

**Tyrone
Closure/Closeout Plan
Earthwork Cost Estimate
Summary Report**

Prepared for
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Signature Page

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A handwritten signature in blue ink, appearing to read "Terry Fairbanks".

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1.0 INTRODUCTION

1.1 Purpose & Summary

As part of the 2012 Tyrone Mine Closure Closeout Plan (CCP) update, an earthwork reclamation cost estimate for financial assurance has been prepared by Telesto Solutions Inc. (Telesto) for Freeport-McMoRan Tyrone Inc. (Tyrone). The earthwork reclamation cost estimate is based on a template originally created by the New Mexico Energy, Minerals and Natural Resources Department, Mining and Minerals Division (MMD, 1996). This earthwork estimate includes reclamation earthwork, demolition, and site operations and maintenance costs. Water related reclamation costs, such as water treatment and water treatment infrastructure, are included in a separate estimate prepared by Golder Associates, Inc. (Golder) and included as Appendix D to the CCP. The earthwork reclamation cost estimate is based on the configuration of facilities as described in the end-of-year (EOY) 2014 mine plan, and assumes reclamation would begin in 2015 (Year 1).

This work was completed in coordination with Golder, who provided overall project management and technical review and MWH America Inc. (MWH) who prepared the reclamation designs and the earthwork quantity take-offs. Telesto prepared the unit costs and cost estimate.

This document is organized into several major sections. Section 1 provides an introduction and a listing of assumptions that are common throughout the financial assurance cost estimate. Sections 2 through 5 describe the assumptions specific to each type of facility. Table 1 provides a brief description of each sheet used in the cost estimate. An overview of the mine facilities is included in Table 2. A summary of the estimate is included in Table 3. Unit cost basis for fuel, labor, and equipment costs are summarized in Table 4. Miscellaneous unit cost basis are provided in Table 5 and equipment production factors are provided in Table 6. Appendix A contains the cost

estimate summary sheets. The unit rates used to develop the cost estimate and other supporting documentation are provided in Appendix B. Engineering quantities are provided in Appendix C and an electronic copy of the cost estimate is provided in Appendix D.

The cost calculations (Appendix A and Appendix D) are organized by worksheet (Sheet) number and/or name. Throughout this document, the items described are followed by a reference to the location of the corresponding calculation Sheet. Table 1 provides a brief description of each sheet contained in the cost estimate. Appendix B.1 provides the main equations used in the cost estimate spreadsheet.

1.2 Reclamation Overview

A summary of the mine facilities, including waiver and reclamation status, is provided in Table 2. With the exception of operation and maintenance costs, only facilities not reclaimed as of EOY 2014 are included in this earthwork reclamation cost estimate. A description of completed reclamation projects and projects where reclamation is projected to be complete by EOY 2014 can be found in Section 3.0 of the CCP. The cost to finish partially completed reclamation, such as complete backfilling and reclamation of the San Salvador Pit, and reclaiming the Savanna Pit backfilled interior flat area (Savanna In-pit Stockpile), is included in the estimate. The South Rim Pit will be covered by the 2C, 4A, 7B, and 4B stockpile, which is included in the reclamation cost estimate. Following mining of the 8C Stockpile, the area will be used for long term sludge disposal area. Reclamation of the 8C Stockpile is included in this estimate.

The contiguous Main, West Main, Valencia, Savanna, and Gettysburg pits, in addition to the Copper Mountain Pit, have been granted a conditional waiver from the requirement of achieving a self-sustaining ecosystem (SSE), with the exception of the Savanna In-pit Stockpile. However, the cost to install public safety measures (fencing and signage around the pit perimeters) is included in the estimate.

Stockpiles outside of the approved Open Pit Surface Drainage Areas (OPSDA), and certain stockpiles or portions of stockpiles within the OPSDA are included in this reclamation cost estimate. The OPSDA is defined as the stockpiles (or stockpile areas) and disturbed areas adjacent to the open pits where surface water cannot feasibly flow out to the perimeter of the Mining Area due to existing topographic constraints, and is contained within the area of open pit hydrologic containment.

1.3 Financial Assurance Cost Estimate Assumptions

Several working assumptions that are used in each of the cost estimates include:

- **Labor Rates:** With the exception of the truck driver rate all labor rates were developed based on the New Mexico Department of Labor (DOL) Type H (Heavy Engineering) labor rates effective January 1, 2012. These rates include the base, fringe benefit, and apprenticeship contribution rates. The following were added to the labor rates to obtain the total per hour labor rate: FICA (6.2%), Medicare (1.45%), Federal un-employment (0.6% on first \$7,000), State un-employment (2% on first \$22,400), and Workman's Compensation Insurance. See Table 4 and Appendix B.2, also listed at the bottom of Sheet 13.
- **Truck Driver Labor Rate:** The base truck driver labor rate for truck drivers was assumed to be 90% of the New Mexico DOL base operator labor rate. Added to the base rate were fringe benefits, apprenticeship contributions, taxes, and Workman's Compensation Insurance (Table 4 and Appendix B.2).
- **Equipment Rates:** The earth-moving equipment used in the estimate would commonly be available to a contractor. The equipment unit operating costs were taken from EquipmentWatch Custom Cost Evaluator (Penton Media, Inc., 2012; Table 4, Appendix B.3, and bottom of Sheet 13).
- **Fuel Costs:** The off-road diesel fuel cost of \$3.13/gal is based on a quote obtained on July 7, 2012 from Western Refining for delivery of dyed ultra-low sulfur diesel to Tyrone, NM (Table 4, Sheet 13).
- **Capital Indirect Costs:** Total indirect costs of 22.5% were applied to the capital direct costs per MMD (1996) and OSM (2000) guidance. The indirect costs are comprised of: Mobilization and Demobilization (1.0%), Contingencies (2.0%), Engineering Redesign Fee (2.5%), Contractor Profit and Overhead (15.0%), and Project Management Fee (2.0%). Indirect cost percentages are identical to the percentages presented to MMD and the New Mexico Environment Department (NMED) in meetings with Tyrone on September 20, 2012, and on November 2, 2012.
- **Operations and Maintenance Indirect Costs:** Total indirect costs of 17.5% were applied for long term operations and maintenance per MMD (1996) and OSM (2000) guidance and comprise the same values and factors as the capital

indirect costs with exception of Contractor Profit and Overhead. Contractor Profit and Overhead for long term operations and maintenance is 10.0%, to account for the long term contract and repetitive annual work. Indirect cost percentages are identical to the percentages presented to MMD and the NMED in meetings with Tyrone on September 20, 2012, and on November 2, 2012.

- **Equipment Production Factors:** Production factors from Caterpillar (2011) for each type of equipment are presented in Table 6. Productivity curves were also developed from Caterpillar (2011) and are described in Appendix B.4 and B.5.
- **Haul Distances:** Haul distances are calculated along a preferred route and assumed to originate at the approximate centroid of the source and terminate at the approximate centroid of the reclamation area. A maximum of three segments are used for each haul route.
- **Borrow Areas:** The borrow areas will be the current Lube Shop area and a portion of the 5A stockpile. If necessary, the 9A stockpile may also be used as a borrow area. Separate line items for borrow area reclamation are not included in the estimate because: 1) the borrow areas will be reclaimed as part of the stockpile reclamation, and 2) removal of borrow material from the Lube Shop area will result in an open pit that will be incorporated into a future waiver area annual review.
- **Dozer Push Distances:** Dozer push distances represent the distance from the centroid of the cut block to the centroid of the fill block.
- **Truck and Shovel Operations:** All truck and shovel operations (pullbacks and backfill operations) will be completed using a Hitachi EX3600-5 hydraulic shovel and Komatsu HD1500-5 mechanical rear dump truck.
- **Dust Suppression and Site Maintenance:** A full time water truck and a motor grader are included as part of the fleet during reclamation. The water truck and grader time was set equal to loader time (Costs located near the bottom of Sheet 13).
- **Vegetation Unit Costs:** The vegetation unit cost was based on a quote obtained on March 27, 2012 from Rocky Mountain Reclamation of Laramie, WY, and includes: scarifying, discing, rangeland drill seeding, mulching, crimping, and daily per diem (Table 4 and Sheets 14, 19 and Demolition Sheet 3).
- **Rip Rap Production:** The rip rap unit cost was developed based on experience gained producing rip rap at the McCain Springs Quarry (Sheet 15). Supporting documentation is included in Appendix B.6.
- **Miscellaneous Unit Costs:** Miscellaneous unit costs were taken from several sources including R.S. Means Heavy Construction Cost Data Edition 26 (R.S. Means, 2012). All costs taken from R.S. Means were adjusted using the location factor for Las Cruces (84.4%). Miscellaneous unit costs are summarized on Table 5 and used on Sheets 15 and 20, and Demolition Sheets 1 and 2. Supporting documentation is included in Appendix B.6.

- **Well and Exploration Abandonment:** The well abandonment and exploration hole abandonment unit costs are based on MMD Guidance for wet drill holes (MMD, 2009; Appendix B.7, Table 5, Sheet 15).
- **Well Installation:** The well installation unit costs are based on a proposal received by Telesto from Wilcox Professional Services (Sheet 15).

2.0 TAILING DAMS

Reclamation work has been completed for the 1, 1A, 1X, 2, 3, 3 X, and Burro Mountain tailing dams. However, portions of the 1, 1A, 2, 3, and 3X Dams have less than 3 feet of cover. It was assumed that tailing cover maintenance for all the dams was initiated following completion seeding of the 1, 1A, 1X and 2 tailing dams in 2009 and will continue through 2021 (12 years). Thus, assuming reclamation will start in 2015, 7 years of tailing cover maintenance has been added to the operations and maintenance costs to address cover specific maintenance on dams for areas that have less than 3 feet of cover.

- **Cover Maintenance:** 90 days/year for Years 0 and 1, and 60 days/year for Years 2 to 6 (Sheet 20).

Erosion control, road maintenance, and vegetation maintenance costs are included for all tailing dams. These costs are described in Section 7. The vegetation maintenance and tailing cover maintenance costs are included in Table 3.

3.0 STOCKPILES

The conceptual designs and associated earthwork cost estimate presented in the CCP for the stockpiles are based on an overall outslope gradient of 3.5H:1V, 32-foot wide terrace benches, and 200-foot inter-bench slope lengths to allow for flexibility in the final design of the terrace benches and associated surface water conveyance channels. With these designs, the inter-bench slope is 3H:1V.

Stockpile surfaces targeted for reclamation under this plan include all top surfaces and outslopes of leach and waste stockpiles that are located outside the OPSDA. Most outslopes within the OPSDA will not be reclaimed. The 2A interior slope, and the 7B

interior slope are exceptions and are included in this cost estimate in accordance with the requirements of the 2012 conditional waiver (MMD, 2012). The top surfaces of leach stockpiles, waste rock piles, and other level areas of significant size within the open pit surface drainage areas will be regraded to a slope of 1% to 5%, covered, and seeded. Runoff from un-reclaimed slopes (impacted water) within the OPSDA will be diverted by gravity around reclaimed surfaces to the bottom of a pit such that impacted water does not adversely affect any reclaimed areas.

Tyrone has applied for, and has received conditional approval of, a reclamation waiver for the following interior-facing stockpile outslopes, located within the OPSDA:

- 1A 1B Leach
- 2B Waste
- 2C 4A Leach
- 3B Waste
- 6B 6C Leach
- Copper Mountain Stockpile interior outslope.

The main activities that will occur in closing the stockpiles inside the OPSDA include:

- Regrading top surfaces only (Sheet 5 and 13).
- Hauling and grading cover material for the top surfaces (Sheet 6, 9, 10, 13).
- Completing surface water channels to route storm water from the stockpile top surfaces (Sheet 15, Appendix B.8).
- Scarification and vegetation of covered areas (Sheet 14).

The main activities that will occur in closing stockpiles outside the OPSDA include:

- Regrading top surfaces and outslopes (Sheet 5 and 13).
- Hauling and grading cover material (Sheet 6, 9, 10, 13).
- Completing surface water channels to route storm water from the stockpile (Sheet 15, Appendix B.8).
- Scarification and vegetation of covered areas (Sheet 14).

The major assumptions for this cost estimate for areas to be closed include:

- **Engineering:** Slopes: 200-foot maximum interbench slope length, 3H:1V interbench slopes, 1% minimum top surface slope.
- **Terrace benches:** 32-foot bench width, 5.0% maximum cross-bench slope, 2.0% longitudinal bench slope and 3-feet of Gila.

- **Terrace Channels:** 2% longitudinal slope, 6-inches of gravel underlain by 3-feet of Gila.
- **Diversions:** maximum 5% longitudinal slope, 1-foot of riprap over 6-inches of gravel bedding underlain by 3-feet of Gila.
- **Down drains:** 2-feet of riprap over 1-foot of 4.5-inch rock, 6-inches of gravel bedding underlain by 3-feet of Gila.
- **Cover:** 36-inch cover thickness – tops and outslopes.
- **Truck and Shovel:** Trucks and loaders with dozer assist perform pullback of stockpile material at the 3A/3B stockpile.
- **Cover Placement:** Trucks and loaders with dozer assist perform all cover loading and distribution. The economic optimum number of trucks per loader is used for each haul route.
- **Vegetation and Scarification:** Scarifying of the final surface is performed at the same time as the vegetation and is included in the vegetation quote.
- **Well Replacement and Abandonment:** Replace 3 monitoring wells (286-2008-04, 286-2008--05, 286-2008--06), plug and abandon 2-inch, 4-inch and 6-inch wells covered during reclamation (Sheet 15). Plugging exploration holes are also included in the estimate, and described in Section 6.1.
- **Seepage Collection System Replacement:** Replacement of collection systems covered by stockpile grading.
- **Dust Suppression/Road Maintenance:** Full time water truck and motor grader during reclamation.
- **Haul Roads:** 36-inches of cover, and vegetation are included for the haul road crossing the top of the 1C stockpile area. The Lube Shop area haul road will be removed as part of borrow material excavation. All other haul roads are being covered by regrading.

4.0 OPEN PITS

The Main, West Main, Valencia, Savanna, and Gettysburg pits are contiguous open pits. These pits have been granted a conditional waiver from the requirement of achieving a self-sustaining ecosystem (SSE), and will not be reclaimed other than installation of public safety measures. Where stockpiles have been placed inside a pit such as at the Savanna Pit, then the estimated cost to reclaim that feature's level area is included in this estimate. The Copper Mountain Pit has also been granted a conditional waiver from the requirement of achieving a SSE, and interior reclamation is not included in this cost estimate.

The main activities that will occur in closing the Main, Valencia, Savanna, Gettysburg, and Copper Mountain open pits include:

- **Fencing:** 6-foot high chain link fence around the perimeter of the high wall to satisfy public safety requirements (Sheet 15, Table 5). Vehicle gates are assumed at 1-mile intervals and warning signs posted every 500 feet for this estimate.

The San Salvador Pit is projected to be partially backfilled at the end of 2014 and costs for finishing the backfilling, and reclaiming the pit backfill surface, projected to exist at that time, are included in the estimate. Backfilling of the South Rim Pit is projected to be completed prior to 2014. The South Rim Pit will then become part of 2C, 4A, 7B, and 4B stockpile which, is included in the estimate. The Savanna Pit will be partially backfilled by 2014 as part of the mine plan. Costs to reclaim the Savanna In-pit Stockpile, projected to exist at that time, are included in the estimate.

The main activities that will occur in closing the Savanna In-pit Stockpile and the San Salvador Pit include:

- **Engineering:** 32-foot wide benches, 200-foot maximum interbench slope length, 1% minimum top surface slope, 5.0% max cross-bench slope, 2.0% longitudinal bench slope.
- **Cover:** 36-inch cover on benches, and regraded surfaces.
- **Regrade/backfill:** Grading and backfill will be done in a manner that ensures positive drainage from areas to be covered and vegetated, and eliminate, to the extent practicable, ponding on final cover surfaces.
- **Truck and Shovel:** Trucks and shovel with dozer assist to finish backfill of San Salvador Pit.
- **Cover Placement:** Trucks and loaders with dozer assist perform all cover loading and distribution. The economic optimum number of trucks per loader is used for each haul route.
- **Vegetation and Scarifying:** Scarifying of the final surface is performed at the same time as the vegetation and is included in the vegetation quote.
- **Dust Suppression/Road Maintenance:** Full time water truck and motor grader during reclamation.

Runoff from un-reclaimed slopes (impacted water) within the OPSDA will be diverted by gravity around reclaimed surfaces to the bottom of a pit such that impacted water does not adversely affect any reclaimed areas.

5.0 BUILDING DEMOLITION

A number of facilities will be used for industrial Post Mining Land Use (PMLU). Those facilities not designated for industrial PMLU will be demolished, removed, and/or buried or otherwise closed in accordance with an approved plan. Demolition costs to take down buildings and other miscellaneous structures upon closure have been included in a standalone calculation sheet (Tyrone_Demolition_2012.xlsx). Assumptions for this cost estimate include:

- All equipment and above-grade structures will be demolished and removed from the area or buried (Demolition Sheet 1).
- Debris will be placed either into the stockpiles or the construction and demolition landfill.
- Demolition debris will be covered with 36-inches of borrow material (Demolition Sheet 2).
- Demolition areas, not already covered by stockpile regrading, will be covered (36”), scarified and vegetated (Demolition Sheets 2 and 3).
- Salvage value for all structures and equipment is zero.

Appendix C provides the information for the demolition cost estimate.

6.0 OTHER MISCELLANEOUS COSTS

This category includes miscellaneous estimated closure costs such as abandonment of exploration holes and wells, fencing, utility demolition, replacement of the 3A stockpile seepage collection systems covered by regrading, surface impoundments and small collection systems that will need to be replaced following stockpile regrading, unplanned disturbed areas, pipelines, and pipeline demolition. Appendix B and Table 5 provide the support for the other miscellaneous unit cost estimates.

6.1 Exploration Holes and Wells

Costs are included for the abandonment of all monitoring and extraction wells. As of the EOY 2014, there are estimated to be 124 exploration holes potentially available for plugging and 162 wells that will be plugged and covered by grading (Sheet 15). In

addition, there are 522 wells not covered by grading that will be abandoned post closure. It was assumed that 94 are extraction wells and 282 monitoring wells (3 monitoring wells per extraction well) abandoned at year 99. It was assumed that the remaining 146 wells will be abandoned at year 20. See Appendix C for a list of the wells to be abandoned. Exploration hole plugging and well abandonment unit cost estimates are based on MMD guidance for abandoning wet drill holes (MMD, 2009; Table 5).

