | $ 23,645 | 5.9 | | | | $ 23,645 |
| | Phase 2 N Pit 10 | | | $ 35,253 | 8.8 | | | | $ 35,253 |
| | Phase 2 N Pit 11 | | | $ 20,918 | 5.2 | | | | $ 20,918 |
| | Phase 2 N Pit 12 | | | $ 23,533 | 5.9 | | | | $ 23,533 |
| | Phase 2 N Pit 13 | | | $ 23,353 | 5.9 | | | | $ 23,353 |
| | Phase 2 N Pit 14 | | | $ 28,375 | 7.1 | | | | $ 28,375 |
| | Phase 2 N Pit 15 | | | $ 27,684 | 6.9 | | | | $ 27,684 |
| | Phase 2 N Pit 16 | | | $ 31,096 | 7.8 | | | | $ 31,096 |
| | Phase 2 N Pit 17 | | | $ 31,869 | 8.0 | | | | $ 31,869 |
| | Phase 2 N Pit 18 | | | $ 36,142 | 9.1 | | | | $ 36,142 |
| | Phase 2 N Pit 19 | | | $ 29,901 | 7.5 | | | | $ 29,901 |
| | Phase 2 SURF 1 | | | $ 49,926 | 12.5 | | | | $ 49,926 |
| | Phase 2 SURF 2 | | | $ 58,650 | 14.7 | | | | $ 58,650 |
| | **Subtotal** | **$ -** | | **$ 571,157** | **143.3** | **$ -** | | **$ -** | **$ 571,157** |
| 2023 Phase 2 Release Submission | | | | | | | | | |
| | Phase 2 N HWT1 | | | $ 46,296 | 11.6 | | | | $ 46,296 |
| | Phase 2 N HWT2 | | | $ 105,163 | 26.4 | | | | $ 105,163 |
| | Phase 2 SURF 3 | | | $ 44,245 | 11.1 | | | | $ 44,245 |
| | Phase 2 SURF 4 | | | $ 32,421 | 8.1 | | | | $ 32,421 |
| | **Subtotal** | **$ -** | **-** | **$ 228,126** | **57.2** | **$ -** | **-** | **$ -** | **$ 228,126** |
| 2026_1 CHM Phase 3 Release Submission | | | | | | | | | |
| | Phase 3 Various - See Appendix 8-1 | $ - | - | $ - | - | $ 240,186 | 187.4 | $ - | $ 240,186 |
| | **Subtotal** | **$ -** | **-** | **$ -** | **-** | **$ 240,186** | **187.4** | **$ -** | **$ 240,186** |
| 2024 - 2034 Release Submissions | | | | | | | | | |
| | Phase 3 N Pit 01 | | | | | $ 3,751 | 2.9 | | $ 3,751 |
| | Phase 3 N Pit 02 | | | | | $ 5,130 | 4.0 | | $ 5,130 |
| | Phase 3 N Pit 03 | | | | | $ 6,823 | 5.3 | | $ 6,823 |
| | Phase 3 N Pit 04 | | | | | $ 7,227 | 5.6 | | $ 7,227 |
| | Phase 3 N Pit 05 | | | | | $ 7,394 | 5.8 | | $ 7,394 |
| | Phase 3 N Pit 06 | | | | | $ 6,208 | 4.8 | | $ 6,208 |
| | Phase 3 N Pit 07 | | | | | $ 5,798 | 4.5 | | $ 5,798 |
| | Phase 3 N Pit 08 | | | | | $ 6,161 | 4.8 | | $ 6,161 |
| | Phase 3 N Pit 09 | | | | | $ 7,603 | 5.9 | | $ 7,603 |
| | Phase 3 N Pit 10 | | | | | $ 11,336 | 8.8 | | $ 11,336 |
| | Phase 3 N Pit 11 | | | | | $ 6,726 | 5.2 | | $ 6,726 |
| | Phase 3 N Pit 12 | | | | | $ 7,567 | 5.9 | | $ 7,567 |
| | Phase 3 N Pit 13 | | | | | $ 7,509 | 5.9 | | $ 7,509 |
| | Phase 3 N Pit 14 | | | | | $ 9,124 | 7.1 | | $ 9,124 |
| | Phase 3 N Pit 15 | | | | | $ 8,901 | 6.9 | | $ 8,901 |
| | Phase 3 N Pit 16 | | | | | $ 9,999 | 7.8 | | $ 9,999 |
| | Phase 3 N Pit 17 | | | | | $ 10,247 | 8.0 | | $ 10,247 |
| | Phase 3 N Pit 18 | | | | | $ 11,621 | 9.1 | | $ 11,621 |
| | Phase 3 N Pit 19 | | | | | $ 9,614 | 7.5 | | $ 9,614 |
| | Phase 3 N Pit 20 | | | | | $ 9,506 | 7.4 | | $ 9,506 |
| | Phase 3 N Pit 21 | | | | | $ 21,697 | 16.9 | | $ 21,697 |
| | Phase 3 N HWT1 | | | | | $ 14,886 | 11.6 | | $ 14,886 |
| | Phase 3 N HWT2 | | | | | $ 33,815 | 26.4 | | $ 33,815 |
| | Phase 3 SURF 1 | | | | | $ 16,053 | 12.5 | | $ 16,053 |
| | Phase 3 SURF 2 | | | | | $ 18,858 | 14.7 | | $ 18,858 |
| | Phase 3 SURF 3 | | | | | $ 14,227 | 11.1 | | $ 14,227 |
| | Phase 3 SURF 4 | | | | | $ 10,425 | 8.1 | | $ 10,425 |
| | Phase 3 SURF CROSSING | | | | | $ - | | | $ - |
| | Phase 3 Facilities Concrete Demolition | | | | | | | $ 29,964 | $ 29,964 |
| | Phase 3 Facilities Structure Demolition | | | | | | | $ 130,274 | $ 130,274 |
| | Phase 3 Facilities Earthwork | | | | | | | $ 957,257 | $ 957,257 |
| | **Subtotal** | **$ -** | **-** | **$ -** | **-** | **$ 288,207** | **224.9** | **$ 1,117,495** | **$ 1,405,702** |
| End of UG CHM Phase 1, 2 & 3 Release Submissions | | | | | | | | | |
| | Phase 1, 2 & 3 Various - See Appendix 8-1 | $ 3,546,457 | 86.0 | $ 839,355 | 179.7 | $ 237,273 | 185.1 | $ 1,493,134 | $ 6,116,219 |
| | **Subtotal** | **$ 3,546,457** | **86.0** | **$ 839,355** | **179.7** | **$ 237,273** | **185.1** | **$ 1,493,134** | **$ 6,116,219** |