Reclamation of the No. 3A Stockpile will cover several existing environmental monitoring and extraction wells located adjacent to the stockpile. Wells needed for continued monitoring of groundwater conditions or extraction and hydraulic containment of impacted groundwater will be placed outside of the reclaimed stockpile footprint. Specifically, extraction wells 286-2008-04 and 286-2008-05, which remove impacted groundwater originating from the Canyon 6 area, will be replaced. Monitoring well 286-2008-06 will also be replaced to allow for continued monitoring of potential perched seepage in Canyon 11 (Sheet 15; Appendix C, Appendix B.7). Replaced wells will be abandoned at year 99.

6.2 Utility Demolition

Utilities serving buildings to be demolished are included in the estimate (Sheet 2 Demo) and include:

- Power Poles
- Powerlines
- Telephone Lines
- Light Poles
- Fire Hydrants.

Powerlines to be demolished include existing powerlines not used for PMLU and the proposed 4160V powerline to the 1X1 pump station. Buried powerlines are assumed to be de-energized and left in place and are not included in the cost estimate.

6.3 No. 3A Stockpile Seepage Collection Systems

Regrading of the No. 3A Stockpile will require construction of new seepage collection facilities in Canyons 5, 6, 7, 8, 10, and 11, and breaching the existing HDPE-lined seepage collection trenches located within the future footprint of the stockpile. These costs have been included in the estimate for the 3A Stockpile (Sheet 15).

6.4 Surface Impoundments and Small Collection Systems

Cost for surface impoundments and small collection systems covered as part of regrading operations will be buried in-place as part of regrading operations. Facilities to be covered include the Lube Shop Pond, 5E Pond 1, Niagara Stormwater, No. 1A Stormwater Pond, and No. 2A (Seep 5E Pond Discharge). The Seep 5E Collection system will be covered during regrading but is needed for PMLU. Therefore, replacement costs are included in the estimate for the Seep 5E Collection System.

Costs are included in the estimate to close surface impoundments used during post closure at year 99. Copper Mountain Pit Sump, Gettysburg Collection Pit, the Main Pit sump, and the Crusher Pond will stay in place after year 99 and are not included in the estimate. Surface impoundments and collection system takeoffs are included in Appendix C. The 2A West and 2A East PLS tanks will be used for process solution elimination and will be demolished six years after the start of closure. The 1A and 1B PLS Tanks are needed for post closure water treatment and will be demolished at year 99. Demolishing costs for these tanks are included on Sheet 2 Demo.

The main activities that will occur in closing surface impoundments include:

- **Ripping, Grading, Cover, and Vegetation:** For impoundments not covered by grading, liners will be ripped and buried in place, the area graded to drain, covered with 36-inches of cover material, and vegetated. For impoundments covered by stockpile grading, liners will be ripped and buried in place. Costs for regrading, cover, and vegetation of these impoundments are included in the associated stockpile reclamation costs. (Sheet 13 and 14)

- **Replace:** Replace four collection systems 50 feet long, 15 feet deep and 2 feet wide. (Sheet 15)

6.5 Unplanned Disturbed Areas

Tyrone is including additional costs in the CCP earthwork cost estimate to account for the dynamic nature of mining. This approach is intended to allow for greater flexibility in meeting the mine planning schedule and reduce the number of financial assurance amendments. Unplanned disturbed areas may include small staging areas, utility corridors, haul roads, pull-offs, stockpile expansions, or other miscellaneous unforeseen changes in the mine plan. The unplanned disturbed area reclamation cost (Table 3) was calculated assuming a reclamation area of 125 acres and the following reclamation activities:

- **Regrade:** Grading will be done in a manner that ensures positive drainage away from areas to be reclaimed. (Sheet 6)
- **Cover:** 36-inch cover on regraded surfaces. (Sheet 5, 9, and 10)
- **Cover Placement:** Trucks and loaders with dozer assist perform all cover loading and distribution. The economic optimum number of trucks per loader is used for the assumed haul route. (Sheet 5,9, and 10)
- **Vegetation and Scarifying:** Scarifying of the final surface is performed at the same time as the vegetation and is included in the vegetation quote. (Sheet 14)
- **Dust Suppression/Road Maintenance:** Full time water truck and motor grader during reclamation. (Sheet 13)

6.6 Pipelines

Cost are included in the estimate for surface pipelines which will be dismantled and stockpiled for PMLU use or hauled to a nearby construction and debris landfill. Pipelines covered by stockpile regrading will be buried in-place as part of regrading operations. Subsurface pipelines which will be drained, capped and left in place. Subsurface fresh water pipelines require no special measures and will remain in-place. The following pipeline demolition costs are included in the estimate:

- PLS and raffinate pipelines located outside the stockpile regrade footprint will be used for process solution elimination and will be demolished 6 years after the start of closure (Sheet 2 Demo).
- Sewer pipelines (closed 6-years after closure; Sheet 2 Demo)

- Pipelines used for post closure water treatment will be demolished at year 99. (Sheet 2 Demo)

Pipeline takeoffs are included in Appendix C.

7.0 OPERATIONS AND MAINTENANCE

Operations and maintenance estimated costs relate to periodic erosion control, road maintenance, and vegetation maintenance have been included in a standalone calculation sheet (Tyrone_Bond_O&M_2012.xls). Operations and maintenance costs are assumed to diminish with time and are allocated over time periods of years 0 to 19, years 20 to 39, and years 40 to 99. Assumptions for this cost estimate include:

Years 0-19:

Erosion Control: 30 days/year (Sheet 20)

Road Maintenance: Monthly during the monsoon season (Sheet 20)

Vegetation Maintenance: 2% failure every year for a total of 12 years, starting the year reclamation is completed (Sheet 19).

Years 20-39:

Erosion Control: 24 days/year (Sheet 20)

Road Maintenance: Monthly during the monsoon season (Sheet 20).

Years 40-99:

Erosion Control: 15 days/year (Sheet 20)

Road Maintenance: Monthly during the monsoon season (Sheet 20).

Based on observations of previously reclaimed areas, the annual vegetation failure is conservatively estimated to be 2% per year for 12 years. Vegetation maintenance takes into account the number of years that have already passed since reclamation was completed for items that have already been reclaimed. For example, reclamation of the Burro Mountain tailing dam was completed in 2004 and vegetation maintenance will be completed in 2016. Thus, the last 2 years of vegetation maintenance are included in the estimate for the Burro Mountain tailing dam.

Also included are tailing cover maintenance only for dams with less than 3 feet of cover, as described in Section 2.0.

- **Tailing Cover Maintenance:** 90 days/year for Years 0 and 1, and 60 days/year for Years 2 to 6 (Sheet 20).

8.0 COST ESTIMATE

The total current dollar cost for reclamation is estimated to be \$153,695,000. A summary of the estimate is provided in Table 3. The costs presented in this estimate are current (2012) dollar costs, a net present value calculation will be presented separately which will include water treatment costs.

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TABLES

Table 1 Cost Estimate Worksheet Sheet Descriptions

Tyrone_Stockpiles_2012.xls	
General	Cover sheet.
2 Demo	Building demolition is included on a separate spreadsheet. Sheet 2 contains the costs for miscellaneous utility demolition.
3 Material	General overview of tasks, locations, and equipment.
4 Earthwork	General overview of material quantities.
5 Dozer	Task time calculation for regrading stockpiles and the dozer to assist the loader with loading cover material. The dozer is used to push-up material for ease of excavation by the loader and would maintain the working area of the loader. The dozer task time is equivalent to the calculated loader task time.
6 Grading	Task time calculation for grading surfaces and cover material.
7 Ripper	Ripper time is not calculated separately from vegetation in this earthwork cost estimate. Sheet 7 is used only for estimating the time to rip surface impoundment liners.
8 Excavator	Excavation in not utilized in this earthwork cost estimate. Sheet 8 is blank and remains to maintain consistency between different cost estimates.
9 Trucks	Task time calculation for hauling material.
10 Loader	Task time calculations for loading material.
11 Scraper	Scrapers are not utilized in this earthwork cost estimate. Sheet 11 is blank and remains to maintain consistency between different cost estimates.
12 M grader	Motor graders are utilized for dust suppression and site maintenance as well as post closure road maintenance. Motor grader use and task times are described further in Section 2. Motor grader costs are accounted for elsewhere in the estimate (13 EarthSum). Sheet 12 is blank and remains to maintain consistency between different cost estimates.
13 EarthSum	Earthwork indirect cost calculation summary. Utilizes the task times calculated in Sheets 5, 6, 9 and 10.
14 Vegetation	Vegetation indirect cost calculations, which include scarifying, discing, rangeland drill seeding, mulching, crimping, and daily per diem.
15 Other	Miscellaneous indirect cost calculations, which include costs for fencing, channels, benches, wells, exploration holes, and soil removal.
16 Sum	Total direct earthwork cost summation and indirect cost calculation based on the direct costs calculated on Sheets 13, 14 and 15.
17 Detailed Sum	Detailed summary of direct and indirect costs for each item.
18 Facility Characteristics	Capital cost per acre calculations for each item.
Tyrone_Demolition_2012.xlsx	
1 Demo	Building demolition cost calculation
2 Cover	Cover cost calculation for areas where soil was removed
3 Veg	Building footprint vegetation cost calculation
4 Sum	Total direct demolition cost summation and indirect cost calculation based on the direct costs calculated on Demolition Sheets 1-3.
Tyrone_Bond_O&M_2012.xls	
19 Veg Maintenance	Calculated the direct current dollar cost for maintaining vegetation on reclaimed surfaces.
20 O&M	Operations and Maintenance direct cost calculations for erosion control, road maintenance, and tailing cover maintenance.
21 Sum	Total current dollar operations and maintenance cost summation based on the costs calculated on Sheets 19 and 20.

Table 2 Reclamation Overview

Feature	Waiver	Notes
Tailings		
Remaining lauder line, and short run of tailings pipeline and associated features located northwest of tailing thickeners	-	Reclamation to be complete prior to EOY 2014 maintenance only
Tailing Series 1 (1, 1A, 1X)	-	Reclamation complete (spring/summer 2009); maintenance only
Tailing 2	-	Reclamation complete (spring/summer 2009); maintenance only
Tailing 3x	-	Reclamation complete (Dec. 2005); maintenance only
Tailing 3	-	Reclamation complete (Dec. 2006); maintenance only
Burro Mountain	-	Reclamation complete (Dec. 2004); maintenance only
Stockpiles		
1A and 1B	Reclamation waiver for outslopes within OPSDA	1A pullback and 1B buttressing to be complete prior to EOY 2014
2A and 2B	Reclamation waiver for 2B outslopes within OPSDA	2A interior slope will be reclaimed
3A and 3B	Reclamation waiver for 3B outslopes within OPSDA	
5A	-	Portion used as a reclamation cover borrow area
4C	-	-
2C, 4A, 7B, 4B	Reclamation waiver for 2C, 4A outslopes within OPSDA	7B interior slope within OPSDA will be reclaimed
6B and 6C	Reclamation waiver for outslopes within OPSDA	-
9A	-	Imported cover not required, may be used as a reclamation cover borrow area, regrade, construct stormwater runoff channels and vegetated
Copper Mountain Stockpile	Reclamation waiver for outslopes within OPSDA	-
8C	-	Used for long term sludge disposal area. Reclamation included in this estimate.
Lube Shop Area	-	Used as reclamation cover borrow area. Removal of borrow material will result in an open pit that will be incorporated into a future waiver area annual review.
1C	-	Reclamation complete (October 2012); maintenance only
7A	-	Reclamation complete (October 2012); maintenance only
Stockpile 1	-	Reclamation complete (Aug. 2009); maintenance only
Mill area south of Mangas Wash	-	Reclamation complete (22 acres Apr. 2007, 11 acres reseeded Aug. 2010); maintenance only
Copper Mountain Reclamation Area	-	Reclamation to be complete prior to EOY 2014 maintenance only
Pits		
South Rim Pit	-	Backfilled prior to EOY 2014; Becomes part of 2C, 4A, 7B, 4B stockpile
Copper Mountain Pit	Pit reclamation waiver	Requires public safety measures (fencing & signage)
San Salvador Pit	-	To be partially backfilled prior to EOY 2014; cost to complete backfilling & reclamation included in estimate
Savanna Pit	Pit reclamation waiver	To be partially backfilled as part of mine plan by EOY 2014; costs included for reclamation of the backfilled interior flat area (Savanna In-pit Stockpile)
Main/Valencia Pit	Pit reclamation waiver	Requires public safety measures (fencing & signage)
Gettysburg Pit	Pit reclamation waiver	Requires public safety measures (fencing & signage)

Table 3 Cost Estimate Summary

Item	Subtotal, Direct Costs	Subtotal, Indirect Costs 22.5% ¹	Total (Current Cost)
Stockpiles			
1A and 1B Leach	\$6,468,000	\$1,455,000	\$7,923,000
1C Top (Haul Raod)	\$266,000	\$60,000	\$326,000
2A Leach and 2B Waste ²	\$17,283,000	\$3,889,000	\$21,172,000
3A / 3B ¹	\$36,261,000	\$8,159,000	\$44,420,000
5A	\$10,942,000	\$2,462,000	\$13,404,000
4C	\$6,255,000	\$1,407,000	\$7,662,000
2C, 4A, 7B, 4B	\$10,935,000	\$2,460,000	\$13,396,000
8C Sludge Disposal Area	\$737,000	\$166,000	\$903,000
6B	\$1,201,000	\$270,000	\$1,472,000
6C	\$2,058,000	\$463,000	\$2,521,000
9A	\$963,000	\$217,000	\$1,180,000
Total	\$93,370,000	\$21,008,000	\$114,378,000
Pits			
San Salvador Pit	\$6,677,000	\$1,502,000	\$8,179,000
Savanna Pit	\$1,137,000	\$256,000	\$1,393,000
Fencing	\$1,117,000	\$251,000	\$1,369,000
Total	\$8,931,000	\$2,009,000	\$10,941,000
Other Disturbed Areas			
Utility Demolition	\$88,000	\$20,000	\$108,000
Surface Impoundments	\$343,000	\$77,000	\$420,000
Unplanned Disturbed Area	\$1,896,000	\$426,000	\$2,322,000
Pipeline Demolition	\$376,000	\$85,000	\$461,000
Total	\$2,703,000	\$608,000	\$3,311,000
Demolition			
Buildings	\$3,197,000	\$719,000	\$3,917,000
Cover	\$182,000	\$41,000	\$223,000
Vegetation	\$22,000	\$5,000	\$27,000
Total	\$3,402,000	\$765,000	\$4,167,000
Other			
Exploration Holes & Wells	\$892,000	\$201,000	\$1,093,000
Total	\$892,000	\$201,000	\$1,093,000
Total Capital Cost	\$109,297,000	\$24,592,000	\$133,889,000
O&M (Current Dollar)			
		17.5% ¹	
Road Maintenance	\$4,677,000	\$818,000	\$5,495,000
Erosion Control	\$9,111,000	\$1,594,000	\$10,705,000
Vegetation Maintenance	\$1,330,000	\$233,000	\$1,562,000
Tailing Cover Maintenance	\$1,739,000	\$304,000	\$2,043,000
Total	\$16,856,000	\$2,950,000	\$19,806,000
Total Including O&M	\$126,154,000	\$27,542,000	\$153,695,000

¹. Indirect cost percentages are identical to the percentages presented to MMD and the NMED in meetings with Tyrone on September 20,2012, and on November 2, 2012.

² Includes stockpile collection systems

Table 4 Fuel, Labor and Equipment Unit Costs

Parameter	Value	Comment
Vegetation	\$1,106.12/acre	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying surface
Fuel	3.13/gal	2. Western Refining, Lordsburg NM (July 5, 2012).
Dozer Operator	\$47.70/hr	Based on NM DOL Rates
Excavator Operator	\$48.05/hr	Based on NM DOL Rates
Mechanic	\$47.19/hr	Based on NM DOL Rates
Haul Truck Operator	\$42.93/hr	Base Rate 90% x Dozer Operator Base Rate
Truck Driver	\$25.77	Based on NM DOL Rates
Loader Operator	\$47.84/hr	Based on NM DOL Rates
Oilier	\$25.55/hr	Based on NM DOL Rates
Caterpillar D11R	\$421.80/hr	Standard Crawler Dozer
Caterpillar D11R w/ Multishank Ripper	\$446.71/hr	Standard Crawler Dozer
Caterpillar D9T	\$225.39/hr	Standard Crawler Dozer
Caterpillar D7R DS LGP SERIES II	\$131.07/hr	Lgp Crawler Dozer
Caterpillar D6T LGP	\$105.63/hr	Lgp Crawler Dozer
Caterpillar 777F	\$284.62/hr	Mechanical Rear Dump
Caterpillar 992K	\$367.14/hr	4-WD Articulated Loader
Caterpillar 16M	\$152.96/hr	Articulated Frame Grader
Off-Highway Water Tanker Truck	\$169.93/hr	10,000 Gallon
On-Highway Light Duty Trucks	\$15.53/hr	1 ton, 4x4, 195 hp
Hitachi EX3600-5	\$839.96/hr	Hydraulic Shovel
Komatsu HD1500-5	\$283.53/hr	Mechanical Rear Dump

Description Notes: ⁽¹⁾ Sales Tax = 0%, Fuel = \$3.13/gal, Annual Use Hours increased as shown to correct for 50 min work hour.

Table 5 Miscellaneous Unit Costs

Activity	Base Unit Cost \$/unit	Units	Scaled Cost Las Cruces 84.4%%	Means Line Item	Means Page	Reference
Erosion Control Crew	5675.18	day	4789.85	Modified Crew B-13A	518	1 Foreman, 2 laborers, 2 equip. operators, 2 truck drivers, 1 FE loader (4 cy), 2 dump trucks (12 ton)
Tailing Cover Maintenance Crew	4291.64	day	3622.14	Modified Crew B-13A	518	1 Foreman, 2 laborers, 1 equip. operators, 1 truck drivers, 1 FE loader (4 cy), 1 dump trucks (12 ton)
Riprap (Processed)	14.61	cy	-	-	-	The rip rap unit cost was developed based on experience gained producing rip rap at the McCain Springs Quarry (Sheet 15). Supporting documentation is included in Appendix B.6.
Chain link fence, pit perimeters	22.77	ft	19.22	323113.2-0800	312	Fence, chain link industrial, schedule 40, including concrete, 6 ga. wire, 6' high, but omit barbed wire, galv. Steel
Vehicle gates, pit perimeters	674	ea	568.86	323113.20-5070	312	Double swing gates, incl. Posts & hardware, in concrete, 6' high, 20' opening, in concrete
Signs every 500 ft, , pit perimeters	61.35	ea	51.78	101453.20-0600	142	Traffic Signs, Guide and directional signs 12" x 18" reflectorized
Down drain (stockpiles)	8.01	ft	-	-	-	Excavate and waste material on slopes with D11R, 175-foot downslope excavation, 200-foot lateral waste push. Finish grade with D6T, 175-foot typical push distance, unit volume per LF. Uses Operator Factor = 0.75 &. Appendix B.8.
Down drain Filter	5.14	cy	4.34	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
Down drain Riprap (Processed) - Haul	9.99	cy	8.43	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
Terrace Channel	3.37	ft	-	-	-	Excavate and waste material with D11R, 175-foot excavation, 200-foot lateral waste push. Finish grade with D6R, 175-foot typical push distance, unit volume per LF. Uses Operator Factor = 0.75. See attachment Channel Linear Foot Cost Appendix B.8.
Top/Outslope channel	8.99	ft	-	-	-	Excavate and waste material with D11R, 175-foot excavation, 200-foot lateral waste push. Finish grade with D6R, 175-foot typical push distance, unit volume per LF. Uses Operator Factor = 0.75. Appendix B.8.
Channel rip rap, haul	9.99	cy	8.43	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
Channel rip rap, backfill	1.14	cy	0.96	312323.14-5220	235	Gravel Backfill, 300 hp dozer & compactors, 150' haul, 6 lifts, 4 passes
Bench Grading	1.69	ft		-	-	Finish grade channel benches using D9R. Three passes per bench, 1 MPH operating speed. Grading benches 31 ft wide, 9.26 cy cut-to-fill/ft of bench Appendix B.8.
Powerline Demolition	0.63	ft	0.53	060505.1 0370	198	Nonmetallic sheathed cable 3 wire; assume similar enough in cost to overhead powerlines.
Powerpole Demolition	230.50	ea	194.54	024113.78 0200	36	wood utility poles 35-45 feet high
Structure Demolition 1	0.27	cf	0.23	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
Structure Demolition 2	17.34	sqft	14.63	133419.50-1100	149	Metal Building Systems, Pre-Engineered Steel Buildings, Clear span rigid frame, 26 ga. Colored roofing and siding 50'-100' wide, 24' eave height
Structure Demolition 3	5.43	cy	4.58	024116.17-0400	38	Building footing and foundation demolition 6" thick plain concrete
Storage Tank Demolition	1130	ea	953.72	130505.75-0530	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 5,000 thru 10,000 gallon
Storage Tank Demolition	2530		2135.32	130505.75-0540	152	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000 gallon
Road Maintenance Crew	12,003.82	month	-	-	-	3 days of road maintenance per month. Equipment Rates - Equipment Watch / Labor Rates NM DOL: Cat 16M motor grader, 10,000-gallon off-highway water tanker truck, mech. with truck, oiler with truck
Fire hydrant Demolition	439.50	ea	370.94	024113.33 0900	28	Minor site demolition; remove fire hydrants
Pipeline Demolition 20" - 36" plastic pipe	4.70	ft	3.97	024113.38 1900	29	Selective demolition water and sewer piping and fitting; excludes excavation plastic pipe 20" to 36" diameter
Plug & Abandon 6" Well	8.08	ft	-	-	-	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (remove 22.5% indirects & escalated 2009>2012 +7%). \$9.25/ft / (1+22.5%) * (1+7%). http://www.emnrd.state.nm.us/MMD/MARP/Documents/20090619_ReclamationCostGuidanceandExamples_Part3_4.pdf
Plug & Abandon 4" Well	3.59	ft	-	-	-	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (remove 22.5% indirects & escalated 2009>2012 +7%). \$9.25/ft / (1+22.5%) * (1+7%), scaled based on cross-sectional area (4"/6" well). http://www.emnrd.state.nm.us/MMD/MARP/Documents/20090619_ReclamationCostGuidanceandExamples_Part3_4.pdf
Plug & Abandon 2" Well	0.90	ft	-	-	-	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (remove 22.5% indirects & escalated 2009>2012 +7%). \$9.25/ft / (1+22.5%) * (1+7%), scaled based on cross-sectional area. (2"/6" well) http://www.emnrd.state.nm.us/MMD/MARP/Documents/20090619_ReclamationCostGuidanceandExamples_Part3_4.pdf
Plug Exploration Hole	\$7.21	ft	-	-	-	Unit cost based on NM EMNRD MMD Guidance for wet drill holes 501-1000 ft (remove 22.5% indirects & escalated 2009>2012 +7%). \$8.25/ft / (1+22.5%) * (1+7%) = \$7.21/ft. http://www.emnrd.state.nm.us/MMD/MARP/Documents/20090619_ReclamationCostGuidanceandExamples_Part3_4.pdf
Replacement Well	\$58.99	ft	-	-	-	Wilcox Professional Services, 8/2011, est. cost for 5 1/2" bore, \$173,500 for 3000 ft total (\$57.83/ft). Escalated 2% 2011-2012 = \$58.99/ft
3A Seepage Collection System	See estimate (Sheet 15)	ls	-	-	-	See Sheet 15; Costs obtained from Golder Associates, Inc. Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.
Replacement Seepage Collection System	\$19,271	ls	-	-	-	Costs based on Golder Associates, Inc. Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates. Seep 5E Collection system

Table 6 Equipment Production Factors

Parameter	Value	Comment/Reference			
Swell Factor Stockpiles ⁽¹⁾	0% Pushdown, load & haul cover	Cover material volumes are calculated based on the reclaimed area and the cover depth. Thus, a swell factor is not needed to calculate this cost. No virgin materials are being regraded as part of closure. Thus a swell factor is not applied when regrading material.			
Regrading (D11R)					
Operator Factor ⁽¹⁾	1.0 Stockpile coarse grading 0.75 Cover & channel fine grading	-			
Material Factor	1.2 - Stockpile 1.2 - Cover	-			
Work Hour	50 min Stockpile	-			
Grade Factor – Tops	1.0 - Stockpile	-			
Grade Factor - Outslopes ⁽¹⁾	1.6 - Stockpile	1.6 – 3H:1V Slopes			
Soil Weight	3300 lb/cy Stockpile 2900 lb/cy Gila Conglomerate	-			
Production Method/ Blade Factor	1.2 – Slot 1 – Channels/Down drains/Benches	-			
Visibility Factor	1.0	Clear (CPH 41, 1-56)			
Elevation Factor	1.0	(CPH 41, 27-5)			
Direct Drive Transmission	1.0	-			
Grading (D11R)					
Material	1.2 –Stockpile 1.2 - Cover	CPH 41, 1-56, Loose stockpile			
Grade ⁽¹⁾	1.6 - Stockpile	1.66 – 33% Slopes, CPH 41, 1-56			
Soil Weight (lb/cy)	3300 lb/cy Stockpile 2900 lb/cy Gila Conglomerate	-			
Production Method/Blade	1.2 – Slot 1 – Channels/Down drains/Benches	(CPH 41, 1-56, slot dozing)			
Effective Blade Width (feet)	20.83 D11R Universal Blade 14.17 D9T Semi Universal Blade 14.75 D7R Series II Straight Blade	Cover (CPH 38, 1-39) Channels (CPH 41, 1-48) Channels (CPH 41, 1-46)			
Speed (miles/hr)	1 D11R 1 D9T 1 D7R LGP Series II		D11R ¹ (mph)	D9T ² (mph)	D7R ³ (mph)
		F/R 1 st	2.5/3.0	2.4/2.9	2.2/2.9
		F/R 2 nd	4.4/5.2	4.2/5.2	3.8/5.0
		F/R 3 rd	7.5/9.0	7.3/8.9	6.7/8.6
¹ CPH 38, 1-18 ² CPH 41, 1-24 ³ CPH 41, 1-23					
Operator	0.75 Cover Soil/	(CPH 41, 1-56, average)			
Work Hour (min/hr)	50	-			
Visibility	1	Clear (CPH 41, 1-56)			
Elevation	1	(CPH 41, 27-5)			
Direct Drive Trans.	1	-			
Ripper					
Ripping Length (ft)	100	-			
Penetration (in)	18	-			
Pocket Spacing (in)	69	(CPH 38, 1-58)			
Number of Pockets	3	(CPH 38, 1-58)			
Turn Time (min/pass)	0.25	-			
Speed (mph)	1	-			
Work Hour (min/hr)	50	-			
Distance between passes (in)	69	Maintain pocket spacing between passes			
Loader (992K)					
Net Bucket Capacity (cy)	16.00	(CPH 41, 12-134, Standard, 3000 lb/yd3)			
Loader Cycle Time (min)	0.65	Use D11R dozer assist while loading cover (CPH 41, 12-112) Avg 0.6-0.7			
Bucket Fill Factor	.875	(CPH 41, 12-113) Avg 0.85-0.90 Loose Material 1” and over			
Work Hour (min/hr)	50	-			
Shovel (Hitachi EX3600-5 / CAT 5230B FS) ⁽²⁾					
Net Bucket Capacity (cy)	27.4	Equipment Watch Spec Sheet			
Loader Cycle Time (min)	0.45	(CPH 35, 4-236, 5230B FS)			
Bucket Fill Factor	1.025	(CPH 35, 4-236) Avg Rock-Earth Mix 100-105%			
Work Hour (min/hr)	50	-			
Trucks (CAT 777F)					
Struck Capacity (cy)	54.8	Equipment Watch Spec Sheet			
Heaped Capacity(cy)	78.6	(CPH 41, 9-6)			
Rolling Resistance (%)	2.5% Stockpile	(CPH 41, 27-1)			
Truck Exchange Time (min)	0.7	(CPH 41, 9-13) Avg. 0.6-0.8			
Dump/Maneuver Time (min)	1.1	(CPH 41, 9-13) Avg 1.0-1.2			
Work Hour (min/hr)	50	-			
Trucks (Komatsu HD1500-5/ CAT 785D) ⁽³⁾					
Struck Capacity HD1500-5 (cy)	71	Equipment Watch Spec Sheet			
Heaped Capacity HD1500-5 (cy)	102	Equipment Watch Spec Sheet			
Rolling Resistance (%)	2.5% Stockpile	(CPH 41, 27-1)			
Truck Exchange Time (min)	0.7	(CPH 41, 9-13) Avg. 0.6-0.8			
Dump/Maneuver Time (min)	1.1	(CPH 41, 9-13) Avg 1.0-1.2			
Work Hour (min/hr)	50	-			

CPH = Caterpillar Performance Handbook Edition 35, 38, 41 (Caterpillar, Inc. 2007, 2008, 2011)

⁽¹⁾ The swell and operator factors used are consistent with factors presented to MMD and NMED in meetings with Tyrone on June 11,2012, November 2, 2012, and a letter to MMD and NMED from Tyrone dated September 5, 2012 (Tyrone, 2012).

⁽²⁾ Performance information is unavailable for the Hitachi EX3600-5; therefore, performance information for the Caterpillar 5230B FS has been used.

⁽³⁾ Performance information is unavailable for the Komatsu HD1500-5; therefore, performance information for the Caterpillar 785D has been used.

EARTHWORK COST ESTIMATE
APPENDIX A
COST CALCULATION SUMMARIES

General Information

6/12/2013

Applicant		
Disturbed Surface Area (acres)	2784	
Type of Operation	Existing/Surface/Copper	
<i>Current value before escalation and discounting</i>	\$129,722,000	Stockpiles

Demolition

Building Demolition costs are addressed elsewhere. This sheet address other miscellaneous demolition costs.

Item	Activity	Quantity	Unit	Unit Cost (\$/unit)	Direct Item Cost (\$)	Reference	Means Line Item	Means Page	Description
Power line Demolition (3 PLS to 1x1 Pond installed 2012)		10,300	ft	0.53	\$5,477	Means	060505.1 0370		Nonmetallic sheathed cable 3 wire; assume similar enough in cost to 198 overhead power lines.
Power pole Demolition (3 PLS to 1x1 Pond installed 2012)		36	ea	194.54	\$7,004	Means	024113.78 0200		36 wood utility poles 35-45 feet high
Power line Demolition (San Salvador Pit)		5,222	ft	0.53	\$2,777	Means	060505.1 0370		Nonmetallic sheathed cable 3 wire; assume similar enough in cost to 198 overhead power lines.
Power pole Demolition (San Salvador Pit)		17	ea	194.54	\$3,307	Means	024113.78 0200		36 wood utility poles 35-45 feet high
Power lines to substations or spurs for buildings to be demolished		66,200	ft	0.53	\$35,200	Means	060505.1 0370		Nonmetallic sheathed cable 3 wire; assume similar enough in cost to 198 overhead power lines.
Power Poles to substations or spurs for buildings to be demolished		135	ea	194.54	\$26,263	Means	024113.78 0200		36 wood utility poles 35-45 feet high
Telephone Lines around buildings to be demolished		1,400	ft	0.53	\$744	Means	060505.1 0370		Nonmetallic sheathed cable 3 wire; assume similar enough in cost to 198 overhead power lines.
Light Poles around to be demolished buildings		13	ea	194.54	\$2,529	Means	024113.78 0200		36 wood utility poles 35-45 feet high
Fire Hydrants Mainly by SXEW		14	ea	370.94	\$5,193	Means	024113.33 0900		28 Minor Site Demolition; remove fire hydrants
Water Treatment Pipelines (Year 99 of Closure)	assume 20-36-inch diameter	74,500	ft	3.97	\$295,527	Means	024113.38 1900		Selective Demolition Water and Sewer Piping and Fitting; excludes 29 excavation plastic pipe 20" to 36" diameter
Sewer Pipelines (Year 6 of Closure)	assume 20-36-inch diameter	1,414	ft	3.97	\$5,609	Means	024113.38 1900		Selective Demolition Water and Sewer Piping and Fitting; excludes 29 excavation plastic pipe 20" to 36" diameter
PLS Pipelines (Year 6 of Closure)	assume 20-36-inch diameter	18,893	ft	3.97	\$74,945	Means	024113.38 1900		Selective Demolition Water and Sewer Piping and Fitting; excludes 29 excavation plastic pipe 20" to 36" diameter
2A East PLS Tank and 2A West PLS Tank (Year 6 of Closure)	Tank Demolition	2	ea	3,238.59	\$6,477	Means	130505.75-0540		Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000; scaled for a 45,500 gal tank - 152 assuming 22 ft diameter and 16 ft high
1A and 1B PLS Tanks (Year 99 of Closure)	Tank Demolition	2	ea	3,238.59	\$6,477	Means	130505.75-0540		Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000 gal; scaled for a 45,500 gal tank - 152 - assuming 22 ft diameter and 16 ft high
				Pipeline Demolition	\$376,080				
				Utility Demolition	\$88,494	\$88,000			
				Surface Impoundments	\$12,954				
				Total Direct Cost:	\$477,528				

Data Sources:
RS Means Heavy Construction Cost Data (21st Annual Edition 2007)

Location adjustment:
New Mexico 880 Las Cruces

84.4%

Tyrone_Stockpiles_2012.xls
Worksheet #3
Page 3 of 24

Item	Description	Location 1	Location 2	Total Haul/Push Distance (ft)	Grade (%)	Equipment
1224	Haul stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outslopes	3,900	See Sheet 9 Trucks	HD1500-5
1225	Haul stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	1,300	See Sheet 9 Trucks	HD1500-5
1226	Haul cover soil	Gila Borrow Area	1A and 1B Leach Top	6,260	See Sheet 9 Trucks	777F
1227	Haul cover soil	Gila Borrow Area	1A and 1B Leach Outslopes	6,260	See Sheet 9 Trucks	777F
1228	Haul cover soil	Gila Borrow Area	1C Top (Haul Road)	11,833	See Sheet 9 Trucks	777F
1229	Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	19,300	See Sheet 9 Trucks	777F
1230	Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Outslopes	19,300	See Sheet 9 Trucks	777F
1231	Haul cover soil	Gila Borrow Area	3A / 3B Top	11,221	See Sheet 9 Trucks	777F
1232	Haul cover soil	Gila Borrow Area	3A / 3B Outslopes	11,221	See Sheet 9 Trucks	777F
1233	Haul cover soil	Gila Borrow Area	5A Top	4,750	See Sheet 9 Trucks	777F
1234	Haul cover soil	Gila Borrow Area	5A Outslopes	4,750	See Sheet 9 Trucks	777F
1235	Haul cover soil	Gila Borrow Area	San Salvador Pit	12,570	See Sheet 9 Trucks	777F
1236	Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	5,730	See Sheet 9 Trucks	777F
1237	Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	5,730	See Sheet 9 Trucks	777F
1238	Haul cover soil	Gila Borrow Area	4C Top	17,830	See Sheet 9 Trucks	777F
1239	Haul cover soil	Gila Borrow Area	4C Outslopes	17,830	See Sheet 9 Trucks	777F
1240	Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	13,990	See Sheet 9 Trucks	777F
1241	Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outslopes	13,990	See Sheet 9 Trucks	777F
1242	Haul cover soil	Gila Borrow Area	8C sludge disposal area	5,730	See Sheet 9 Trucks	777F
1243	Haul cover soil	Gila Borrow Area	6B Top	10,050	See Sheet 9 Trucks	777F
1244	Haul cover soil	Gila Borrow Area	6B Outslopes	10,050	See Sheet 9 Trucks	777F
1245	Haul cover soil	Gila Borrow Area	6C Top	11,833	See Sheet 9 Trucks	777F
1246	Haul cover soil	Gila Borrow Area	6C Outslopes	11,833	See Sheet 9 Trucks	777F
1247	Haul cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	10,669	See Sheet 9 Trucks	777F
1248	Haul cover soil	Gila Borrow Area	Unplanned Disturbed Area	10,669	See Sheet 9 Trucks	777F
1301	Grade Surface	8C sludge disposal area	-			D11R
1302	Grade Surface	Surface Impoundments closed at year 99; some closed year 6	-			D11R
1303	Grade Surface	Unplanned Disturbed Area	-			D11R
1304	Grade cover soil	1A and 1B Leach Top	-			D11R
1305	Grade cover soil	1A and 1B Leach Outslopes	-			D11R
1306	Grade cover soil	1C Top (Haul Road)	-			D11R
1307	Grade cover soil	2A Leach and 2B Waste Top	-			D11R
1308	Grade cover soil	2A Leach and 2B Waste Outslopes	-			D11R
1309	Grade cover soil	3A / 3B Top	-			D11R
1310	Grade cover soil	3A / 3B Outslopes	-			D11R
1311	Grade cover soil	5A Top	-			D11R
1312	Grade cover soil	5A Outslopes	-			D11R
1313	Grade cover soil	San Salvador Pit	-			D11R
1314	Grade cover soil	Savanna In-Pit Stockpile Top	-			D11R
1315	Grade cover soil	Savanna In-Pit Stockpile Outslope	-			D11R
1316	Grade cover soil	4C Top	-			D11R
1317	Grade cover soil	4C Outslopes	-			D11R
1318	Grade cover soil	2C, 4A, 7B, 4B Top	-			D11R
1319	Grade cover soil	2C, 4A, 7B, 4B Outslopes	-			D11R
1320	Grade cover soil	8C sludge disposal area	-			D11R
1321	Grade cover soil	6B Top	-			D11R
1322	Grade cover soil	6B Outslopes	-			D11R
1323	Grade cover soil	6C Top	-			D11R
1324	Grade cover soil	6C Outslopes	-			D11R
1325	Grade cover soil	Surface Impoundments closed at year 99; some closed year 6	-			D11R
1326	Grade cover soil	Unplanned Disturbed Area	-			D11R
1500	Rip Impoundment Liners	Surface Impoundments closed at year 99; some closed year 6	-	100	-	D11R
1501	Rip Impoundment Liners	Surface Impoundments graded over at closure	-	100	-	D11R
1700		Gila Borrow Area	-			
Other						
1800	Off-Hwy Water Tanker Truck					10,000 gal
1801	Motor Grader					16M