## North Area Point of Maximum Reclamation Liability Determination

| Stage of Reclamation | Included Pits / Areas | Phase 1 Bond Amount | Phase 1 Surface Area (acres) | Phase 2 Bond Amount | Phase 2 Surface Area (acres) | Phase 3 Bond Amount | Phase 3 Surface Area (acres) | Facilities Bond Amount | Total Bond Amount |
|---|---|---|---|---|---|---|---|---|---|
| ***All amounts escalated to 2019** | | | | | | | | | |
| **Point of Maximum Reclamation Liability** | | | | | | | | | |
| Phase 1 | N Pit 20 | $ 1,029,516 | 7.4 | | | | | | $ 1,029,516 |
| Phase 1 | N Pit 21 | $ 1,000,096 | 16.9 | | | | | | $ 1,000,096 |
| Phase 1 | N HWT1BORROW | $ 121,755 | 11.6 | | | | | | $ 121,755 |
| Phase 1 | N HWT2BORROW | $ 276,570 | 26.4 | | | | | | $ 276,570 |
| Phase 2 & 3 | N Pit 01 | | | $ 11,667 | 2.9 | $ 3,751 | 2.9 | | $ 15,418 |
| Phase 2 & 3 | N Pit 02 | | | $ 15,954 | 4.0 | $ 5,130 | 4.0 | | $ 21,083 |
| Phase 2 & 3 | N Pit 03 | | | $ 21,219 | 5.3 | $ 6,823 | 5.3 | | $ 28,042 |
| Phase 2 & 3 | N Pit 04 | | | $ 22,477 | 5.6 | $ 7,227 | 5.6 | | $ 29,705 |
| Phase 2 & 3 | N Pit 05 | | | $ 22,995 | 5.8 | $ 7,394 | 5.8 | | $ 30,389 |
| Phase 2 & 3 | N Pit 06 | | | $ 19,307 | 4.8 | $ 6,208 | 4.8 | | $ 25,515 |
| Phase 2 & 3 | N Pit 07 | | | $ 18,033 | 4.5 | $ 5,798 | 4.5 | | $ 23,831 |
| Phase 2 & 3 | N Pit 08 | | | $ 19,162 | 4.8 | $ 6,161 | 4.8 | | $ 25,324 |
| Phase 2 & 3 | N Pit 09 | | | $ 23,645 | 5.9 | $ 7,603 | 5.9 | | $ 31,247 |
| Phase 2 & 3 | N Pit 10 | | | $ 35,253 | 8.8 | $ 11,336 | 8.8 | | $ 46,589 |
| Phase 2 & 3 | N Pit 11 | | | $ 20,918 | 5.2 | $ 6,726 | 5.2 | | $ 27,644 |
| Phase 2 & 3 | N Pit 12 | | | $ 23,533 | 5.9 | $ 7,567 | 5.9 | | $ 31,099 |
| Phase 2 & 3 | N Pit 13 | | | $ 23,353 | 5.9 | $ 7,509 | 5.9 | | $ 30,862 |
| Phase 2 & 3 | N Pit 14 | | | $ 28,375 | 7.1 | $ 9,124 | 7.1 | | $ 37,498 |
| Phase 2 & 3 | N Pit 15 | | | $ 27,684 | 6.9 | $ 8,901 | 6.9 | | $ 36,585 |
| Phase 2 & 3 | N Pit 16 | | | $ 31,096 | 7.8 | $ 9,999 | 7.8 | | $ 41,095 |
| Phase 2 & 3 | N Pit 17 | | | $ 31,869 | 8.0 | $ 10,247 | 8.0 | | $ 42,116 |
| Phase 2 & 3 | N Pit 18 | | | $ 36,142 | 9.1 | $ 11,621 | 9.1 | | $ 47,763 |
| Phase 2 & 3 | N Pit 19 | | | $ 29,901 | 7.5 | $ 9,614 | 7.5 | | $ 39,515 |
| Phase 2 & 3 | N Pit 20 | | | $ 29,563 | 7.4 | $ 9,506 | 7.4 | | $ 39,069 |
| Phase 2 & 3 | N Pit 21 | | | $ 67,478 | 16.9 | $ 21,697 | 16.9 | | $ 89,175 |
| Phase 2 & 3 | N HWT1 | | | $ 46,296 | 11.6 | $ 14,886 | 11.6 | | $ 61,183 |
| Phase 2 & 3 | N HWT2 | | | $ 105,163 | 26.4 | $ 33,815 | 26.4 | | $ 138,978 |
| Phase 2 & 3 | SURF 1 | | | $ 49,926 | 12.5 | $ 16,053 | 12.5 | | $ 65,979 |
| Phase 2 & 3 | SURF 2 | | | $ 58,650 | 14.7 | $ 18,858 | 14.7 | | $ 77,508 |
| Phase 2 & 3 | SURF 3 | | | $ 44,245 | 11.1 | $ 14,227 | 11.1 | | $ 58,472 |
| Phase 2 & 3 | SURF 4 | | | $ 32,421 | 8.1 | $ 10,425 | 8.1 | | $ 42,846 |
| Phase 2 & 3 | SURF CROSSING | | | $ - | - | $ - | - | | $ - |
| Line Items | Facilities Concrete Demolition | | | | | | | $ 29,964 | $ 29,964 |
| Line Items | Facilities Structure Demolition | | | | | | | $ 130,274 | $ 130,274 |
| Line Items | Facilities Earthwork | | | | | | | $ 957,257 | $ 957,257 |
| **Total** | | **$ 2,427,938** | **62.3** | **$ 896,324** | **224.9** | **$ 288,207** | **224.9** | **$ 1,117,495** | **$ 4,729,964** |

# North Area Facilities Reclamation Cost Estimate

## Concrete Reclamation Cost Estimate

### Concrete Demolition

| Item | Unit | Quantity | Unit Cost ($) | Cost | **Cost Data Reference |
|---|---|---|---|---|---|
| New Kanab Creek Crossing (Box Culvert C-3) | lft | 450 | $24.50 | $11,025 | RSMeans Building Constr., 02 41 13.43 0200 |
| **Concrete Disposal** | | | | | |
| *Concrete Disposal (All Facilities) | $yd^3$ | 1,000 | $17.90 | $17,900 | RSMeans Building Constr., 02 41 16.17 4250 |
| **Subtotal Concrete Demolition & Disposal** | | | | **$28,925** | |

*Concrete is disposed of on site (in pits) within five miles of facilities

**All cost data is from the 2018 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals

(Total Cost Including O&P)

## Structures Reclamation Cost Estimate

### Structure Demolition & Disposal

| Item | Unit | Quantity | Unit Cost ($) | Cost | **Cost Data Reference |
|---|---|---|---|---|---|
| 12" Drainage Culvert (demolition) ASCA-1 Drop Pipe | ft | 10 | $2.60 | $26 | RSMeans Heavy Constr., 02 41 13.40 0150 |
| 18" Drainage Culvert (demolition) UC-T1-01 (mined out) | ft | 306 | $0.00 | $0 | RSMeans Heavy Constr., 02 41 13.40 0170 |
| 24" Drainage Culvert (demolition) C-1 | ft | 140 | $14.55 | $2,037 | RSMeans Heavy Constr., 02 41 13.40 0170 |
| 24" Drainage Culvert (demolition) C-4 | ft | 120 | $14.55 | $1,746 | RSMeans Heavy Constr., 02 41 13.40 0170 |
| 36" Drainage Culvert (demolition) C-2 | ft | 150 | $17.45 | $2,618 | RSMeans Heavy Constr., 02 41 13.40 0180 |
| 144" Drainage Culvert (demolition) C-3 | ft | 215 | $48.00 | $10,320 | RSMeans Heavy Constr., 02 41 13.40 0200 |
| ASCA-1 Box Drain | each | 1 | $242.00 | $242 | RSMeans Heavy Constr., 02 41 13.42 0400 |
| Culvert Excavation 6' - 10' Deep ASCA-1 Drop Pipe | $yd^3$ | 37 | $4.95 | $183 | RSMeans Heavy Constr., 31 23 16.13 0510 |
| Culvert Excavation 6' - 10' Deep C-1 | $yd^3$ | 187 | $4.95 | $924 | RSMeans Heavy Constr., 31 23 16.13 0510 |
| Culvert Excavation 6' - 10' Deep C-4 | $yd^3$ | 160 | $4.95 | $792 | RSMeans Heavy Constr., 31 23 16.13 0510 |
| Culvert Excavation 14' - 20' Deep C-2 | $yd^3$ | 1,089 | $6.20 | $6,751 | RSMeans Heavy Constr., 31 23 16.13 1300 |
| Culvert Excavation 14' - 20' Deep C-3 | $yd^3$ | 5,000 | $6.20 | $31,000 | RSMeans Heavy Constr., 31 23 16.13 1300 |
| Perimeter Fencing (demolition) | ft | 15,000 | $3.47 | $52,050 | RSMeans Heavy Constr., 02 41 13.60 1650 |
| Water Monitoring Wells - PVC (demolition) | VLF | 1,888 | $7.27 | $13,722 | RSMeans Heavy Constr., 02 41 13.76 0900 |
| Water Monitoring Wells - Steel (demolition) | VLF | 230 | $14.55 | $3,347 | RSMeans Heavy Constr., 02 41 13.76 1000 |
| **Subtotal Structure Demolition & Disposal** | | | | **$125,758** | |

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

All cost data is from the 2018 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted (Total Cost Including O&P)

# Earthwork Reclamation Cost Estimate

## Facilities Earthwork

| Item | Unit | Quantity | Unit Cost ($) | Cost | **Cost Data Reference |
|---|---|---|---|---|---|
| Pond 5 backfill from embankment | $yd^3$ | 124 | $2.29 | $285 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 5 backfill from stockpile | $yd^3$ | 7,765 | $5.57 | $43,253 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 6 backfill from embankment | $yd^3$ | 242 | $2.29 | $554 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 6 backfill from stockpile | $yd^3$ | 8,665 | $5.57 | $48,263 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 7 backfill from embankment | $yd^3$ | 219 | $2.29 | $501 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 7 backfill from stockpile | $yd^3$ | 118,132 | $5.57 | $657,995 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 8 backfill from embankment | $yd^3$ | 5,467 | $2.29 | $12,519 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 8 backfill from stockpile | $yd^3$ | 0 | $5.57 | $0 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond 9 backfill from embankment | $yd^3$ | 371 | $2.29 | $850 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Pond 9 backfill from stockpile | $yd^3$ | 9,486 | $5.57 | $52,838 | RSMeans Heavy Constr., 31 23 16.43 5330 & 31 23 23.20 6160 & 31 23 23.17 0020 |
| Pond T1 backfill (mined out) | $yd^3$ | 3,288 | $0.00 | $0 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ditch DD-05 TO DD-20 recontouring | $yd^3$ | 2,483 | $2.29 | $5,687 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ditch DD-T1-01 to DD-T1-02 recontouring (mined out) | $yd^3$ | 97 | $0.00 | $0 | RSMeans Heavy Constr., 31 23 23.17 0020 |
| Ripping of haul roads and compacted surfaces | $yd^3$ | 38,673 | $2.62 | $101,322 | RSMeans Heavy Constr., 31 23 16.32 2310 |
| **Subtotal Facilities Earthwork** | | | | **$924,067** | |

** RS Means does not have direct cost data references for some specific items. Where needed, reasonable substitutues are utilized.
All cost data is from the 2018 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted (Total Cost Including O&P)

| | |
|---|---|
| **Total Facilities Reclamation Cost Estimate** | **$1,078,750** |