Item	Description	Location 1	Location 2	Area (acres)	Cover Depth (inches)	Bank/stockpile Volume (cy)	Swell Factor (%)	Loose/stockpile Volume (cy)
1101	Regrade Outslopes	1A and 1B Leach	Outslopes			140,000	0%	140,000
1102	Regrade Outslopes	1A and 1B Leach Regrade benches from truck/shovel pullback	Outslopes			1,329,670	0%	1,329,670
1103	Regrade Outslopes	2A Leach and 2B Waste	Outslopes			8,060,000	0%	8,060,000
1104	Regrade Outslopes	3A / 3B	Outslopes			3,500,000	0%	3,500,000
1105	Regrade Outslopes	3A / 3B Regrade benches from truck/shovel pullback	Outslopes			1,590,064	0%	1,590,064
1106	Regrade Outslopes	5A	Outslopes			6,300,000	0%	6,300,000
1107	Regrade Outslopes	Savanna In-Pit Stockpile	Outslopes			135,000	0%	135,000
1108	Regrade Outslopes	4C	Outslopes			2,700,000	0%	2,700,000
1109	Regrade Outslopes	2C, 4A, 7B, 4B	Outslopes			2,300,000	0%	2,300,000
1110	Regrade Outslopes	6B	Outslopes			183,000	0%	183,000
1111	Regrade Outslopes	6C	Outslopes			650,000	0%	650,000
1112	Regrade Outslopes	9A Regrade benches from truck/shovel pullback	Outslopes			642,674	0%	642,674
1113	Regrade Top	1A and 1B Leach	Top			79,000	0%	79,000
1114	Regrade Top	2A Leach and 2B Waste	Top			143,000	0%	143,000
1115	Regrade Top	3A / 3B	Top			199,000	0%	199,000
1116	Regrade Top	5A	Top			413,000	0%	413,000
1117	Regrade Surface	San Salvador Pit	Surface			1,600,000	0%	1,600,000
1118	Regrade Top	Savanna In-Pit Stockpile	Outslopes			350,000	0%	350,000
1119	Regrade Top	4C	Top			67,000	0%	67,000
1120	Regrade Top	2C, 4A, 7B, 4B	Top			1,003,000	0%	1,003,000
1121	Regrade Top	6B	Top			147,000	0%	147,000
1122	Regrade Top	6C	Top			19,000	0%	19,000
1123	Regrade Top	9A	Top			40,000	0%	40,000
1124	Dozer Assist	3A / 3B	3A / 3B truck/shovel pullback Outslopes			17,500,000	0%	17,500,000
1125	Dozer Assist	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill			3,500,000	0%	3,500,000
1126	Dozer Assist	Gila Borrow Area	1A and 1B Leach Top			82,280	0%	82,280
1127	Dozer Assist	Gila Borrow Area	1A and 1B Leach Outslopes			1,239,040	0%	1,239,040
1128	Dozer Assist	Gila Borrow Area	1C Top (Haul Road)			82,300	0%	82,300
1129	Dozer Assist	Gila Borrow Area	2A Leach and 2B Waste Top			174,240	0%	174,240
1130	Dozer Assist	Gila Borrow Area	2A Leach and 2B Waste Outslopes			2,182,800	0%	2,182,800
1131	Dozer Assist	Gila Borrow Area	3A / 3B Top			159,720	0%	159,720
1132	Dozer Assist	Gila Borrow Area	3A / 3B Outslopes			2,042,480	0%	2,042,480
1133	Dozer Assist	Gila Borrow Area	5A Top			304,920	0%	304,920
1134	Dozer Assist	Gila Borrow Area	5A Outslopes			1,490,720	0%	1,490,720
1135	Dozer Assist	Gila Borrow Area	San Salvador Pit			556,600	0%	556,600
1136	Dozer Assist	Gila Borrow Area	Savanna In-Pit Stockpile Top			157,300	0%	157,300
1137	Dozer Assist	Gila Borrow Area	Savanna In-Pit Stockpile Outslope			157,300	0%	157,300
1138	Dozer Assist	Gila Borrow Area	4C Top			62,920	0%	62,920
1139	Dozer Assist	Gila Borrow Area	4C Outslopes			822,800	0%	822,800
1140	Dozer Assist	Gila Borrow Area	2C, 4A, 7B, 4B Top			609,840	0%	609,840
1141	Dozer Assist	Gila Borrow Area	2C, 4A, 7B, 4B Outslopes			1,205,160	0%	1,205,160
1142	Dozer Assist	Gila Borrow Area	8C sludge disposal area			229,222	0%	229,222
1143	Dozer Assist	Gila Borrow Area	6B Top			188,760	0%	188,760
1144	Dozer Assist	Gila Borrow Area	6B Outslopes			72,600	0%	72,600
1145	Dozer Assist	Gila Borrow Area	6C Top			48,400	0%	48,400
1146	Dozer Assist	Gila Borrow Area	6C Outslopes			271,040	0%	271,040
1147	Dozer Assist	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6			102,753	0%	102,753
1148	Dozer Assist	Gila Borrow Area	Unplanned Disturbed Area			605,000	0%	605,000
1201	Load stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outslopes	-	-	17,500,000	0%	17,500,000
1202	Load stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill		-	3,500,000	0%	3,500,000
1203	Load cover soil	Gila Borrow Area	1A and 1B Leach Top	17.0	36	82,280	0%	82,280
1204	Load cover soil	Gila Borrow Area	1A and 1B Leach Outslopes	256.0	36	1,239,040	0%	1,239,040
1205	Load cover soil	Gila Borrow Area	1C Top (Haul Road)	17.0	36	82,300	0%	82,300
1206	Load cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	36.0	36	174,240	0%	174,240
1207	Load cover soil	Gila Borrow Area	2A Leach and 2B Waste Outslopes	451.0	36	2,182,800	0%	2,182,800
1208	Load cover soil	Gila Borrow Area	3A / 3B Top	33.0	36	159,720	0%	159,720
1209	Load cover soil	Gila Borrow Area	3A / 3B Outslopes	422.0	36	2,042,480	0%	2,042,480
1210	Load cover soil	Gila Borrow Area	5A Top	63.0	36	304,920	0%	304,920
1211	Load cover soil	Gila Borrow Area	5A Outslopes	308.0	36	1,490,720	0%	1,490,720
1212	Load cover soil	Gila Borrow Area	San Salvador Pit	115.0	36	556,600	0%	556,600
1213	Load cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	32.5	36	157,300	0%	157,300
1214	Load cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	32.5	36	157,300	0%	157,300
1215	Load cover soil	Gila Borrow Area	4C Top	13.0	36	62,920	0%	62,920
1216	Load cover soil	Gila Borrow Area	4C Outslopes	170.0	36	822,800	0%	822,800
1217	Load cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	126.0	36	609,840	0%	609,840
1218	Load cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outslopes	249.0	36	1,205,160	0%	1,205,160
1219	Load cover soil	Gila Borrow Area	8C sludge disposal area	47.4	36	229,222	0%	229,222
1220	Load cover soil	Gila Borrow Area	6B Top	39.0	36	188,760	0%	188,760
1221	Load cover soil	Gila Borrow Area	6B Outslopes	15.0	36	72,600	0%	72,600
1222	Load cover soil	Gila Borrow Area	6C Top	10.0	36	48,400	0%	48,400
1223	Load cover soil	Gila Borrow Area	6C Outslopes	56.0	36	271,040	0%	271,040
1224	Load cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	21.2	36	102,753	0%	102,753
1225	Load cover soil	Gila Borrow Area	Unplanned Disturbed Area	125.0	36	605,000	0%	605,000

Item	Description	Location 1	Location 2					
				Area (acres)	Cover Depth (inches)	Bank/stockpile Volume (cy)	Swell Factor (%)	Loose/stockpile Volume (cy)
1224	Haul stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outslopes			17,500,000	0%	17,500,000
1225	Haul stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill			3,500,000	0%	3,500,000
1226	Haul cover soil	Gila Borrow Area	1A and 1B Leach Top			82,280	0%	82,280
1227	Haul cover soil	Gila Borrow Area	1A and 1B Leach Outslopes			1,239,040	0%	1,239,040
1228	Haul cover soil	Gila Borrow Area	1C Top (Haul Road)			82,300	0%	82,300
1229	Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Top			174,240	0%	174,240
1230	Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Outslopes			2,182,800	0%	2,182,800
1231	Haul cover soil	Gila Borrow Area	3A / 3B Top			159,720	0%	159,720
1232	Haul cover soil	Gila Borrow Area	3A / 3B Outslopes			2,042,480	0%	2,042,480
1233	Haul cover soil	Gila Borrow Area	5A Top			304,920	0%	304,920
1234	Haul cover soil	Gila Borrow Area	5A Outslopes			1,490,720	0%	1,490,720
1235	Haul cover soil	Gila Borrow Area	San Salvador Pit			556,600	0%	556,600
1236	Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top			157,300	0%	157,300
1237	Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope			157,300	0%	157,300
1238	Haul cover soil	Gila Borrow Area	4C Top			62,920	0%	62,920
1239	Haul cover soil	Gila Borrow Area	4C Outslopes			822,800	0%	822,800
1240	Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top			609,840	0%	609,840
1241	Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outslopes			1,205,160	0%	1,205,160
1242	Haul cover soil	Gila Borrow Area	8C sludge disposal area			229,222	0%	229,222
1243	Haul cover soil	Gila Borrow Area	6B Top			188,760	0%	188,760
1244	Haul cover soil	Gila Borrow Area	6B Outslopes			72,600	0%	72,600
1245	Haul cover soil	Gila Borrow Area	6C Top			48,400	0%	48,400
1246	Haul cover soil	Gila Borrow Area	6C Outslopes			271,040	0%	271,040
1247	Haul cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6			102,753	0%	102,753
1248	Haul cover soil	Gila Borrow Area	Unplanned Disturbed Area			605,000	0%	605,000
1301	Grade Surface	8C sludge disposal area	-	47.4				
1302	Grade Surface	Surface Impoundments closed at year 99; some closed year 6	-	21.2				
1303	Grade Surface	Unplanned Disturbed Area	-	125.0				
1304	Grade cover soil	1A and 1B Leach Top	-	17.0	36	82,280	0%	82,280
1305	Grade cover soil	1A and 1B Leach Outslopes	-	256.0	36	1,239,040	0%	1,239,040
1306	Grade cover soil	1C Top (Haul Road)	-	17.0	36	82,300	0%	82,300
1307	Grade cover soil	2A Leach and 2B Waste Top	-	36.0	36	174,240	0%	174,240
1308	Grade cover soil	2A Leach and 2B Waste Outslopes	-	451.0	36	2,182,800	0%	2,182,800
1309	Grade cover soil	3A / 3B Top	-	33.0	36	159,720	0%	159,720
1310	Grade cover soil	3A / 3B Outslopes	-	422.0	36	2,042,480	0%	2,042,480
1311	Grade cover soil	5A Top	-	63.0	36	304,920	0%	304,920
1312	Grade cover soil	5A Outslopes	-	308.0	36	1,490,720	0%	1,490,720
1313	Grade cover soil	San Salvador Pit	-	115.0	36	556,600	0%	556,600
1314	Grade cover soil	Savanna In-Pit Stockpile Top	-	32.5	36	157,300	0%	157,300
1315	Grade cover soil	Savanna In-Pit Stockpile Outslope	-	32.5	36	157,300	0%	157,300
1316	Grade cover soil	4C Top	-	13.0	36	62,920	0%	62,920
1317	Grade cover soil	4C Outslopes	-	170.0	36	822,800	0%	822,800
1318	Grade cover soil	2C, 4A, 7B, 4B Top	-	126.0	36	609,840	0%	609,840
1319	Grade cover soil	2C, 4A, 7B, 4B Outslopes	-	249.0	36	1,205,160	0%	1,205,160
1320	Grade cover soil	8C sludge disposal area	-	47.4	36	229,222	0%	229,222
1321	Grade cover soil	6B Top	-	39.0	36	188,760	0%	188,760
1322	Grade cover soil	6B Outslopes	-	15.0	36	72,600	0%	72,600
1323	Grade cover soil	6C Top	-	10.0	36	48,400	0%	48,400
1324	Grade cover soil	6C Outslopes	-	56.0	36	271,040	0%	271,040
1325	Grade cover soil	Surface Impoundments closed at year 99; some closed year 6	-	21.2	36	102,753	0%	102,753
1326	Grade cover soil	Unplanned Disturbed Area	-	125.0	36	605,000	0%	605,000
1500	Rip Impoundment Liners	Surface Impoundments closed at year 99; some closed year 6	-	21.2	-	-	-	-
1501	Rip Impoundment Liners	Surface Impoundments graded over at closure	-	0.48	-	-	-	-
1700		Gila Borrow Area						
Other								
1800	Off-Hwy Water Tanker Truck							
1801	Motor Grader							

Productivity and Hours Required for Dozer Use--Earthmoving

Task Description	Location 1	Location 2	Equipment	Loose Volume (cy)	Productivity (cy/hr)	Total Task Time (hours)	PERFORMANCE FACTORS										Direct Drive Trans.	Grade (%)
							Material	Grade	Soil Weight (lb/cy)	Production Method/ Blade	Maximum Push Distance (feet)	Normal Production (cy/hr)	Operator	Work Hour (min/hr)	Visibility	Elevation		
Regrade Outslopes	1A and 1B Leach	Outslopes	D11R	140,000	1,649	85	1.2	1.58	3,300	1.20	250	1248	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	1A and 1B Leach Regrade benches from truck/shovel pullback	Outslopes	D11R	1,329,670	4,323	308	1.2	1.58	3,300	1.20	90	3271	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	2A Leach and 2B Waste	Outslopes	D11R	8,060,000	909	8,864	1.2	1.58	3,300	1.20	470	688	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	3A / 3B	Outslopes	D11R	3,500,000	771	4,541	1.2	1.58	3,300	1.20	560	583	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	3A / 3B Regrade benches from truck/shovel pullback	Outslopes	D11R	1,590,064	4,323	368	1.2	1.58	3,300	1.20	90	3271	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	5A	Outslopes	D11R	6,300,000	798	7,898	1.2	1.58	3,300	1.20	540	604	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	Savanna In-Pit Stockpile	Outslopes	D11R	135,000	2,512	54	1.2	1.58	3,300	1.20	160	1901	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	4C	Outslopes	D11R	2,700,000	983	2,745	1.2	1.57	3,300	1.20	430	748	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	2C, 4A, 7B, 4B	Outslopes	D11R	2,300,000	1,006	2,287	1.2	1.57	3,300	1.20	420	765	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	6B	Outslopes	D11R	183,000	2,248	81	1.2	1.58	3,300	1.20	180	1701	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	6C	Outslopes	D11R	650,000	1,283	507	1.2	1.57	3,300	1.20	325	976	1.00	50	1.00	1.00	1.00	-29
Regrade Outslopes	9A Regrade benches from truck/shovel pullback	Outslopes	D11R	642,674	4,299	149	1.2	1.57	3,300	1.20	90	3271	1.00	50	1.00	1.00	1.00	-29
Regrade Top	1A and 1B Leach	Top	D11R	79,000	613	129	1.2	0.98	3,300	1.20	430	748	1.00	50	1.00	1.00	1.00	1
Regrade Top	2A Leach and 2B Waste	Top	D11R	143,000	707	202	1.2	0.98	3,300	1.20	370	862	1.00	50	1.00	1.00	1.00	1
Regrade Top	3A / 3B	Top	D11R	199,000	478	416	1.2	0.98	3,300	1.20	560	583	1.00	50	1.00	1.00	1.00	1
Regrade Top	5A	Top	D11R	413,000	441	936	1.2	0.98	3,300	1.20	610	538	1.00	50	1.00	1.00	1.00	1
Regrade Surface	San Salvador Pit	Surface	D11R	1,600,000	1,525	1,049	1.2	1.10	3,300	1.20	185	1658	1.00	50	1.00	1.00	1.00	-5
Regrade Top	Savanna In-Pit Stockpile	Outslopes	D11R	350,000	532	658	1.2	0.98	3,300	1.20	500	649	1.00	50	1.00	1.00	1.00	1
Regrade Top	4C	Top	D11R	67,000	553	121	1.2	0.98	3,300	1.20	480	675	1.00	50	1.00	1.00	1.00	1
Regrade Top	2C, 4A, 7B, 4B	Top	D11R	1,003,000	368	2,729	1.2	0.98	3,300	1.20	740	448	1.00	50	1.00	1.00	1.00	1
Regrade Top	6B	Top	D11R	147,000	745	197	1.2	0.98	3,300	1.20	350	909	1.00	50	1.00	1.00	1.00	1
Regrade Top	6C	Top	D11R	19,000	1,394	14	1.2	0.98	3,300	1.20	180	1701	1.00	50	1.00	1.00	1.00	1
Regrade Top	9A	Top	D11R	40,000	904	44	1.2	0.98	3,300	1.20	285	1103	1.00	50	1.00	1.00	1.00	1
Dozer Assist	3A / 3B	3A / 3B truck/shovel pullback	D11R	N/A	N/A	5,608	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	D11R	N/A	N/A	1,122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	1A and 1B Leach Top	D11R	N/A	N/A	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	1A and 1B Leach Outslopes	D11R	N/A	N/A	1,151	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	1C Top (Haul Road)	D11R	N/A	N/A	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	2A Leach and 2B Waste Top	D11R	N/A	N/A	162	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	2A Leach and 2B Waste Outslopes	D11R	N/A	N/A	2,027	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	3A / 3B Top	D11R	N/A	N/A	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	3A / 3B Outslopes	D11R	N/A	N/A	1,897	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	5A Top	D11R	N/A	N/A	283	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	5A Outslopes	D11R	N/A	N/A	1,384	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	San Salvador Pit	D11R	N/A	N/A	517	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	Savanna In-Pit Stockpile Top	D11R	N/A	N/A	146	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	D11R	N/A	N/A	146	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	4C Top	D11R	N/A	N/A	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	4C Outslopes	D11R	N/A	N/A	764	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	2C, 4A, 7B, 4B Top	D11R	N/A	N/A	566	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	2C, 4A, 7B, 4B Outslopes	D11R	N/A	N/A	1,119	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	8C sludge disposal area	D11R	N/A	N/A	213	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	6B Top	D11R	N/A	N/A	175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	6B Outslopes	D11R	N/A	N/A	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	6C Top	D11R	N/A	N/A	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	6C Outslopes	D11R	N/A	N/A	252	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	D11R	N/A	N/A	95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer Assist	Gila Borrow Area	Unplanned Disturbed Area	D11R	N/A	N/A	562	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Productivity and Hours Required for Dozer Use---Grading