**North Area Bond Polygon Cost Estimates**

| | | | | | | | Phase 1 Cost | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pit | BCF | BCY | Backfill LCY | Area (sf) | Area (acres) | Backfill Cost | Subsoil Quantity (LCY) | Subsoil Cost | Total Direct Cost | Indirect Cost | Total Phase 1 Cost | **Total Polygon Phase 1 Cost - Escalated** | **Incremental Phase 1 Cost (10%)** |
| Excavated Areas | N Pit 01 | | | 285,556 | 127,498.2 | 2.9 | $ 333,977 | 16,874 | $ 23,359 | $ 357,336 | $ 95,766 | $ 453,102 | **$ 469,376** | **$ 46,938** |
| | N Pit 02 | | | 615,264 | 174,342.8 | 4.0 | $ 719,591 | 23,074 | $ 31,941 | $ 751,533 | $ 201,411 | $ 952,943 | **$ 987,170** | **$ 98,717** |
| | N Pit 03 | | | 653,788 | 231,889.1 | 5.3 | $ 764,647 | 30,690 | $ 42,484 | $ 807,131 | $ 216,311 | $ 1,023,443 | **$ 1,060,202** | **$ 106,020** |
| | N Pit 04 | | | 518,901 | 245,636.1 | 5.6 | $ 606,887 | 32,509 | $ 45,003 | $ 651,890 | $ 174,707 | $ 826,597 | **$ 856,286** | **$ 85,629** |
| | N Pit 05 | | | 510,556 | 251,290.3 | 5.8 | $ 597,128 | 33,257 | $ 46,039 | $ 643,167 | $ 172,369 | $ 815,536 | **$ 844,828** | **$ 84,483** |
| | N Pit 06 | | | 611,257 | 210,990.1 | 4.8 | $ 714,905 | 27,924 | $ 38,655 | $ 753,560 | $ 201,954 | $ 955,514 | **$ 989,833** | **$ 98,983** |
| | N Pit 07 | | | 597,912 | 197,063.8 | 4.5 | $ 699,297 | 26,081 | $ 36,104 | $ 735,401 | $ 197,087 | $ 932,489 | **$ 965,981** | **$ 96,598** |
| | N Pit 08 | | | 494,843 | 209,407.1 | 4.8 | $ 578,751 | 27,714 | $ 38,365 | $ 617,116 | $ 165,387 | $ 782,504 | **$ 810,609** | **$ 81,061** |
| | N Pit 09 | | | 491,854 | 258,391.9 | 5.9 | $ 575,255 | 34,197 | $ 47,340 | $ 622,595 | $ 166,855 | $ 789,450 | **$ 817,804** | **$ 81,780** |
| | N Pit 10 | | | 345,858 | 385,255.3 | 8.8 | $ 404,503 | 50,987 | $ 70,583 | $ 475,086 | $ 127,323 | $ 602,408 | **$ 624,045** | **$ 62,405** |
| | N Pit 11 | | | 556,238 | 228,593.2 | 5.2 | $ 650,556 | 30,253 | $ 41,881 | $ 692,437 | $ 185,573 | $ 878,010 | **$ 909,545** | **$ 90,955** |
| | N Pit 12 | | | 737,045 | 257,167.9 | 5.9 | $ 862,021 | 34,035 | $ 47,116 | $ 909,137 | $ 243,649 | $ 1,152,786 | **$ 1,194,190** | **$ 119,419** |
| | N Pit 13 | | | 964,625 | 255,204.9 | 5.9 | $ 1,128,191 | 33,775 | $ 46,756 | $ 1,174,947 | $ 314,886 | $ 1,489,833 | **$ 1,543,343** | **$ 154,334** |
| | N Pit 14 | | | 1,164,166 | 310,084.3 | 7.1 | $ 1,361,567 | 41,038 | $ 56,811 | $ 1,418,377 | $ 380,125 | $ 1,798,502 | **$ 1,863,099** | **$ 186,310** |
| | N Pit 15 | | | 1,215,444 | 302,530.8 | 6.9 | $ 1,421,540 | 40,039 | $ 55,427 | $ 1,476,967 | $ 395,827 | $ 1,872,794 | **$ 1,940,059** | **$ 194,006** |
| | N Pit 16 | | | 1,125,612 | 339,825.1 | 7.8 | $ 1,316,475 | 44,974 | $ 62,259 | $ 1,378,735 | $ 369,501 | $ 1,748,236 | **$ 1,811,027** | **$ 181,103** |
| | N Pit 17 | | | 858,146 | 348,270.0 | 8.0 | $ 1,003,657 | 46,092 | $ 63,806 | $ 1,067,463 | $ 286,080 | $ 1,353,544 | **$ 1,402,159** | **$ 140,216** |
| | N Pit 18 | | | 765,344 | 394,965.3 | 9.1 | $ 895,118 | 52,272 | $ 72,362 | $ 967,480 | $ 259,285 | $ 1,226,765 | **$ 1,270,826** | **$ 127,083** |
| | N Pit 19 | | | 682,113 | 326,762.4 | 7.5 | $ 797,774 | 43,246 | $ 59,866 | $ 857,641 | $ 229,848 | $ 1,087,488 | **$ 1,126,547** | **$ 112,655** |
| | N Pit 20 | | | 619,530 | 323,072.3 | 7.4 | $ 724,581 | 42,757 | $ 59,190 | $ 783,771 | $ 210,051 | $ 993,821 | **$ 1,029,516** | **$ 102,952** |
| | N Pit 21 | | | 535,475 | 737,409.2 | 16.9 | $ 626,272 | 97,593 | $ 135,101 | $ 761,373 | $ 204,048 | $ 965,421 | **$ 1,000,096** | **$ 100,010** |
| | N HWT1 | | | 3,038,645 | 505,935.4 | 11.6 | $ 3,553,890 | 66,958 | $ 92,692 | $ 3,646,583 | $ 977,284 | $ 4,623,867 | **$ 4,789,942** | **$ 478,994** |
| | N HWT2 | | | 3,206,426 | 1,149,244.4 | 26.4 | $ 3,750,121 | 152,098 | $ 210,553 | $ 3,960,674 | $ 1,061,461 | $ 5,022,135 | **$ 5,202,514** | **$ 520,251** |
| | N HWT1BORROW | | | - | 505,935.4 | 11.6 | $ - | 66,958 | $ 92,692 | $ 92,692 | $ 24,842 | $ 117,534 | **$ 121,755** | **$ 12,176** |
| | N HWT2BORROW | | | - | 1,149,244.4 | 26.4 | $ - | 152,098 | $ 210,553 | $ 210,553 | $ 56,428 | $ 266,981 | **$ 276,570** | **$ 27,657** |
| | **Excavated Areas Totals** | **0** | **0** | **20,594,599** | **9,426,009** | **216.4** | **$ 24,086,707** | **1,247,492** | **$ 1,726,938** | **$ 25,813,645** | **$ 6,918,057** | **$ 32,731,702** | **$ 33,907,321** | **$ 3,390,732** |
| Surface Disturbance Only Areas | SURF 1 | | | | 545,598 | 12.5 | | | | | | | | |
| | SURF 2 | | | | 640,935 | 14.7 | | | | | | | | |
| | SURF 3 | | | | 483,523 | 11.1 | | | | | | | | |
| | SURF 4 | | | | 354,303 | 8.1 | | | | | | | | |
| | SURF CROSSING | | | | - | - | | | | | | | | |
| | **Surface Disturbance Only Areas Totals** | | | | **2,024,359** | **46.5** | | | | | | | | |
| Facilities & Special Areas* | Facilities Concrete Demolition | | | | | | | | | | | | | |
| | Facilities Structure Demolition | | | | | | | | | | | | | |
| | Facilities Earthwork | | | | | | | | | | | | | |
| | **Facilities & Special Areas* Totals** | | | | | | | | | | | | | |
| | **North Area Totals** | **0** | **0** | **20,594,599** | **11,450,369** | **262.9** | **$ 24,086,707** | **1,247,492** | **$ 1,726,938** | **$ 25,813,645** | **$ 6,918,057** | **$ 32,731,702** | **$ 33,907,321** | **$ 3,390,732** |

*All Topsoiling, Mulching & Seeding included in surface disturbance area calculations

| | | Phase 2 Cost | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pit | 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** |
| Excavated Areas | N Pit 01 | 3,375 | $ 3,989 | 127 | $ 2,037 | 127 | $ 2,856 | $ 8,882 | $ 2,380 | $ 11,262 | **$ 11,667** |
| | N Pit 02 | 4,615 | $ 5,454 | 174 | $ 2,786 | 174 | $ 3,905 | $ 12,145 | $ 3,255 | $ 15,400 | **$ 15,954** |
| | N Pit 03 | 6,138 | $ 7,254 | 232 | $ 3,706 | 232 | $ 5,194 | $ 16,154 | $ 4,329 | $ 20,484 | **$ 21,219** |
| | N Pit 04 | 6,502 | $ 7,684 | 246 | $ 3,925 | 246 | $ 5,502 | $ 17,112 | $ 4,586 | $ 21,698 | **$ 22,477** |
| | N Pit 05 | 6,651 | $ 7,861 | 251 | $ 4,016 | 251 | $ 5,629 | $ 17,506 | $ 4,692 | $ 22,197 | **$ 22,995** |
| | N Pit 06 | 5,585 | $ 6,601 | 211 | $ 3,372 | 211 | $ 4,726 | $ 14,698 | $ 3,939 | $ 18,638 | **$ 19,307** |
| | N Pit 07 | 5,216 | $ 6,165 | 197 | $ 3,149 | 197 | $ 4,414 | $ 13,728 | $ 3,679 | $ 17,407 | **$ 18,033** |
| | N Pit 08 | 5,543 | $ 6,551 | 209 | $ 3,346 | 209 | $ 4,691 | $ 14,588 | $ 3,910 | $ 18,498 | **$ 19,162** |
| | N Pit 09 | 6,839 | $ 8,084 | 258 | $ 4,129 | 258 | $ 5,788 | $ 18,001 | $ 4,824 | $ 22,825 | **$ 23,645** |
| | N Pit 10 | 10,197 | $ 12,052 | 385 | $ 6,156 | 385 | $ 8,630 | $ 26,838 | $ 7,193 | $ 34,031 | **$ 35,253** |
| | N Pit 11 | 6,051 | $ 7,151 | 229 | $ 3,653 | 229 | $ 5,120 | $ 15,925 | $ 4,268 | $ 20,193 | **$ 20,918** |
| | N Pit 12 | 6,807 | $ 8,045 | 257 | $ 4,110 | 257 | $ 5,761 | $ 17,915 | $ 4,801 | $ 22,717 | **$ 23,533** |
| | N Pit 13 | 6,755 | $ 7,984 | 255 | $ 4,078 | 255 | $ 5,717 | $ 17,779 | $ 4,765 | $ 22,543 | **$ 23,353** |
| | N Pit 14 | 8,208 | $ 9,701 | 310 | $ 4,955 | 310 | $ 6,946 | $ 21,602 | $ 5,789 | $ 27,391 | **$ 28,375** |
| | N Pit 15 | 8,008 | $ 9,464 | 303 | $ 4,834 | 303 | $ 6,777 | $ 21,075 | $ 5,648 | $ 26,724 | **$ 27,684** |
| | N Pit 16 | 8,995 | $ 10,631 | 340 | $ 5,430 | 340 | $ 7,612 | $ 23,674 | $ 6,345 | $ 30,018 | **$ 31,096** |
| | N Pit 17 | 9,218 | $ 10,895 | 348 | $ 5,565 | 348 | $ 7,801 | $ 24,262 | $ 6,502 | $ 30,764 | **$ 31,869** |
| | N Pit 18 | 10,454 | $ 12,356 | 395 | $ 6,312 | 395 | $ 8,847 | $ 27,515 | $ 7,374 | $ 34,889 | **$ 36,142** |
| | N Pit 19 | 8,649 | $ 10,222 | 327 | $ 5,222 | 327 | $ 7,319 | $ 22,764 | $ 6,101 | $ 28,864 | **$ 29,901** |
| | N Pit 20 | 8,551 | $ 10,107 | 323 | $ 5,163 | 323 | $ 7,237 | $ 22,506 | $ 6,032 | $ 28,538 | **$ 29,563** |
| | N Pit 21 | 19,519 | $ 23,069 | 737 | $ 11,784 | 737 | $ 16,518 | $ 51,371 | $ 13,767 | $ 65,138 | **$ 67,478** |
| | N HWT1 | 13,392 | $ 15,828 | 506 | $ 8,085 | 506 | $ 11,333 | $ 35,245 | $ 9,446 | $ 44,691 | **$ 46,296** |
| | N HWT2 | 30,420 | $ 35,953 | 1,149 | $ 18,365 | 1,149 | $ 25,743 | $ 80,061 | $ 21,456 | $ 101,517 | **$ 105,163** |
| | N HWT1BORROW | 13,392 | $ 15,828 | 506 | $ 8,085 | 506 | $ 11,333 | $ 35,245 | $ 9,446 | $ 44,691 | **$ 46,296** |
| | N HWT2BORROW | 30,420 | $ 35,953 | 1,149 | $ 18,365 | 1,149 | $ 25,743 | $ 80,061 | $ 21,456 | $ 101,517 | **$ 105,163** |
| | **Excavated Areas Totals** | **249,498** | **$ 294,883** | **9,426** | **$ 150,628** | **$ 9,426** | **$ 211,143** | **$ 656,653** | **$ 175,983** | **$ 832,636** | **$ 862,542** |
| Surface Disturbance Only Areas | SURF 1 | 14,442 | $ 17,068 | 546 | $ 8,719 | 546 | $ 12,221 | $ 38,009 | $ 10,186 | $ 48,195 | **$ 49,926** |
| | SURF 2 | 16,965 | $ 20,051 | 641 | $ 10,242 | 641 | $ 14,357 | $ 44,650 | $ 11,966 | $ 56,616 | **$ 58,650** |
| | SURF 3 | 12,798 | $ 15,126 | 484 | $ 7,727 | 484 | $ 10,831 | $ 33,684 | $ 9,027 | $ 42,711 | **$ 44,245** |
| | SURF 4 | 9,378 | $ 11,084 | 354 | $ 5,662 | 354 | $ 7,936 | $ 24,682 | $ 6,615 | $ 31,297 | **$ 32,421** |
| | SURF CROSSING | - | $ - | - | $ - | - | $ - | $ - | $ - | $ - | **$ -** |
| | **Surface Disturbance Only Areas Totals** | **53,583** | **$ 63,330** | **2,024** | **$ 32,349** | **2,024** | **$ 45,346** | **$ 141,025** | **$ 37,795** | **$ 178,820** | **$ 185,242** |
| Facilities & Special Areas* | Facilities Concrete Demolition | | | | | | | | | | |
| | Facilities Structure Demolition | | | | | | | | | | |
| | Facilities Earthwork | | | | | | | | | | |
| | **Facilities & Special Areas* Totals** | | | | | | | | | | |
| | **North Area Totals** | **303,081** | **$ 358,213** | **11,450** | **$ 182,977** | **11,450** | **$ 256,488** | **$ 797,678** | **$ 213,778** | **$ 1,011,456** | **$ 1,047,784** |