Tyrone
Worksheet #6
06/12/13

PERFORMANCE FACTORS																						
Task Description	Location 1	Location 2	Equipment	Volume (cy)	Area (acres)	Productivity (acres/hr)	Productivity (cy/hr)	Task Time (hours)	Material	Grade	Soil Weight (lb/cy)	Production Method/ Blade	Effective Blade Width (feet)	Speed (miles/hr)	Work Hour (min/hr)	Visibility	Elevation	Direct Drive Trans.	Grade (%)	Operator	Maximum Push Distance (feet)	Normal Production (cy/hr)
Grade Surface	8C sludge disposal area	-	D11R	-	47.4	3.9	-	12	1.2	1.0	3,300	1.20	20.83	2.50	50	1.00	1.00	1.00	1	0.75	-	-
Grade Surface	Surface Impoundments closed at year 99; some closed year 6	-	D11R	-	21.2	3.9	-	5	1.2	1.0	3,300	1.20	20.83	2.50	50	1.00	1.00	1.00	1	0.75	-	-
Grade Surface	Unplanned Disturbed Area	-	D11R	-	125.0	3.9	-	32	1.2	1.0	3,300	1.20	20.83	2.50	50	1.00	1.00	1.00	1	0.75	-	-
Grade cover soil	1A and 1B Leach Top	-	D11R	82,280	-	-	2,072	40	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	1A and 1B Leach Outslopes	-	D11R	1,239,040	-	-	616	2,010	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	600	547
Grade cover soil	1C Top (Haul Road)	-	D11R	82,300	-	-	2,072	40	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	2A Leach and 2B Waste Top	-	D11R	174,240	-	-	2,072	84	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	2A Leach and 2B Waste Outslopes	-	D11R	2,182,800	-	-	616	3,541	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	600	547
Grade cover soil	3A / 3B Top	-	D11R	159,720	-	-	2,072	77	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	3A / 3B Outslopes	-	D11R	2,042,480	-	-	616	3,314	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	600	547
Grade cover soil	5A Top	-	D11R	304,920	-	-	2,072	147	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	5A Outslopes	-	D11R	1,490,720	-	-	616	2,419	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	600	547
Grade cover soil	San Salvador Pit	-	D11R	556,600	-	-	1,587	351	1.2	1.1	2,900	1.20	-	-	50	1.00	1.00	1.00	-5	0.75	150	2021
Grade cover soil	Savanna In-Pit Stockpile Top	-	D11R	157,300	-	-	1,209	130	1.2	1.1	2,900	1.20	-	-	50	1.00	1.00	1.00	-5	0.75	200	1540
Grade cover soil	Savanna In-Pit Stockpile	-	D11R	157,300	-	-	1,209	130	1.2	1.1	2,900	1.20	-	-	50	1.00	1.00	1.00	-5	0.75	200	1540
Grade cover soil	4C Top	-	D11R	62,920	-	-	2,072	30	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	4C Outslopes	-	D11R	822,800	-	-	728	1,130	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	500	649
Grade cover soil	2C, 4A, 7B, 4B Top	-	D11R	609,840	-	-	2,072	294	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	2C, 4A, 7B, 4B Outslopes	-	D11R	1,205,160	-	-	899	1,341	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	400	801
Grade cover soil	8C sludge disposal area	-	D11R	229,222	-	-	559	410	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	401	799
Grade cover soil	6B Top	-	D11R	188,760	-	-	2,072	91	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	6B Outslopes	-	D11R	72,600	-	-	1,737	42	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	200	1540
Grade cover soil	6C Top	-	D11R	48,400	-	-	2,072	23	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	6C Outslopes	-	D11R	271,040	-	-	899	302	1.2	1.6	2,900	1.20	-	-	50	1.00	1.00	1.00	-29	0.75	400	801
Grade cover soil	Surface Impoundments closed at year 99; some closed year 6	-	D11R	102,753	-	-	2,072	50	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962
Grade cover soil	Unplanned Disturbed Area	-	D11R	605,000	-	-	2,072	292	1.2	1.0	2,900	1.20	-	-	50	1.00	1.00	1.00	1	0.75	100	2962

**Productivity and Hours Required for
Ripper-Equipped Dozer Use**

Note: Cover Material Ripping Currently Included in Vegetation Costs

								PERFORMANCE FACTORS								
Task Description	Location 1	Location 2	Equipment	Area (acres)	Volume (cy)	Productivity (acres/hr)	Task Time (hours)	Ripping	Ripper	*Pocket	No. of Pockets	Turn Time (min/pass)	Work Hour (min/hr)	Speed (mph)	1000 ft passes/acre	ripper width (feet)
								Length (feet)	Penetration (in)	Spacing (in)						
Rip Impoundment Liners Surface Impoundments -			D11R	21	51,377	1.4	15	100	18.0	69.0	3	0.25	50	1	25.25	17.3
Rip Impoundment Liners Surface Impoundments -			D11R	0.48	1,162	1.4	0.34	100	18.0	69.0	3	0.25	50	1	25.25	17.3

Productivity and Hours Required for Hydraulic Excavator

Tyrone
Worksheet #8
06/12/13

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Productivity and Hours Required for Truck Use

		PERFORMANCE FACTORS																					
Task Description	Location 1	Location 2	Equipment	Volume (cy/hr)	Truck Cycle Time (min)	Optimum No. of Trucks	Productivity (cy/hr)	Task Time (hrs)	Struck Capacity (cy)	Heaped Capacity (cy)	Loader Cycles per Truck	Total Haul Distance (feet)	**Haul Distance Segment 1 (feet)	**Haul Distance Segment 2 (feet)	**Haul Distance Segment 3 (feet)	**Haul Grade Segment 1 (%)	**Haul Grade Segment 2 (%)	**Haul Grade Segment 3 (%)	Rolling Resistance (%)	Haul Distance Segment 1 (meters)	Haul Distance Segment 2 (meters)	Haul Distance Segment 3 (meters)	
Haul stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outcrops	HD1500-5	17,500,000	6.4	5	3,311	5,608	71.0	102.0	3	3,900	3,900	-	-	0.0%	-	-	-	2.5%	1,189	0	0
Haul stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	HD1500-5	3,500,000	4.1	3	3,047	1,149	71.0	102.0	3	1,300	1,300	-	-	-1.0%	-	-	-	2.5%	396	0	0
Haul cover soil	Gila Borrow Area	1A and 1B Leach Top	777F	82,280	12.1	4	1,155	76	54.8	78.8	5	6,260	2,320	2,170	1,770	2.2%	7.8%	0.0%	2.5%	707	661	539	
Haul cover soil	Gila Borrow Area	1A and 1B Leach Outcrops	777F	1,239,040	12.1	4	1,155	1,151	54.8	78.8	5	6,260	2,320	2,170	1,770	2.2%	7.8%	0.0%	2.5%	707	661	539	
Haul cover soil	Gila Borrow Area	1C Top (Haul Road)	777F	82,300	16.7	5	1,046	79	54.8	78.8	5	11,833	7,780	4,053	-	0.8%	5.9%	-	2.5%	2,371	1,235	0	
Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	777F	174,240	24.1	7	1,018	171	54.8	78.8	5	19,300	7,780	6,580	4,940	0.8%	1.4%	6.9%	2.5%	2,371	2,006	1,506	
Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Outcrops	777F	2,182,800	24.1	7	1,018	2,145	54.8	78.8	5	19,300	7,780	6,580	4,940	0.8%	1.4%	6.9%	2.5%	2,371	2,006	1,506	
Haul cover soil	Gila Borrow Area	3A / 3B Top	777F	159,720	19.3	6	1,089	148	54.8	78.8	5	11,221	4,411	6,810	-	-7.0%	6.6%	-	2.5%	1,344	2,076	0	
Haul cover soil	Gila Borrow Area	3A / 3B Outcrops	777F	2,042,480	19.3	6	1,089	1,897	54.8	78.8	5	11,221	4,411	6,810	-	-7.0%	6.6%	-	2.5%	1,344	2,076	0	
Haul cover soil	Gila Borrow Area	5A Top	777F	304,920	9.5	3	1,110	283	54.8	78.8	5	4,750	1,450	3,300	-	6.2%	0.0%	-	2.5%	442	1,006	0	
Haul cover soil	Gila Borrow Area	5A Outcrops	777F	1,490,720	9.5	3	1,110	1,384	54.8	78.8	5	4,750	1,450	3,300	-	6.2%	0.0%	-	2.5%	442	1,006	0	
Haul cover soil	Gila Borrow Area	San Salvador Pit	777F	556,600	18.8	5	929	599	54.8	78.8	5	12,570	7,780	3,020	1,770	0.8%	9.9%	-9.6%	2.5%	2,371	920	539	
Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	777F	157,300	9.9	3	1,064	148	54.8	78.8	5	5,730	5,730	-	-	1.6%	-	-	2.5%	1,747	0	0	
Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	777F	157,300	9.9	3	1,064	148	54.8	78.8	5	5,730	5,730	-	-	1.6%	-	-	2.5%	1,747	0	0	
Haul cover soil	Gila Borrow Area	4C Top	777F	62,920	23.8	7	1,030	61	54.8	78.8	5	17,830	7,780	3,020	7,030	0.8%	9.9%	2.6%	2.5%	2,371	920	2,143	
Haul cover soil	Gila Borrow Area	4C Outcrops	777F	622,800	23.8	7	1,030	799	54.8	78.8	5	17,830	7,780	3,020	7,030	0.8%	9.9%	2.6%	2.5%	2,371	920	2,143	
Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	777F	609,840	21.7	6	969	629	54.8	78.8	5	13,990	7,780	6,210	-	0.8%	7.9%	-	2.5%	2,371	1,893	0	
Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outcrops	777F	1,205,160	21.7	6	969	1,244	54.8	78.8	5	13,990	7,780	6,210	-	0.8%	7.9%	-	2.5%	2,371	1,893	0	
Haul cover soil	Gila Borrow Area	8C sludge disposal area	777F	229,222	9.9	3	1,064	215	54.8	78.8	5	5,730	5,730	-	-	1.6%	-	-	2.5%	1,747	0	0	
Haul cover soil	Gila Borrow Area	6B Top	777F	188,760	14.2	4	983	192	54.8	78.8	5	10,050	7,780	2,270	-	0.8%	6.2%	-	2.5%	2,371	692	0	
Haul cover soil	Gila Borrow Area	6B Outcrops	777F	72,600	14.2	4	983	74	54.8	78.8	5	10,050	7,780	2,270	-	0.8%	6.2%	-	2.5%	2,371	692	0	
Haul cover soil	Gila Borrow Area	6C Top	777F	48,400	16.7	5	1,046	46	54.8	78.8	5	11,833	7,780	4,053	-	0.8%	5.9%	-	2.5%	2,371	1,235	0	
Haul cover soil	Gila Borrow Area	6C Outcrops	777F	271,040	16.7	5	1,046	259	54.8	78.8	5	11,833	7,780	4,053	-	0.8%	5.9%	-	2.5%	2,371	1,235	0	
Haul cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	777F	102,753	14.6	4	957	107	54.8	78.8	5	10,669	5,744	3,300	1,625	0.7%	4.7%	0	2.5%	1,751	1,006	495	
Haul cover soil	Gila Borrow Area	Unplanned Disturbed Area	777F	605,000	14.6	4	957	632	54.8	78.8	5	10,669	5,744	3,300	1,625	0.7%	4.7%	0	2.5%	1,751	1,006	495	

Productivity and Hours Required for Truck Use

																Using 777F											
Task Description	Location 1	Location 2	Equipment	Haul Effective Grade Segment 1	Haul Effective Grade Segment 2	Haul Effective Grade Segment 3	Return Effective Grade Segment 1	Return Effective Grade Segment 2	Return Effective Grade Segment 3	Haul Time Segment 3	Return Time Segment 3	Loading Time	Load/Maneuver Time	Dump/Maneuver Time	Work Hour	Travel Time Loaded Segment 1	Travel Time Loaded Segment 2	Travel Time Loaded Segment 3	Travel Time Empty Segment 1	Travel Time Empty Segment 2	Travel Time Empty Segment 3						
				(%)	(%)	(%)	(%)	(%)	(min)	(min)	(min)	(min)	(min/hr)	(min/mi)	(min/mi)	(min/mi)	(min/mi)	(min/mi)	(min/mi)	(min/mi)	(min/mi)	(min/mi)	(min/mi)				
Haul stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outlopes	HD1500-S	3%	0%	0%	3%	0%	0%	1.9	1.3	1.4	0.7	1.1	50	0.00158	0.00110	0.00110	0.00112	0.00110	0.00110						
Haul stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	HD1500-S	2%	0%	0%	4%	0%	0%	0.5	0.5	1.4	0.7	1.1	50	0.00136	0.00110	0.00110	0.00116	0.00110	0.00110						
Haul cover soil	Gila Borrow Area	1A and 1B Leach Top	777F	5%	10%	3%	0%	0%	3%	5.4	1.7	3.3	0.7	1.1	50	0.00209	0.00476	0.00136	0.00089	0.00090	0.00089						
Haul cover soil	Gila Borrow Area	1A and 1B Leach Outlopes	777F	5%	10%	3%	0%	0%	3%	5.4	1.7	3.3	0.7	1.1	50	0.00209	0.00476	0.00136	0.00089	0.00090	0.00089						
Haul cover soil	Gila Borrow Area	1C Top (Haul Road)	777F	3%	8%	0%	2%	0%	0%	8.5	3.2	3.3	0.7	1.1	50	0.00159	0.00382	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	777F	3%	4%	9%	2%	1%	0%	13.8	5.2	3.3	0.7	1.1	50	0.00159	0.00180	0.00429	0.00087	0.00087	0.00090						
Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Outlopes	777F	3%	4%	9%	2%	1%	0%	13.8	5.2	3.3	0.7	1.1	50	0.00159	0.00180	0.00429	0.00087	0.00087	0.00090						
Haul cover soil	Gila Borrow Area	3A / 3B Top	777F	0%	9%	0%	10%	0%	0%	9.8	4.4	3.3	0.7	1.1	50	0.00090	0.00416	0.00090	0.00188	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	3A / 3B Outlopes	777F	0%	9%	0%	10%	0%	0%	9.8	4.4	3.3	0.7	1.1	50	0.00090	0.00416	0.00090	0.00188	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	5A Top	777F	9%	3%	0%	0%	3%	0%	3.1	1.3	3.3	0.7	1.1	50	0.00396	0.00136	0.00090	0.00090	0.00089	0.00090						
Haul cover soil	Gila Borrow Area	5A Outlopes	777F	9%	3%	0%	0%	3%	0%	3.1	1.3	3.3	0.7	1.1	50	0.00396	0.00136	0.00090	0.00090	0.00089	0.00090						
Haul cover soil	Gila Borrow Area	San Salvador Pit	777F	3%	12%	0%	2%	0%	12%	9.5	4.2	3.3	0.7	1.1	50	0.00159	0.00575	0.00090	0.00087	0.00090	0.00248						
Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	777F	4%	0%	0%	1%	0%	0%	3.3	1.5	3.3	0.7	1.1	50	0.00188	0.00090	0.00090	0.00088	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outlope	777F	4%	0%	0%	1%	0%	0%	3.3	1.5	3.3	0.7	1.1	50	0.00188	0.00090	0.00090	0.00088	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	4C Top	777F	3%	12%	5%	2%	0%	0%	13.9	4.8	3.3	0.7	1.1	50	0.00159	0.00575	0.00226	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	4C Outlopes	777F	3%	12%	5%	2%	0%	0%	13.9	4.8	3.3	0.7	1.1	50	0.00159	0.00575	0.00226	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	777F	3%	10%	0%	2%	0%	0%	12.8	3.8	3.3	0.7	1.1	50	0.00159	0.00479	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outlopes	777F	3%	10%	0%	2%	0%	0%	12.8	3.8	3.3	0.7	1.1	50	0.00159	0.00479	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	8C sludge disposal area	777F	4%	0%	0%	1%	0%	0%	3.3	1.5	3.3	0.7	1.1	50	0.00188	0.00090	0.00090	0.00088	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	6B Top	777F	3%	9%	0%	2%	0%	0%	6.5	2.7	3.3	0.7	1.1	50	0.00159	0.00394	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	6B Outlopes	777F	3%	9%	0%	2%	0%	0%	6.5	2.7	3.3	0.7	1.1	50	0.00159	0.00394	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	6C Top	777F	3%	8%	0%	2%	0%	0%	8.5	3.2	3.3	0.7	1.1	50	0.00159	0.00382	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	6C Outlopes	777F	3%	8%	0%	2%	0%	0%	8.5	3.2	3.3	0.7	1.1	50	0.00159	0.00382	0.00090	0.00087	0.00090	0.00090						
Haul cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	777F	3%	7%	3%	2%	0%	2%	6.7	2.9	3.3	0.7	1.1	50	0.00156	0.00320	0.00151	0.00088	0.00090	0.00088						
Haul cover soil	Gila Borrow Area	Unplanned Disturbed Area	777F	3%	7%	3%	2%	0%	2%	6.7	2.9	3.3	0.7	1.1	50	0.00156	0.00320	0.00151	0.00088	0.00090	0.00088						

Productivity for Front End Loader

									PERFORMANCE FACTORS		
Task Description	Location 1	Location 2	Equipment	Volume (cy)	Net Bucket Capacity (cy)	Loader Cycle Time (min)	Productivity (cy/hr)	Task Time (hours)	Heaped	Bucket	Work
									Bucket Capacity (cy)	Fill Factor	
Stockpile Areas											
Load stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outslopes	EX3600-5	17,500,000	28.1	0.45	3,121	5,608	27.4	1.025	50
Load stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	EX3600-5	3,500,000	28.1	0.45	3,121	1,122	27.4	1.025	50
Load cover soil	Gila Borrow Area	1A and 1B Leach Top	992K	82,280	14.0	0.65	1,077	76	16.0	0.875	50
Load cover soil	Gila Borrow Area	1A and 1B Leach Outslopes	992K	1,239,040	14.0	0.65	1,077	1,151	16.0	0.875	50
Load cover soil	Gila Borrow Area	1C Top (Haul Road)	992K	82,300	14.0	0.65	1,077	76	16.0	0.875	50
Load cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	992K	174,240	14.0	0.65	1,077	162	16.0	0.875	50
Load cover soil	Gila Borrow Area	2A Leach and 2B Waste Outslopes	992K	2,182,800	14.0	0.65	1,077	2,027	16.0	0.875	50
Load cover soil	Gila Borrow Area	3A / 3B Top	992K	159,720	14.0	0.65	1,077	148	16.0	0.875	50
Load cover soil	Gila Borrow Area	3A / 3B Outslopes	992K	2,042,480	14.0	0.65	1,077	1,897	16.0	0.875	50
Load cover soil	Gila Borrow Area	5A Top	992K	304,920	14.0	0.65	1,077	283	16.0	0.875	50
Load cover soil	Gila Borrow Area	5A Outslopes	992K	1,490,720	14.0	0.65	1,077	1,384	16.0	0.875	50
Load cover soil	Gila Borrow Area	San Salvador Pit	992K	556,600	14.0	0.65	1,077	517	16.0	0.875	50
Load cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	992K	157,300	14.0	0.65	1,077	146	16.0	0.875	50
Load cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	992K	157,300	14.0	0.65	1,077	146	16.0	0.875	50
Load cover soil	Gila Borrow Area	4C Top	992K	62,920	14.0	0.65	1,077	58	16.0	0.875	50
Load cover soil	Gila Borrow Area	4C Outslopes	992K	822,800	14.0	0.65	1,077	764	16.0	0.875	50
Load cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	992K	609,840	14.0	0.65	1,077	566	16.0	0.875	50
Load cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outslopes	992K	1,205,160	14.0	0.65	1,077	1,119	16.0	0.875	50
Load cover soil	Gila Borrow Area	8C sludge disposal area	992K	229,222	14.0	0.65	1,077	213	16.0	0.875	50
Load cover soil	Gila Borrow Area	6B Top	992K	188,760	14.0	0.65	1,077	175	16.0	0.875	50
Load cover soil	Gila Borrow Area	6B Outslopes	992K	72,600	14.0	0.65	1,077	67	16.0	0.875	50
Load cover soil	Gila Borrow Area	6C Top	992K	48,400	14.0	0.65	1,077	45	16.0	0.875	50
Load cover soil	Gila Borrow Area	6C Outslopes	992K	271,040	14.0	0.65	1,077	252	16.0	0.875	50
Load cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	992K	102,753	14.0	0.65	1,077	95	16.0	0.875	50
Load cover soil	Gila Borrow Area	Unplanned Disturbed Area	992K	605,000	14.0	0.65	1,077	562	16.0	0.875	50

Productivity and Hours Required for Scraper Use

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Productivity and Hours Required for Motor grader Use---Grading

Tyrone
Worksheet #12
6/12/2013

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Summary Calculation of Earthmoving Costs

Equipment Type	Task	Location 1	Location 2	Owning and Operating Cost (\$/hr)	Fuel Consumption (gal/hr)	Fuel Consumption (gal)	Labor Cost (\$/hr)	Number of Units (Equipment)	Time Req'd (hrs)	Total Cost (\$)	Total Production	Prod. Unit	Unit Cost (\$/unit)
Dozers-Earthmoving													
D11R	Dozer Assist	3A / 3B	3A / 3B truck/shovel pullback Out slopes	421.80	29.75	166837.28	47.70	2	5,608	5,265,889	17,500,000	cy	0.30
D11R	Dozer Assist	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	421.80	29.75	33367.46	47.70	2	1,122	1,053,178	3,500,000	cy	0.30
D11R	Regrade Out slopes	1A and 1B Leach	Out slopes	421.80	29.75	2525.42	47.70	1	85	39,855	140,000	cy	0.28
D11R	Regrade Out slopes	1A and 1B Leach Regrade benches from truck/shovel pullback	Out slopes	421.80	29.75	9150.71	47.70	1	308	144,412	1,329,670	cy	0.11
D11R	Regrade Out slopes	2A Leach and 2B Waste	Out slopes	421.80	29.75	263710.34	47.70	1	8,864	4,161,748	8,060,000	cy	0.52
D11R	Regrade Out slopes	3A / 3B	Out slopes	421.80	29.75	13889.92	47.70	1	541	2,131,350	3,500,000	cy	0.54
D11R	Regrade Out slopes	3A / 3B Regrade benches from truck/shovel pullback	Out slopes	421.80	29.75	10942.73	47.70	1	369	172,693	1,590,064	cy	0.11
D11R	Regrade Out slopes	5A	Out slopes	421.80	29.75	234965.32	47.70	1	7,898	3,708,108	6,300,000	cy	0.59
D11R	Regrade Out slopes	Savanna In-Pit Stockpile	Out slopes	421.80	29.75	1598.56	47.70	1	54	25,228	135,000	cy	0.19
D11R	Regrade Out slopes	4C	Out slopes	421.80	29.75	81673.86	47.70	1	2,745	1,288,937	2,700,000	cy	0.48
D11R	Regrade Out slopes	2C, 4A, 7B, 4B	Out slopes	421.80	29.75	68046.91	47.70	1	2,287	1,073,883	2,300,000	cy	0.47
D11R	Regrade Out slopes	6B	Out slopes	421.80	29.75	2421.55	47.70	1	81	38,216	183,000	cy	0.21
D11R	Regrade Out slopes	6C	Out slopes	421.80	29.75	15077.28	47.70	1	507	237,942	650,000	cy	0.47
D11R	Regrade Out slopes	9A Regrade benches from truck/shovel pullback	Out slopes	421.80	29.75	4446.97	47.70	1	149	70,180	642,674	cy	0.11
D11R	Regrade Top	1A and 1B Leach	Top	421.80	29.75	3831.91	47.70	1	129	60,473	79,000	cy	0.77
D11R	Regrade Top	2A Leach and 2B Waste	Top	421.80	29.75	6019.55	47.70	1	202	94,998	143,000	cy	0.66
D11R	Regrade Top	3A / 3B	Top	421.80	29.75	12383.53	47.70	1	416	195,431	199,000	cy	0.98
D11R	Regrade Top	5A	Top	421.80	29.75	27859.52	47.70	1	936	439,665	413,000	cy	1.06
D11R	Regrade Surface	San Salvador Pit	Surface	421.80	29.75	31206.87	47.70	1	1,049	492,492	1,600,000	cy	0.31
D11R	Regrade Top	Savanna In-Pit Stockpile	Out slopes	421.80	29.75	19572.08	47.70	1	658	308,877	350,000	cy	0.88
D11R	Regrade Top	4C	Top	421.80	29.75	3605.14	47.70	1	121	56,895	67,000	cy	0.85
D11R	Regrade Top	2C, 4A, 7B, 4B	Top	421.80	29.75	81182.18	47.70	1	2,729	1,281,178	1,003,000	cy	1.28
D11R	Regrade Top	6B	Top	421.80	29.75	5871.96	47.70	1	197	92,668	147,000	cy	0.63
D11R	Regrade Top	6C	Top	421.80	29.75	405.35	47.70	1	14	6,397	19,000	cy	0.34
D11R	Regrade Top	9A	Top	421.80	29.75	1316.35	47.70	1	44	20,774	40,000	cy	0.52
D11R	Dozer Assist	Gila Borrow Area	1A and 1B Leach Top	421.80	29.75	2272.99	47.70	1	76	35,871	82,280	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	1A and 1B Leach Out slopes	421.80	29.75	34228.48	47.70	1	1,151	540,177	1,239,040	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	1C Top (Haul Road)	421.80	29.75	2273.54	47.70	1	76	35,880	82,300	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	2A Leach and 2B Waste Top	421.80	29.75	4813.38	47.70	1	162	75,962	174,240	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	2A Leach and 2B Waste Out slopes	421.80	29.75	60299.85	47.70	1	2,027	951,623	2,182,800	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	3A / 3B Top	421.80	29.75	4412.27	47.70	1	148	69,632	159,720	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	3A / 3B Out slopes	421.80	29.75	56423.51	47.70	1	1,897	890,448	2,042,480	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	5A Top	421.80	29.75	8423.42	47.70	1	283	132,934	304,920	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	5A Out slopes	421.80	29.75	41181.14	47.70	1	1,384	649,901	1,490,720	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	San Salvador Pit	421.80	29.75	15376.98	47.70	1	517	242,658	477,000	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	Savanna In-Pit Stockpile Top	421.80	29.75	4345.41	47.70	1	146	68,577	157,300	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	Savanna In-Pit Stockpile Out slope	421.80	29.75	4345.41	47.70	1	146	68,577	157,300	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	4C Top	421.80	29.75	1738.17	47.70	1	58	27,431	62,920	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	4C Out slopes	421.80	29.75	22729.85	47.70	1	764	358,711	822,800	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	2C, 4A, 7B, 4B Top	421.80	29.75	16846.83	47.70	1	566	265,868	609,840	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	2C, 4A, 7B, 4B Out slopes	421.80	29.75	33292.55	47.70	1	1,119	525,407	1,205,160	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	8C sludge disposal area	421.80	29.75	6332.27	47.70	1	213	93,933	203,220	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	6B Top	421.80	29.75	5214.50	47.70	1	175	82,293	188,760	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	6B Out slopes	421.80	29.75	2005.58	47.70	1	67	31,651	72,600	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	6C Top	421.80	29.75	1337.05	47.70	1	45	21,101	48,400	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	6C Out slopes	421.80	29.75	7487.48	47.70	1	252	118,164	271,040	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	421.80	29.75	2838.56	47.70	1	95	44,797	102,753	cy	0.44
D11R	Dozer Assist	Gila Borrow Area	Unplanned Disturbed Area	421.80	29.75	16713.13	47.70	1	562	263,758	605,000	cy	0.44
Dozers-Grading													
D11R	Grade Surface	8C sludge disposal area	-	421.80	29.75	363.11	47.70	1	12.2	5,730	-	cy	---
D11R	Grade Surface	Surface Impoundments closed at year 99; some closed year 6	-	421.80	29.75	162.77	47.70	1	5.5	2,569	-	cy	---
D11R	Grade Surface	Unplanned Disturbed Area	-	421.80	29.75	958.38	47.70	1	32.2	15,125	-	cy	---
D11R	Grade cover soil	1A and 1B Leach Top	-	421.80	29.75	1181.46	47.70	1	39.7	18,645	82,280.0	cy	0.23
D11R	Grade cover soil	1A and 1B Leach Out slopes	-	421.80	29.75	59803.94	47.70	1	2,010.2	943,797	1,239,040.0	cy	0.76
D11R	Grade cover soil	1C Top (Haul Road)	-	421.80	29.75	1181.74	47.70	1	39.7	18,650	82,300.0	cy	0.23
D11R	Grade cover soil	2A Leach and 2B Waste Top	-	421.80	29.75	2501.91	47.70	1	84.1	39,484	174,240.0	cy	0.23
D11R	Grade cover soil	2A Leach and 2B Waste Out slopes	-	421.80	29.75	105355.78	47.70	1	3,541.4	1,662,674	2,182,799.8	cy	0.76
D11R	Grade cover soil	3A / 3B Top	-	421.80	29.75	2293.41	47.70	1	77.1	36,194	159,720.0	cy	0.23
D11R	Grade cover soil	3A / 3B Out slopes	-	421.80	29.75	98583.06	47.70	1	3,313.7	1,555,790	2,042,480.0	cy	0.76
D11R	Grade cover soil	5A Top	-	421.80	29.75	4378.34	47.70	1	147.2	69,097	304,920.0	cy	0.23
D11R	Grade cover soil	5A Out slopes	-	421.80	29.75	71951.62	47.70	1	2,418.5	1,135,505	1,490,720.0	cy	0.76
D11R	Grade cover soil	San Salvador Pit	-	421.80	29.75	10437.32	47.70	1	350.8	164,717	556,600.0	cy	0.30
D11R	Grade cover soil	Savanna In-Pit Stockpile Top	-	421.80	29.75	3869.16	47.70	1	130.1	61,061	157,300.0	cy	0.39
D11R	Grade cover soil	Savanna In-Pit Stockpile Out slope	-	421.80	29.75	3869.16	47.70	1	130.1	61,061	157,300.0	cy	0.39
D11R	Grade cover soil	4C Top	-	421.80	29.75	903.47	47.70	1	30.4	14,258	62,920.0	cy	0.23
D11R	Grade cover soil	4C Out slopes	-	421.80	29.75	33621.53	47.70	1	1,130.1	530,599	822,800.0	cy	0.64
D11R	Grade cover soil	2C, 4A, 7B, 4B Top	-	421.80	29.75	8756.67	47.70	1	294.3	138,194	609,840.0	cy	0.23
D11R	Grade cover soil	2C, 4A, 7B, 4B Out slopes	-	421.80	29.75	39899.03	47.70	1	1,341.1	629,667	1,205,160.0	cy	0.52
D11R	Grade cover soil	8C sludge disposal area	-	421.80	29.75	12197.37	47.70	1	412.0	192,493	422,224.0	cy	0.44
D11R	Grade cover soil	6B Top	-	421.80	29.75	2710.40	47.70	1	91.1	42,774	188,760.0	cy	0.23
D11R	Grade cover soil	6B Out slopes	-	421.80	29.75	1243.26	47.70	1	41.8	19,620	72,600.0	cy	0.27
D11R	Grade cover soil	6C Top	-	421.80	29.75	694.97	47.70	1	23.4	10,968	48,400.0	cy	0.23
D11R	Grade cover soil	6C Out slopes	-	421.80	29.75	8973.28	47.70	1	301.6	141,612	271,040.0	cy	0.52
D11R	Grade cover soil	Surface Impoundments closed at year 99; some closed year 6	-	421.80	29.75	1475.43	47.70	1	49.6	23,285	102,753.2	cy	0.23
D11R	Grade cover soil	Unplanned Disturbed Area	-	421.80	29.75	8687.18	47.70	1	292.0	137,097	605,000.0	cy	0.23