| | | Phase 3 Cost | | | | | | Facilities Cost | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pit | Re-Seed Quantity | Re-Seed Cost | Total Direct Cost | Indirect Cost | Total Phase 3 Cost | **Total Phase 3 Cost - Escalated** | Total Facilities Cost | **Total Facilities Cost - Escalated** | **Total Bonded Amount - Escalated** |
| Excavated Areas | N Pit 01 | 127 | $ 2,856 | $ 2,856 | $ 765 | $ 3,621 | **$ 3,751** | | | **$ 484,794** |
| | N Pit 02 | 174 | $ 3,905 | $ 3,905 | $ 1,047 | $ 4,952 | **$ 5,130** | | | **$ 1,008,253** |
| | N Pit 03 | 232 | $ 5,194 | $ 5,194 | $ 1,392 | $ 6,586 | **$ 6,823** | | | **$ 1,088,244** |
| | N Pit 04 | 246 | $ 5,502 | $ 5,502 | $ 1,475 | $ 6,977 | **$ 7,227** | | | **$ 885,991** |
| | N Pit 05 | 251 | $ 5,629 | $ 5,629 | $ 1,509 | $ 7,137 | **$ 7,394** | | | **$ 875,216** |
| | N Pit 06 | 211 | $ 4,726 | $ 4,726 | $ 1,267 | $ 5,993 | **$ 6,208** | | | **$ 1,015,348** |
| | N Pit 07 | 197 | $ 4,414 | $ 4,414 | $ 1,183 | $ 5,597 | **$ 5,798** | | | **$ 989,812** |
| | N Pit 08 | 209 | $ 4,691 | $ 4,691 | $ 1,257 | $ 5,948 | **$ 6,161** | | | **$ 835,932** |
| | N Pit 09 | 258 | $ 5,788 | $ 5,788 | $ 1,551 | $ 7,339 | **$ 7,603** | | | **$ 849,052** |
| | N Pit 10 | 385 | $ 8,630 | $ 8,630 | $ 2,313 | $ 10,942 | **$ 11,336** | | | **$ 670,634** |
| | N Pit 11 | 229 | $ 5,120 | $ 5,120 | $ 1,372 | $ 6,493 | **$ 6,726** | | | **$ 937,189** |
| | N Pit 12 | 257 | $ 5,761 | $ 5,761 | $ 1,544 | $ 7,304 | **$ 7,567** | | | **$ 1,225,290** |
| | N Pit 13 | 255 | $ 5,717 | $ 5,717 | $ 1,532 | $ 7,249 | **$ 7,509** | | | **$ 1,574,205** |
| | N Pit 14 | 310 | $ 6,946 | $ 6,946 | $ 1,861 | $ 8,807 | **$ 9,124** | | | **$ 1,900,597** |
| | N Pit 15 | 303 | $ 6,777 | $ 6,777 | $ 1,816 | $ 8,593 | **$ 8,901** | | | **$ 1,976,644** |
| | N Pit 16 | 340 | $ 7,612 | $ 7,612 | $ 2,040 | $ 9,652 | **$ 9,999** | | | **$ 1,852,122** |
| | N Pit 17 | 348 | $ 7,801 | $ 7,801 | $ 2,091 | $ 9,892 | **$ 10,247** | | | **$ 1,444,275** |
| | N Pit 18 | 395 | $ 8,847 | $ 8,847 | $ 2,371 | $ 11,218 | **$ 11,621** | | | **$ 1,318,589** |
| | N Pit 19 | 327 | $ 7,319 | $ 7,319 | $ 1,962 | $ 9,281 | **$ 9,614** | | | **$ 1,166,063** |
| | N Pit 20 | 323 | $ 7,237 | $ 7,237 | $ 1,939 | $ 9,176 | **$ 9,506** | | | **$ 1,068,585** |
| | N Pit 21 | 737 | $ 16,518 | $ 16,518 | $ 4,427 | $ 20,945 | **$ 21,697** | | | **$ 1,089,271** |
| | N HWT1 | 506 | $ 11,333 | $ 11,333 | $ 3,037 | $ 14,370 | **$ 14,886** | | | **$ 4,851,124** |
| | N HWT2 | 1,149 | $ 25,743 | $ 25,743 | $ 6,899 | $ 32,642 | **$ 33,815** | | | **$ 5,341,492** |
| | N HWT1BORROW | 506 | $ 11,333 | $ 11,333 | $ 3,037 | $ 14,370 | **$ 14,886** | | | |
| | N HWT2BORROW | 1,149 | $ 25,743 | $ 25,743 | $ 6,899 | $ 32,642 | **$ 33,815** | | | **$ 415,548** |
| | **Excavated Areas Totals** | **9,426** | **$ 211,143** | **$ 211,143** | **$ 56,586** | **$ 267,729** | **$ 277,345** | | | **$ 34,864,269** |
| Surface Disturbance Only Areas | SURF 1 | 546 | $ 12,221 | $ 12,221 | $ 3,275 | $ 15,497 | **$ 16,053** | | | **$ 65,979** |
| | SURF 2 | 641 | $ 14,357 | $ 14,357 | $ 3,848 | $ 18,205 | **$ 18,858** | | | **$ 77,508** |
| | SURF 3 | 484 | $ 10,831 | $ 10,831 | $ 2,903 | $ 13,734 | **$ 14,227** | | | **$ 58,472** |
| | SURF 4 | 354 | $ 7,936 | $ 7,936 | $ 2,127 | $ 10,063 | **$ 10,425** | | | **$ 42,846** |
| | SURF CROSSING | - | $ - | $ - | $ - | $ - | **$ -** | | | **$ -** |
| | **Surface Disturbance Only Areas Totals** | **2,024** | **$ 45,346** | **$ 45,346** | **$ 12,153** | **$ 57,498** | **$ 59,563** | | | **$ 244,806** |
| Facilities & Special Areas* | Facilities Concrete Demolition | | | | | | | **$ 28,925** | **$ 29,964** | **$ 29,964** |
| | Facilities Structure Demolition | | | | | | | **$ 125,758** | **$ 130,274** | **$ 130,274** |
| | Facilities Earthwork | | | | | | | **$ 924,067** | **$ 957,257** | **$ 957,257** |
| | **Facilities & Special Areas* Totals** | | | | | | | **$ 1,078,750** | **$ 1,117,495** | **$ 1,117,495** |
| | **North Area Totals** | **11,450** | **$ 256,488** | **$ 256,488** | **$ 68,739** | **$ 325,227** | **$ 336,908** | **$ 1,078,750** | **$ 1,117,495** | **$ 36,226,570** |

## North Area Production Model Cost Data & Assumptions

| Equipment Description | Equipment Cost $/hr | Equip + Labor Cost $/hr |
|---|---|---|
| 7 yd. Excavator (385C LME) | $87.34 | $121.34 |
| 40 Ton (30 CY) Haul Truck (769C) | $51.23 | $91.47 |
| 5,000 Gal. Water Truck (35 ton articulat | $33.35 | $67.35 |
| 14 Grader | $42.31 | $76.31 |
| D10 Dozer | $98.42 | $132.42 |
| D7 Dozer | $54.21 | $88.21 |

Sourced from Cost Mine 2017 Coal Cost Guide and 2017 Mine and Mill Equipment Costs

**Labor Cost Data**

| Manpower Type | Base Wage ($/hr) | Labor Cost @ 36% burden ($/hr) |
|---|---|---|
| Heavy Equipment Operator | $25.00 | $34.00 |
| Truck Drivers | $29.59 | $40.24 |