Summary Calculation of Earthmoving Costs

Equipment Type	Task	Location 1	Location 2	Owning and Operating Cost (\$/hr)	Fuel Consumption (gal/hr)	Fuel Consumption (gal)	Labor Cost (\$/hr)	Number of Units (Equipment)	Time Req'd (hrs)	Total Cost (\$)	Total Production	Prod. Unit	Unit Cost (\$/unit)
Loaders													
EX3600-5	Load stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outlopes	839.96	82.72	463891.76	47.84	1	5,608	4,978,761	17,500,000	cy	0.28
EX3600-5	Load stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	839.96	82.72	95024.78	47.84	1	1,149	1,019,862	3,500,000	cy	0.29
992K	Load cover soil	Gila Borrow Area	1A and 1B Leach Top	367.14	25.63	1958.36	47.84	1	76	31,706	82,280	cy	0.39
992K	Load cover soil	Gila Borrow Area	1A and 1B Leach Outlopes	367.14	25.63	29490.57	47.84	1	1,151	477,450	1,239,040	cy	0.39
992K	Load cover soil	Gila Borrow Area	1C Top (Haul Road)	367.14	25.63	2015.99	47.84	1	79	32,639	82,300	cy	0.40
992K	Load cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	367.14	25.63	4388.16	47.84	1	171	71,044	174,240	cy	0.41
992K	Load cover soil	Gila Borrow Area	2A Leach and 2B Waste Outlopes	367.14	25.63	54972.83	47.84	1	2,145	890,006	2,182,800	cy	0.41
992K	Load cover soil	Gila Borrow Area	3A / 3B Top	367.14	25.63	3801.52	47.84	1	148	61,546	159,720	cy	0.39
992K	Load cover soil	Gila Borrow Area	3A / 3B Outlopes	367.14	25.63	48613.36	47.84	1	1,897	787,046	2,042,480	cy	0.39
992K	Load cover soil	Gila Borrow Area	5A Top	367.14	25.63	7257.44	47.84	1	283	117,497	304,920	cy	0.39
992K	Load cover soil	Gila Borrow Area	5A Outlopes	367.14	25.63	35480.84	47.84	1	1,384	574,432	1,490,720	cy	0.39
992K	Load cover soil	Gila Borrow Area	San Salvador Pit	367.14	25.63	15360.25	47.84	1	599	248,681	556,600	cy	0.45
992K	Load cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	367.14	25.63	3786.33	47.84	1	148	61,333	157,300	cy	0.39
992K	Load cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	367.14	25.63	3786.33	47.84	1	148	61,333	157,300	cy	0.39
992K	Load cover soil	Gila Borrow Area	4C Top	367.14	25.63	1565.48	47.84	1	61	25,345	62,920	cy	0.40
992K	Load cover soil	Gila Borrow Area	4C Outlopes	367.14	25.63	20471.66	47.84	1	799	331,435	822,800	cy	0.40
992K	Load cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	367.14	25.63	16129.35	47.84	1	629	261,133	609,840	cy	0.43
992K	Load cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outlopes	367.14	25.63	31874.67	47.84	1	1,244	516,048	1,205,160	cy	0.43
992K	Load cover soil	Gila Borrow Area	8C sludge disposal area	367.14	25.63	5620.47	47.84	1	215	89,376	229,222	cy	0.39
992K	Load cover soil	Gila Borrow Area	6B Top	367.14	25.63	4922.90	47.84	1	192	79,701	188,760	cy	0.42
992K	Load cover soil	Gila Borrow Area	6B Outlopes	367.14	25.63	1893.42	47.84	1	74	30,654	72,600	cy	0.39
992K	Load cover soil	Gila Borrow Area	6C Top	367.14	25.63	1185.59	47.84	1	46	19,195	48,400	cy	0.40
992K	Load cover soil	Gila Borrow Area	6C Outlopes	367.14	25.63	6639.30	47.84	1	259	107,490	271,040	cy	0.40
992K	Load cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	367.14	25.63	2752.25	47.84	1	107	44,559	102,753	cy	0.43
992K	Load cover soil	Gila Borrow Area	Unplanned Disturbed Area	367.14	25.63	16204.95	47.84	1	632	262,357	605,000	cy	0.43
Trucks													
HD1500-5	Haul stockpile material	3A / 3B	3A / 3B truck/shovel pullback Outlopes	283.53	28.12	788481.40	42.93	5	28,040	9,153,899	17,500,000	cy	0.52
HD1500-5	Haul stockpile material	San Salvador Pit	San Salvador Pit Truck/Shovel Pit Backfill	283.53	28.12	96908.74	42.93	3	3,446	1,125,065	3,500,000	cy	0.32
777F	Haul cover soil	Gila Borrow Area	1A and 1B Leach Top	284.62	18.76	5733.27	42.93	4	306	100,103	82,280	cy	1.22
777F	Haul cover soil	Gila Borrow Area	1A and 1B Leach Outlopes	284.62	18.76	86336.31	42.93	4	4,602	1,507,434	1,239,040	cy	1.22
777F	Haul cover soil	Gila Borrow Area	1C Top (Haul Road)	284.62	18.76	7377.49	42.93	5	393	128,811	82,300	cy	1.57
777F	Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Top	284.62	18.76	22481.77	42.93	7	1,198	392,532	174,240	cy	2.25
777F	Haul cover soil	Gila Borrow Area	2A Leach and 2B Waste Outlopes	284.62	18.76	281641.41	42.93	7	15,013	4,917,465	2,182,800	cy	2.25
777F	Haul cover soil	Gila Borrow Area	3A / 3B Top	284.62	18.76	16693.93	42.93	6	890	291,476	159,720	cy	1.82
777F	Haul cover soil	Gila Borrow Area	3A / 3B Outlopes	284.62	18.76	213480.01	42.93	6	11,380	3,727,366	2,042,480	cy	1.82
777F	Haul cover soil	Gila Borrow Area	5A Top	284.62	18.76	15935.12	42.93	3	849	278,228	304,920	cy	0.91
777F	Haul cover soil	Gila Borrow Area	5A Outlopes	284.62	18.76	77905.03	42.93	3	4,153	1,360,223	1,490,720	cy	0.91
777F	Haul cover soil	Gila Borrow Area	San Salvador Pit	284.62	18.76	56210.64	42.93	5	2,996	981,439	556,600	cy	1.76
777F	Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Top	284.62	18.76	8318.00	42.93	3	443	145,233	157,300	cy	0.92
777F	Haul cover soil	Gila Borrow Area	Savanna In-Pit Stockpile Outslope	284.62	18.76	8318.00	42.93	3	443	145,233	157,300	cy	0.92
777F	Haul cover soil	Gila Borrow Area	4C Top	284.62	18.76	8020.40	42.93	7	428	140,036	62,920	cy	2.23
777F	Haul cover soil	Gila Borrow Area	4C Outlopes	284.62	18.76	104882.13	42.93	7	5,591	1,831,244	822,800	cy	2.23
777F	Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Top	284.62	18.76	70830.20	42.93	6	3,776	1,236,697	609,840	cy	2.03
777F	Haul cover soil	Gila Borrow Area	2C, 4A, 7B, 4B Outlopes	284.62	18.76	139973.97	42.93	6	7,461	2,443,948	1,205,160	cy	2.03
777F	Haul cover soil	Gila Borrow Area	8C sludge disposal area	284.62	18.76	12121.25	42.93	3	646	211,637	229,222	cy	0.92
777F	Haul cover soil	Gila Borrow Area	6B Top	284.62	18.76	14412.25	42.93	4	768	251,638	188,760	cy	1.33
777F	Haul cover soil	Gila Borrow Area	6B Outlopes	284.62	18.76	5543.17	42.93	4	295	96,784	72,600	cy	1.33
777F	Haul cover soil	Gila Borrow Area	6C Top	284.62	18.76	4338.65	42.93	5	231	75,753	48,400	cy	1.57
777F	Haul cover soil	Gila Borrow Area	6C Outlopes	284.62	18.76	24296.42	42.93	5	1,295	424,216	271,040	cy	1.57
777F	Haul cover soil	Gila Borrow Area	Surface Impoundments closed at year 99; some closed year 6	284.62	18.76	8057.46	42.93	4	430	140,683	102,753	cy	1.37
777F	Haul cover soil	Gila Borrow Area	Unplanned Disturbed Area	284.62	18.76	47441.45	42.93	4	2,529	828,329	605,000	cy	1.37
Ripper													
D11R	Rip Impoundment Liners	Surface Impoundments closed at year 99; some closed year 6	.	446.71	29.77	442.57	47.70	1	15	7,349	51,377	cy	0.14
D11R	Rip Impoundment Liners	Surface Impoundments graded over at closure	-	446.71	29.77	10.01	47.70	1	0	166	1,162	cy	0.14

EQUIPMENT	Fuel Consumption (gal/hr)	Fuel Cost (\$/hr)	Operating Cost (w/out fuel) (\$/hr)	Own/Op Cost (\$/hr)	Reference
Cat D11R Bulldozer w/universal blade	29.75	\$93.12	\$328.68	\$421.80	1
Cat D11R Bulldozer w/ adjustable parallelogram mulitshank ripper	29.77	\$93.19	\$353.52	\$446.71	1
Cat D6T Bulldozer w/semi universal blade	14.175	\$44.37	\$4181.02	\$225.39	1
Cat D6T LGP Bulldozer	7.8	\$24.41	\$81.22	\$105.63	1
Cat 777F Truck	18.76	\$58.72	\$225.90	\$284.62	1
Cat 992K Loader	25.632	\$80.23	\$286.91	\$367.14	1
Cat 16M Motor Grader	9.504	\$29.75	\$123.21	\$152.96	1
Off-Hwy Water Tanker Truck, 10,000-gal.	15.345	\$48.03	\$121.90	\$169.93	1
Light Duty Truck, 4x4, 1 ton, 195 HP	2.34	\$7.32	\$8.21	\$15.53	1
Komatsu HD1500-5	28.12	\$88.02	\$195.51	\$283.53	1
EX3600-5	82.72	\$258.91	\$581.05	\$839.96	1

Oil Broker Quote

\$3.1300 per gallon

Reference 2. Western Refining, Lordsburg NM (July 5, 2012)

2

Label Description	NMDOL Type A Operator Group	NMDOL Type A Operator Classification	Rate (\$/hr)	2007
Cat D11D Bulldozer w/universal blade	Equipment Operator IV	Bulldozer (mult. Units)	\$47.70	31,417 3
Cat D9R Bulldozer w/semi universal blade	Equipment Operator IV	Bulldozer (mult. Units)	\$47.70	31,417 3
Cat D6R LGP Series II Bulldozer	Equipment Operator IV	Bulldozer (mult. Units)	\$47.70	31,417 3
Cat 777D Truck	N/A	N/A	\$42.93	24,988 3
Cat 982G Loader	Equipment Operator VI	Loader (over 10 cy)	\$157.84	31,417 3
Cat 16H Motor Grader	Equipment Operator IV	Motor Grader	\$47.70	31,417 3
Off-Hwy Water Tanker Truck, 10,000-gal.	N/A	N/A	\$25.77	24,988 3
Light Duty Truck, 4x4, 1 ton, 195 HP (Mechanic)	Equipment Operator VI	Mechanic	-	29,633 3
Light Duty Truck, 4x4, 1 ton, 195 HP (Other)	Equipment Operator VI	Other	-	24,988 3

Data Sources

Tyrone_Stockpiles_2012.xls
Worksheet #13
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Vegetation Costs

Tyrone
Worksheet #14
06/12/13

Description:

Includes scarifying, discing, rangeland drill seeding, mulching, crimping, and daily per diem

Unit or Disturbance	(acres)	Unit Cost (\$/acre)	Subtotal Cost (\$)	Area Reference
Stockpile Areas		1,106.12		
1A and 1B Leach Top	17	1,106.12	18,804	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
1A and 1B Leach Out slopes	256	1,106.12	283,167	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
1C Top (Haul Road)	17	1,106.12	18,809	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
2A Leach and 2B Waste Top	36	1,106.12	39,820	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
2A Leach and 2B Waste Out slopes	451	1,106.12	498,852	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
3A / 3B Top	33	1,106.12	36,502	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
3A / 3B Out slopes	422	1,106.12	466,784	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
5A Top	63	1,106.12	69,686	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
5A Out slopes	308	1,106.12	340,686	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
San Salvador Pit	115	1,106.12	127,204	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
Savanna In-Pit Stockpile Top	33	1,106.12	35,949	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
Savanna In-Pit Stockpile Out slope	33	1,106.12	35,949	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
4C Top	13	1,106.12	14,380	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
4C Out slopes	170	1,106.12	188,041	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
2C, 4A, 7B, 4B Top	126	1,106.12	139,371	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
2C, 4A, 7B, 4B Out slopes	249	1,106.12	275,424	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
8C sludge disposal area	47.4	1,106.12	52,386	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
6B Top	39	1,106.12	43,139	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
6B Out slopes	15	1,106.12	16,592	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
6C Top	10	1,106.12	11,061	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
6C Out slopes	56	1,106.12	61,943	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
9A Out slopes	116	1,106.12	128,310	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
9A Top	13	1,106.12	14,380	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
Surface Impoundments closed at year 99; some closed year 6	21	1,106.12	23,483	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
Surface Impoundments graded over at closure	0.48	1,106.12	531	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
Unplanned Disturbed Area	125	1,106.12	138,265	Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface
		1A and 1B Leach	301,971	
		1C Top (Haul Road)	18,809	
		2A Leach and 2B Waste	538,672	
		3A / 3B	503,286	
		5A	410,371	
		San Salvador Pit	127,204	
		Savanna Pit	71,898	
		4C	202,420	
		2C, 4A, 7B, 4B	414,796	
		8C sludge disposal area	52,386	
		6B	59,731	
		6C	73,004	
		9A	142,690	
		Surface Impoundments	24,014	
		Unplanned Disturbed Area	138,265	
		Total Cost	\$3,079,518	

Other Reclamation Activity Costs

Item	Activity	Quantity	Unit	Unit Cost (\$/unit)	Direct Item Cost (\$)	Reference	Means Line Item	Means Page	Description
Plug & Abandon, Install, Replace Monitoring Wells									
2-inch ID wells (avg. TD = 36 ft)	Plug & Abandon Well	431	ft	0.90	387	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (see note 6)			
4-inch ID wells (avg. TD = 113 ft)	Plug & Abandon Well	11,787	ft	3.59	42,324	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (see note 6)			
4-inch ID wells, avg. total depth = 172 ft (28% Year 19 and rest Year 99 of closure)	Plug & Abandon Well	88,284	ft	3.59	317,022	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (see note 6)			Tyrone_Wells to be Abandoned_During_Closure.xls Assumed 4" diameter for all wells. 84823.73 ft total length + 3000 ft (30 Wells @ 100 ft Estimated TD) + 3 Replacement wells
6-inch ID wells (avg. TD = 135 ft)	Plug & Abandon Well	6,084	ft	8.08	49,157	Unit cost based on NM EMNRD MMD Guidance for 6" wet drill holes 0-500 ft (see note 6)	1.3642		
Replace 286-2008-04 (5" x 200')	Replace Well	200	ft	58.99	11,798	Wilcox Professional Services, 8/2011, est. cost for 5 1/2" bore, \$173,500 for 3000 ft total (\$57.83/ft). Escalated 2% 2011-2012 = \$58.99/ft			Takeoffs Per Golder 8/24/12. Cost to abandon added to 6" well abandonment costs.
Replace 286-2008-05 (5" x 200')	Replace Well	200	ft	58.99	11,798	Wilcox Professional Services, 8/2011, est. cost for 5 1/2" bore, \$173,500 for 3000 ft total (\$57.83/ft). Escalated 2% 2011-2012 = \$58.99/ft			Takeoffs Per Golder 8/24/12. Cost to abandon added to 6" well abandonment costs.
Replace 286-2008-06 (4" x 60.5')	Replace Well	61	ft	58.99	3,569	Wilcox Professional Services, 8/2011, est. cost for 5 1/2" bore, \$173,500 for 3000 ft total (\$57.83/ft). Escalated 2% 2011-2012 = \$58.99/ft			Takeoffs Per Golder 8/24/12. Cost to abandon added to 4" well abandonment costs.
Plug Exploration Holes									
Plug & Abandon Exploration Holes	Plug & Abandon Exploration Holes	124	holes	3,677.10	455,960	510 ft assumed total depth per well.			
Interceptor Trenches									
Replacement Seepage Collection Systems	Seep 5E Collection	1	lump sum	19,271	19,271	Costs based on Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates. (Seep_5E_Collection_Replacement.xlsx)			
3A Seepage Collection System									
Preliminary Earthworks		1	lump sum	15,900	15,900	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Overflow Pond & Booster Station		1	lump sum	130,100	130,100	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Canyon 5 Deep Collection		1	lump sum	133,125	133,125	Estimated to be average of Canyon 7, 8, 10 & 11 Deep Collection Systems			
Canyon 6 Deep Collection		1	lump sum	133,125	133,125	Estimated to be average of Canyon 7, 8, 10 & 11 Deep Collection Systems			
Canyon 7 Deep Collection		1	lump sum	135,400	135,400	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Canyon 8 Deep Collection		1	lump sum	105,900	105,900	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Canyon 10 Deep Collection		1	lump sum	154,500	154,500	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Canyon 11 Deep Collection		1	lump sum	136,700	136,700	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Bolster Existing Surface PLS Catchments		1	lump sum	231,500	231,500	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Finger Drain System		1	lump sum	72,700	72,700	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Breach of Existing Seepage Collection Trenches		1	lump sum	189,600	189,600	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Concrete Pad for Above-Ground Tank		1	lump sum	9,900	9,900	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Electrical Hookup		1	lump sum	157,600	157,600	Costs obtained from Golder Associates Inc., Scope of Work; No. 3A Stockpile Seepage and PLS Control Systems; 2006 and escalated to 2012 rates.			
Down drains									
1A and 1B Leach	Down Drain Length	3,727	ft	8.01	29,853	See Appendix B8			See Note 3 for unit cost
2A Leach and 2B Waste	Down Drain Length	7,999	ft	8.01	64,072	See Appendix B8			See Note 3 for unit cost
3A / 3B	Down Drain Length	6,069	ft	8.01	48,613	See Appendix B8			See Note 3 for unit cost
5A	Down Drain Length	2,754	ft	8.01	22,060	See Appendix B8			See Note 3 for unit cost
San Salvador Pit	Down Drain Length	1,227	ft	8.01	9,828	See Appendix B8			See Note 3 for unit cost
4C	Down Drain Length	3,125	ft	8.01	25,031	See Appendix B8			See Note 3 for unit cost
2C, 4A, 7B, 4B	Down Drain Length	2,943	ft	8.01	23,573	See Appendix B8			See Note 3 for unit cost
6B	Down Drain Length	800	ft	8.01	6,408	See Appendix B8			See Note 3 for unit cost
6C	Down Drain Length	550	ft	8.01	4,406	See Appendix B8			See Note 3 for unit cost
9A	Down Drain Length	2,500	ft	8.01	20,025	See Appendix B8			See Note 3 for unit cost
1A and 1B Leach	Down Drain Filter	2,600	cy	4.34	11,279	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
2A Leach and 2B Waste	Down Drain Filter	5,600	cy	4.34	24,294	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
3A / 3B	Down Drain Filter	4,200	cy	4.34	18,220	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
5A	Down Drain Filter	1,900	cy	4.34	8,243	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
San Salvador Pit	Down Drain Filter	900	cy	4.34	3,904	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
4C	Down Drain Filter	2,200	cy	4.34	9,544	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
2C, 4A, 7B, 4B	Down Drain Filter	2,100	cy	4.34	9,110	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
6B	Down Drain Filter	600	cy	4.34	2,603	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
6C	Down Drain Filter	400	cy	4.34	1,735	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
9A	Down Drain Filter	1,800	cy	4.34	7,809	Means	321123.23-0301	298	Base Course Drainage Layers, Crushed 1 1/2 ", Compacted to 4" deep
1A and 1B Leach	Down Drain Riprap (Processed), Haul	15,200	cy	8.43	128,160	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2A Leach and 2B Waste	Down Drain Riprap (Processed), Haul	32,700	cy	8.43	275,712	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
3A / 3B	Down Drain Riprap (Processed), Haul	24,800	cy	8.43	209,103	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
5A	Down Drain Riprap (Processed), Haul	11,300	cy	8.43	95,277	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
San Salvador Pit	Down Drain Riprap (Processed), Haul	5,000	cy	8.43	42,158	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
4C	Down Drain Riprap (Processed), Haul	12,800	cy	8.43	107,924	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2C, 4A, 7B, 4B	Down Drain Riprap (Processed), Haul	12,000	cy	8.43	101,179	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6B	Down Drain Riprap (Processed), Haul	3,300	cy	8.43	27,824	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6C	Down Drain Riprap (Processed), Haul	2,200	cy	8.43	18,549	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
9A	Down Drain Riprap (Processed), Haul	10,200	cy	8.43	86,002	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
1A and 1B Leach	Down Drain Riprap (processed), Backfill	15,200	cy	0.96	14,625	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2A Leach and 2B Waste	Down Drain Riprap (processed), Backfill	32,700	cy	0.96	31,463	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
3A / 3B	Down Drain Riprap (processed), Backfill	24,800	cy	0.96	23,862	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
5A	Down Drain Riprap (processed), Backfill	11,300	cy	0.96	10,872	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
San Salvador Pit	Down Drain Riprap (processed), Backfill	5,000	cy	0.96	4,811	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
4C	Down Drain Riprap (processed), Backfill	12,800	cy	0.96	12,316	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2C, 4A, 7B, 4B	Down Drain Riprap (processed), Backfill	12,000	cy	0.96	11,546	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6B	Down Drain Riprap (processed), Backfill	3,300	cy	0.96	3,175	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6C	Down Drain Riprap (processed), Backfill	2,200	cy	0.96	2,117	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
9A	Down Drain Riprap (processed), Backfill	10,200	cy	0.96	9,814	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
Bench Grading									
1A and 1B Leach	Bench Grading	44,800	ft	1.69	75,712	See Appendix B8			See Note 4 for full description
2A Leach and 2B Waste	Bench Grading	58,600	ft	1.69	99,034	See Appendix B8			See Note 4 for full description
3A / 3B	Bench Grading	65,200	ft	1.69	110,188	See Appendix B8			See Note 4 for full description
5A	Bench Grading	44,000	ft	1.69	74,360	See Appendix B8			See Note 4 for full description
San Salvador Pit	Bench Grading	4,700	ft	1.69	7,943	See Appendix B8			See Note 4 for full description
4C	Bench Grading	16,100	ft	1.69	27,209	See Appendix B8			See Note 4 for full description
2C, 4A, 7B, 4B	Bench Grading	26,700	ft	1.69	45,123	See Appendix B8			See Note 4 for full description
6C	Bench Grading	4,100	ft	1.69	6,929	See Appendix B8			See Note 4 for full description
9A	Bench Grading	23,700	ft	1.69	40,053	See Appendix B8			See Note 4 for full description