Labor Data from 2017 Coal Cost Guide Table LA-7 for Surface Coal Mines (Non-Union)

**Unit Cost Data**

| Movement Type | Cost/BCY | Cost/LCY | Unit Swell Factor | |
|---|---|---|---|---|
| Rehandle with Truck/Shovel | $ 1.30 | $ 1.17 | 10.7% | |
| Subsoil | $ 1.48 | $ 1.38 | 7.2% | |
| Topsoil | $ 1.27 | $ 1.18 | 7.2% | |
| | | **Cost/M.S.F** | | |
| Mulching | | $ 15.98 | | Local Supplier Quote 3 yr. average |
| Seeding | | $ 22.40 | | Local Supplier Quote 3 yr. average |

Unit Costs calculated from Caterpillar Inc. FPC production model (v. 5.3.0.6) using 2017 cost data

| Indirect Cost Factor |
|---|
| 26.8% |

| Escalation Factor 2018 to 2019 |
|---|
| 1.03591684 |

## South Area and North Area Actual Cost of Reclamation Per Acre

| North Pasture | 2017 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $161.60 | $ 3.71 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 17.69** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $ 105.00 | $ 2.41 | | |
| Straw Mulch (2,000 lbs) | $ 135.00 | $ 3.10 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 16.67** | **Mulching Subtotal** |
| **Total** | **$1,496.60** | **$34.36** | **$34.36** | |

**Doesn't include shipping

| North Pasture | 3 Yr Average | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $148.20 | $ 3.40 | | |
| Drill Seeding Cost | $609.00 | $ 13.98 | **$ 17.38** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $81.67 | $ 1.87 | | |
| Straw Mulch (2,000 lbs) | $128.33 | $ 2.95 | | |
| Spreading Mulch | $486.00 | $ 11.16 | **$ 15.98** | **Mulching Subtotal** |
| **Total** | **$1,453.20** | **$33.36** | **$33.36** | |

**Doesn't include shipping

| Sage Grass Mix | 2017 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $311.75 | $ 7.16 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 21.14** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $ 105.00 | $ 2.41 | | |
| Straw Mulch (2,000 lbs) | $ 135.00 | $ 3.10 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 16.67** | **Mulching Subtotal** |
| **Total** | **$1,646.75** | **$37.80** | **$37.80** | |

**Doesn't include shipping

| Sage Grass Mix | 3 Yr Average | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $366.92 | $ 8.42 | | |
| Drill Seeding Cost | $609.00 | $ 13.98 | **$ 22.40** | **Seeding Subtotal** |
| Nutrimulch (2,250 lbs) | $81.67 | $ 1.87 | | |
| Straw Mulch (2,000 lbs) | $128.33 | $ 2.95 | | |
| Spreading Mulch | $486.00 | $ 11.16 | **$ 15.98** | **Mulching Subtotal** |
| **Total** | **$1,671.92** | **$38.38** | **$38.38** | |

**Doesn't include shipping

| North Pasture | 2016 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $177.00 | $ 4.06 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 18.04** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,467.00** | **$33.68** | **$33.68** | |

**Includes Shipping

| Sage Grass Mix | 2016 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $385.00 | $ 8.84 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 22.82** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,675.00** | **$38.45** | **$38.45** | |

**Includes Shipping

| Pasture | 2015 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $106.00 | $ 2.43 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 16.41** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,396.00** | **$32.05** | **$32.05** | |

**Includes Shipping

| Sage Grass Mix | 2015 | Cost per M.S.F. | | |
|---|---|---|---|---|
| Seed Cost** | $404.00 | $ 9.27 | | |
| Drill Seeding Cost | $ 609.00 | $ 13.98 | **$ 23.26** | **Seeding Subtotal** |
| Nutrimulch (1,500 lbs) | $ 70.00 | $ 1.61 | | |
| Straw Mulch (2,000 lbs) | $ 125.00 | $ 2.87 | | |
| Spreading Mulch | $ 486.00 | $ 11.16 | **$ 15.63** | **Mulching Subtotal** |
| **Total** | **$1,694.00** | **$38.89** | **$38.89** | |

**Includes Shipping

FPC_2018_January_North Area_Truck-Shovel_Backfill

**Cycle Times**

Hauler Cycle Time

| | | |
|---|---|---|
| | 7 769C | |
| Load with Exchange (min) | | 1.25 |
| Haul (min) | | 2.8 |
| Dump and Maneuver (min) | | 1.2 |
| Return (min) | | 2.55 |
| Potential Cycle Time (min) | | 7.8 |
| Wait on Slow Hauler (min) | | 0 |
| Wait to Load (min) | | 0.95 |
| Additional Bunching (min) | | 0.99 |
| Wait to Dump (min) | | 0 |
| TMPH Wait (min) | | |
| Total Cycle Time (min) | | 9.74 |
| Bunching | Avg | |
| Haul Start mph | | 0 |
| Haul End mph | | 0 |
| Return Start mph | | 0 |
| Return End mph | | 0 |

Loader Cycle Time

| | | |
|---|---|---|
| | 7 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 | | |
| Operator Efficiency | 90 | % |
| Schedule Period | Shift | |
| Scheduled Hours | 10.5 | |
| Fleet Estimates | | |
| Fleet Availability | 87.12 | % |
| Production per Sched Hr | 656.3 | BCY |
| Total Production | 1,000,000 | BCY |
| Sched Hrs Required | 1,523.68 | |
| Total Cost ($) | 1,353,613 | |
| Cost per BCY ($) | 1.354 | |
| Production per Shift | 6,891 | BCY |
| Shifts Required | 145.11 | |

Theoretical Production

| | Quantity | Model | BCY per Hour | Cycles per Hour |
|---|---|---|---|---|
| 1 | 1 | 385C LME | 932 | |
| 2 | 7 | 769C | 1,046 | 7.7 |

Actual Production

| | Quantity | Model | Cycles per Hour | Payload in Tons | Tons per Hour |
|---|---|---|---|---|---|
| 1 | 5 | 769C | 6.16 | 27.17 | 836.39 |
| Fleet Tons per Operating Hour | | | | | 836.39 |
| x 90.00% Operator Efficiency = | | | | | 752.76 |
| x 87.12% Fleet Availability = | | | | | 655.84 |

**Cost**

| | Qty | Model | Machine Code | Hourly Cost Each Unit | Operating Hours | Total $ | $ per BCY |
|---|---|---|---|---|---|---|---|
| Loaders | 1 | 385C LME | | 124.78 | 1,371 | 171,113 | 0.171 |
| Haulers: | 7 | 769C | C202 | 93.68 | 9,293 | 870,560 | 0.871 |
| Totals | 7 | | | | 9,293 | 870,560 | 0.871 |
| Support | 1 | 5,000 Gal. Water Truck | | 66.58 | 996 | 66,289 | 0.066 |
| | 1 | 14 Grader | | 82.84 | 664 | 54,985 | 0.055 |
| | 1 | D10 Dozer | | 132.42 | 996 | 131,841 | 0.132 |
| Totals | 3 | | | | 2,655 | 253,115 | 0.253 |
| Fleet Totals | 11 | | | | 13,319 | 1,294,788 | 1.295 |

FPC_2018_January_North Area_Truck-Shovel_Subsoil

**Cycle Times**

Hauler Cycle Time

| | | |
|---|---|---|
| | 6 769C | |
| Load with Exchange (min) | | 1.25 |
| Haul (min) | | 2.12 |
| Dump and Maneuver (min) | | 1.2 |
| Return (min) | | 1.94 |
| Potential Cycle Time (min) | | 6.51 |
| Wait on Slow Hauler (min) | | 0 |
| Wait to Load (min) | | 0.99 |
| Additional Bunching (min) | | 0.74 |
| Wait to Dump (min) | | 0 |
| TMPH Wait (min) | | |
| Total Cycle Time (min) | | 8.24 |
| Bunching | Avg | |
| Haul Start mph | | 0 |
| Haul End mph | | 0 |
| Return Start mph | | 0 |
| Return End mph | | 0 |

Loader Cycle Time

| | | |
|---|---|---|
| | 6 769C | |
| Loader Model | 385C LME | |
| Loader Quantity | | 1 |
| Bucket Capacity (CY) | | 7.25 |
| Loader Fill Factor (%) | | 100 |
| Loose Density (Lbs/LCY) | | 1,601 |
| Tons per Pass | | 5.8 |
| System Passes per Hauler | | 3 |
| Hauler Payload (Tons) | | 17.41 |
| % of Max GVW | | 87.58 |
| 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 | | |
| Operator Efficiency | 90 | % |
| Schedule Period | Shift | |
| Scheduled Hours | 10.5 | |
| Fleet Estimates | | |
| Fleet Availability | 87.49 | % |
| Production per Sched Hr | 518.69 | BCY |
| Total Production | 360,000 | BCY |
| Sched Hrs Required | 694.06 | |
| Total Cost ($) | 558,548 | |
| Cost per BCY ($) | 1.552 | |
| Production per Shift | 5,446 | BCY |
| Shifts Required | 66.1 | |

Theoretical Production

| | Quantity | | Model | BCY per Hour | Cycles per Hour |
|---|---|---|---|---|---|
| 1 | | 1 | 385C LME | 724 | |
| 2 | | 6 | 769C | 834 | 9.2 |

Actual Production

| | Quantity | | Model | Cycles per Hour | Payload in Tons | Tons per Hour |
|---|---|---|---|---|---|---|
| 1 | | 5 | 769C | 7.28 | 17.41 | 633.76 |
| Fleet Tons per Operating Hour | | | | | | 633.76 |
| x 90.00% Operator Efficiency = | | | | | | 570.38 |
| x 87.49% Fleet Availability = | | | | | | 499.02 |

**Cost**

| | Qty | Model | Machine Code | Hourly Cost Each Unit | Operating Hours | Total $ | $ per BCY |
|---|---|---|---|---|---|---|---|
| Loaders | 1 | 385C LME | | 124.78 | 625 | 77,945 | 0.217 |
| Haulers: | 6 | 769C | C202 | 93.51 | 3,643 | 340,686 | 0.946 |
| Totals | 6 | | | | 3,643 | 340,686 | 0.946 |
| Support | 1 | 5,000 Gal. Water Truck | | 66.58 | 455 | 30,322 | 0.084 |
| | 1 | 14 Grader | | 82.84 | 304 | 25,151 | 0.07 |
| | 1 | D10 Dozer | | 132.42 | 455 | 60,307 | 0.168 |
| Totals | 3 | | | | 1,214 | 115,780 | 0.322 |
| Fleet Totals | 10 | | | | 5,482 | 534,411 | 1.484 |

FPC_2018_January_North Area_Truck-Shovel_Topsoil

**Cycle Times**

Hauler Cycle Time

| | | |
|---|---|---|
| | 5 769C | |
| Load with Exchange (min) | 1.25 | |
| Haul (min) | 1.4 | |
| Dump and Maneuver (min) | 1.2 | |
| Return (min) | 1.35 | |
| Potential Cycle Time (min) | 5.2 | |
| Wait on Slow Hauler (min) | 0 | |
| Wait to Load (min) | 1.05 | |
| Additional Bunching (min) | 0.49 | |
| Wait to Dump (min) | 0 | |
| TMPH Wait (min) | | |
| Total Cycle Time (min) | 6.74 | |
| 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) | 1,601 | |
| Tons per Pass | 5.8 | |
| System Passes per Hauler | 3 | |
| Hauler Payload (Tons) | 17.41 | |
| % of Max GVW | 87.58 | |
| 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 | | |
| Operator Efficiency | 90 | % |
| Schedule Period | Shift | |
| Scheduled Hours | 10.5 | |
| Fleet Estimates | | |
| Fleet Availability | 87.87 | % |
| Production per Sched Hr | 530.95 | BCY |
| Total Production | 250,000 | BCY |
| Sched Hrs Required | 470.85 | |
| Total Cost ($) | 330,159 | |
| Cost per BCY ($) | 1.321 | |
| Production per Shift | 5,575 | BCY |
| Shifts Required | 44.84 | |

Theoretical Production

| | Quantity | Model | BCY per Hour | Cycles per Hour | |
|---|---|---|---|---|---|
| 1 | 1 | 385C LME | 724 | | |
| 2 | 5 | 769C | 869 | | 11.5 |

Actual Production

| | Quantity | Model | Cycles per Hour | Payload in Tons | Tons per Hour |
|---|---|---|---|---|---|
| 1 | 5 | 769C | 8.9 | 17.41 | 775.13 |
| Fleet Tons per Operating Hour | | | | | 775.13 |
| x 90.00% Operator Efficiency = | | | | | 697.62 |
| x 87.87% Fleet Availability = | | | | | 612.98 |

**Cost**

| | Qty | Model | Machine Code | Hourly Cost Each Unit | Operating Hours | Total $ | $ per BCY |
|---|---|---|---|---|---|---|---|
| Loaders | 1 | 385C LME | | 124.78 | 424 | 52,878 | 0.212 |
| Haulers: | 5 | 769C | C202 | 93.35 | 2,069 | 193,113 | 0.772 |
| Totals | 5 | | | | 2,069 | 193,113 | 0.772 |
| Support | 1 | 5,000 Gal. Water Truck | | 66.58 | 310 | 20,660 | 0.083 |
| | 1 | 14 Grader | | 82.84 | 207 | 17,137 | 0.069 |
| | 1 | D7 Dozer | | 88.21 | 372 | 32,846 | 0.131 |
| Totals | 3 | | | | 890 | 70,642 | 0.283 |
| Fleet Totals | 9 | | | | 3,382 | 316,632 | 1.267 |