Other Reclamation Activity Costs

Item	Activity	Quantity	Unit	Unit Cost (\$/unit)	Direct Item Cost (\$)	Reference	Means Line Item	Means Page	Description
Channel Excavation									
1A and 1B Leach	Outslope Channels	4,813	feet	8.99	43,269	See Appendix B8			Excavation...see note 1 for full description
2A Leach and 2B Waste	Outslope Channels	9,462	feet	8.99	85,063	See Appendix B8			Excavation...see note 1 for full description
3A / 3B	Outslope Channels	780	feet	8.99	7,012	See Appendix B8			Excavation...see note 1 for full description
5A	Outslope Channels	6,330	feet	8.99	56,907	See Appendix B8			Excavation...see note 1 for full description
San Salvador Pit	Outslope Channels	5,240	feet	8.99	47,108	See Appendix B8			Excavation...see note 1 for full description
4C	Outslope Channels	7,401	feet	8.99	66,535	See Appendix B8			Excavation...see note 1 for full description
9A	Outslope Channels	1,448	feet	8.99	13,018	See Appendix B8			Excavation...see note 1 for full description
1A and 1B Leach	Outslope Terrace Channels	45,200	feet	3.37	152,340	See Appendix B8			Excavation...see note 1 for full description
2A Leach and 2B Waste	Outslope Terrace Channels	58,600	feet	3.37	197,502	See Appendix B8			Excavation...see note 1 for full description
3A / 3B	Outslope Terrace Channels	65,200	feet	3.37	219,746	See Appendix B8			Excavation...see note 1 for full description
5A	Outslope Terrace Channels	44,000	feet	3.37	148,295	See Appendix B8			Excavation...see note 1 for full description
San Salvador Pit	Outslope Terrace Channels	4,700	feet	3.37	15,841	See Appendix B8			Excavation...see note 1 for full description
4C	Outslope Terrace Channels	16,100	feet	3.37	54,263	See Appendix B8			Excavation...see note 1 for full description
2C, 4A, 7B, 4B	Outslope Terrace Channels	26,700	feet	3.37	89,988	See Appendix B8			Excavation...see note 1 for full description
6C	Outslope Terrace Channels	4,100	feet	3.37	13,818	See Appendix B8			Excavation...see note 1 for full description
9A	Outslope Terrace Channels	23,700	feet	3.37	79,877	See Appendix B8			Excavation...see note 1 for full description
1A and 1B Leach	Top Channels	6,743	feet	8.99	60,620	See Appendix B8			Excavation...see note 1 for full description
2A Leach and 2B Waste	Top Channels	3,872	feet	8.99	34,809	See Appendix B8			Excavation...see note 1 for full description
3A / 3B	Top Channels	2,346	feet	8.99	21,091	See Appendix B8			Excavation...see note 1 for full description
5A	Top Channels	3,541	feet	8.99	31,834	See Appendix B8			Excavation...see note 1 for full description
4C	Top Channels	1,062	feet	8.99	9,547	See Appendix B8			Excavation...see note 1 for full description
2C, 4A, 7B, 4B	Top Channels	11,206	feet	8.99	100,742	See Appendix B8			Excavation...see note 1 for full description
6C	Top Channels	9,714	feet	8.99	87,329	See Appendix B8			Excavation...see note 1 for full description
6B	Top Channels	2,509	feet	8.99	22,556	See Appendix B8			Excavation...see note 1 for full description
9A	Top Channels	935	feet	8.99	8,406	See Appendix B8			Excavation...see note 1 for full description
Riprap & Gravel									
1A and 1B Leach	Outslope Channel Riprap (Processed), Haul	7,100	cy	8.43	59,864	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2A Leach and 2B Waste	Outslope Channel Riprap (Processed), Haul	14,000	cy	8.43	118,042	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
3A / 3B	Outslope Channel Riprap (Processed), Haul	1,200	cy	8.43	10,118	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
5A	Outslope Channel Riprap (Processed), Haul	9,400	cy	8.43	79,257	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
San Salvador Pit	Outslope Channel Riprap (Processed), Haul	7,800	cy	8.43	65,766	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
4C	Outslope Channel Riprap (Processed), Haul	11,000	cy	8.43	92,747	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
9A	Outslope Channel Riprap (Processed), Haul	2,100	cy	8.43	17,706	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
1A and 1B Leach	Outslope Channel Gravel, Haul	21,200	cy	8.43	178,749	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2A Leach and 2B Waste	Outslope Channel Gravel, Haul	29,900	cy	8.43	252,104	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
3A / 3B	Outslope Channel Gravel, Haul	26,000	cy	8.43	219,221	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
5A	Outslope Channel Gravel, Haul	21,800	cy	8.43	183,808	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
San Salvador Pit	Outslope Channel Gravel, Haul	5,700	cy	8.43	48,060	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
4C	Outslope Channel Gravel, Haul	11,900	cy	8.43	100,336	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2C, 4A, 7B, 4B	Outslope Channel Gravel, Haul	10,400	cy	8.43	87,688	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6C	Outslope Channel Gravel, Haul	1,600	cy	8.43	13,490	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
9A	Outslope Channel Gravel, Haul	10,300	cy	8.43	86,845	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
1A and 1B Leach	Top Channel Riprap (processed), Haul	10,000	cy	8.43	84,316	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2A Leach and 2B Waste	Top Channel Riprap (processed), Haul	5,700	cy	8.43	48,060	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
3A / 3B	Top Channel Riprap (processed), Haul	3,500	cy	8.43	29,510	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
5A	Top Channel Riprap (processed), Haul	5,200	cy	8.43	43,844	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
4C	Top Channel Riprap (processed), Haul	1,600	cy	8.43	13,490	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2C, 4A, 7B, 4B	Top Channel Riprap (processed), Haul	16,600	cy	8.43	139,964	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6B	Top Channel Riprap (processed), Haul	3,700	cy	8.43	31,197	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6C	Top Channel Riprap (processed), Haul	14,400	cy	8.43	121,414	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
9A	Top Channel Riprap (processed), Haul	1,400	cy	8.43	11,804	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
1A and 1B Leach	Top Channel Gravel, Haul	5,100	cy	8.43	43,001	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2A Leach and 2B Waste	Top Channel Gravel, Haul	2,900	cy	8.43	24,452	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
3A / 3B	Top Channel Gravel, Haul	1,800	cy	8.43	15,177	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
5A	Top Channel Gravel, Haul	2,700	cy	8.43	22,765	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
4C	Top Channel Gravel, Haul	800	cy	8.43	6,745	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
2C, 4A, 7B, 4B	Top Channel Gravel, Haul	8,400	cy	8.43	70,825	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6B	Top Channel Gravel, Haul	1,900	cy	8.43	16,020	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
6C	Top Channel Gravel, Haul	7,300	cy	8.43	61,550	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
9A	Top Channel Gravel, Haul	700	cy	8.43	5,902	Means	G1030 150 6600	465	Load & Haul rock, 3-cy loader, 12 20-cy trailers, 4-mile RT
1A and 1B Leach	Outslope Channel Riprap (processed), Backfill	7,100	cy	0.96	6,831	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2A Leach and 2B Waste	Outslope Channel Riprap (processed), Backfill	14,000	cy	0.96	13,470	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
3A / 3B	Outslope Channel Riprap (processed), Backfill	1,200	cy	0.96	1,155	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
San Salvador Pit	Outslope Channel Riprap (processed), Backfill	7,800	cy	0.96	7,505	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
4C	Outslope Channel Riprap (processed), Backfill	11,000	cy	0.96	10,584	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
1A and 1B Leach	Outslope Channel Gravel, Backfill	21,200	cy	0.96	20,398	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2A Leach and 2B Waste	Outslope Channel Gravel, Backfill	29,900	cy	0.96	28,769	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
3A / 3B	Outslope Channel Gravel, Backfill	26,000	cy	0.96	25,016	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
5A	Outslope Channel Gravel, Backfill	21,800	cy	0.96	20,975	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
San Salvador Pit	Outslope Channel Gravel, Backfill	5,700	cy	0.96	5,484	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
4C	Outslope Channel Gravel, Backfill	11,900	cy	0.96	11,450	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2C, 4A, 7B, 4B	Outslope Channel Gravel, Backfill	10,400	cy	0.96	10,006	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6B	Outslope Channel Gravel, Backfill	1,600	cy	0.96	1,539	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
9A	Outslope Channel Gravel, Backfill	10,300	cy	0.96	9,910	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
1A and 1B Leach	Top Channel Riprap, (processed) Backfill	10,000	cy	0.96	9,622	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2A Leach and 2B Waste	Top Channel Riprap, (processed) Backfill	5,700	cy	0.96	5,484	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
3A / 3B	Top Channel Riprap, (processed) Backfill	3,500	cy	0.96	3,368	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
5A	Top Channel Riprap, (processed) Backfill	5,200	cy	0.96	5,003	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
4C	Top Channel Riprap, (processed) Backfill	1,600	cy	0.96	1,539	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2C, 4A, 7B, 4B	Top Channel Riprap, (processed) Backfill	16,600	cy	0.96	15,972	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6B	Top Channel Riprap, (processed) Backfill	3,700	cy	0.96	3,560	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6C	Top Channel Riprap, (processed) Backfill	14,400	cy	0.96	13,855	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
9A	Top Channel Riprap, (processed) Backfill	1,400	cy	0.96	1,347	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
1A and 1B Leach	Top Channel Gravel, Backfill	5,100	cy	0.96	4,907	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2A Leach and 2B Waste	Top Channel Gravel, Backfill	2,900	cy	0.96	2,790	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
3A / 3B	Top Channel Gravel, Backfill	1,800	cy	0.96	1,732	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
5A	Top Channel Gravel, Backfill	2,700	cy	0.96	2,598	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
4C	Top Channel Gravel, Backfill	800	cy	0.96	770	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
2C, 4A, 7B, 4B	Top Channel Gravel, Backfill	8,400	cy	0.96	8,082	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6B	Top Channel Gravel, Backfill	1,900	cy	0.96	1,828	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
6C	Top Channel Gravel, Backfill	7,300	cy	0.96	7,024	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
9A	Top Channel Gravel, Backfill	700	cy	0.96	674	Means	312323.14-5220	235	Gravel backfill...see note 2 for full description
1A and 1B Leach	Riprap production (processed)	58,600	cy	14.61	856,146	See Appendix B.6			
2A Leach and 2B Waste	Riprap production (processed)	85,200	cy	14.61	1,244,772	See Appendix B.6			
3A / 3B	Riprap production (processed)	57,300	cy	14.61	837,153	See Appendix B.6			
5A	Riprap production (processed)	41,000	cy	14.61	599,010	See Appendix B.6			
San Salvador Pit	Riprap production (processed)	18,500	cy	14.61	270,285	See Appendix B.6			
4C	Riprap production (processed)	38,100	cy	14.61	556,641	See Appendix B.6			
2C, 4A, 7B, 4B	Riprap production (processed)	47,400	cy	14.61	692,514	See Appendix B.6			
6B	Riprap production (processed)	10,500	cy	14.61	153,405	See Appendix B.6			
6C	Riprap production (processed)	23,900	cy	14.61	349,179	See Appendix B.6			
9A	Riprap production (processed)	22,600	cy	14.61	330,186	See Appendix B.6			

Fencing

Main, Gettysburg, Savannah, and Copper Mountain open pits	Chain link fence, Pits perimeter	57,500	ft	19.22	1,105,028	Means	323113.2-0800	312	Fence, chain link industrial, schedule 40, including concrete, 6 ga. wire, 6' high, but omit barbed wire, galv. Steel Main (25700'), Gettysburg (10700'), Savannah (8300'), and Copper Mountain (12800')
Main, Gettysburg, Savannah, and Copper Mountain open pits	Vehicle gates, Pits perimeter	11	Openings	568.86	6,257	Means	323113.20-5070	312	1 per mile. Double swing gates, incl. Posts & hardware, in concrete, 6' high, 20' opening, in concrete
Main, Gettysburg, Savannah, and Copper Mountain open pits	Signs Posted every 500 ft	115	each	51.78	5,955	Means	101453.20-0600	142	Traffic Signs, Guide and directional signs 12" x 18" reflectorized

1A and 1B Leach	1,779,690
2A Leach and 2B Waste	2,569,163
3A / 3B	3,406,333
5A	1,405,107
San Salvador Pit	528,693
Savanna In-Pit Stockpile	0
4C	1,106,671
2C, 4A, 7B, 4B	1,406,313
6B	270,115
6C	701,396
9A	729,377
Exploration Holes & Wells	892,016
Fencing	1,117,240
Direct Cost Total	\$15,912,216

Reclamation Summary

Tyrone Mine			Current Value
Task Description	Facility and Structure Removal		\$477,528
	Earthmoving		\$86,426,705
	Vegetation	100%	\$3,079,518
	Other		\$15,912,116
Subtotal, Direct Costs			\$105,895,867
INDIRECT COSTS¹			
	Mobilization and Demobilization	1.0%	\$1,058,959
	Contingencies	2.0%	\$2,117,917
	Engineering Redesign Fee	2.5%	\$2,647,397
	Contractor Profit and Overhead	15.0%	\$15,884,380
	Project Management Fee	2.0%	\$2,117,917
	State Procurement Cost	0.0%	\$0
	Indirect Percentage Sum =	22.5%	
Subtotal, Indirect Costs			\$23,826,570
TOTAL COST			\$129,722,000

Data Sources:

- MMD. 1996. Closeout Plan Guidelines for Existing Mines, Mining Act Reclamation Bureau Mining and Minerals Division
New Mexico Energy, Minerals and Natural Resources Department. April 30, 1996.
- OSM. 2000. U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement
Handbook for Calculation of Reclamation Bond Amounts. April 5, 2000.

Notes:

- 1) Indirect costs are based on the guidance available from MMD (1996) and OSM (2000).

Reclamation Summary

		1A and 1B Leach	2A Leach and 2B Waste	3A / 3B	5A	San Salvador Pit	Savanna Pit	4C	2C, 4A, 7B, 4B	8C sludge disposal area	6B	6C	9A	Exploration Holes & Wells	Fencing	Utility Demolition	1C Top (Haul Road)	Surface Impoundments	Unplanned Disturbed Area	Pipeline Demolition	Totals		
DIRECT COSTS	Facility and Structure Removal ¹		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$88,494	\$0	\$12,954	\$0	\$376,080	\$478,000		
	Earthmoving		\$4,386,233	\$14,175,463	\$32,351,415	\$9,126,473	\$6,020,934	\$1,065,093	\$4,945,662	\$9,114,332	\$684,535	\$871,404	\$1,283,836	\$90,954	\$0	\$0	\$0	\$247,154	\$305,967	\$1,757,250	\$0	\$86,427,000	
	Vegetation	100.0%	\$301,971	\$538,672	\$503,286	\$410,371	\$127,204	\$71,898	\$202,420	\$414,796	\$52,386	\$59,731	\$73,004	\$142,690	\$0	\$0	\$0	\$18,809	\$24,014	\$138,265	\$0	\$3,080,000	
	Other ¹		\$1,779,690	\$2,569,163	\$3,406,333	\$1,405,107	\$528,693	\$0	\$1,106,671	\$1,406,313	\$0	\$270,115	\$701,396	\$729,377	\$892,016	\$1,117,240	\$0	\$0	\$0	\$0	\$0	\$15,912,000	
	Subtotal, Direct Costs		\$6,467,895	\$17,283,298	\$36,261,034	\$10,941,952	\$6,676,830	\$1,136,991	\$6,254,753	\$10,935,441	\$736,921	\$1,201,250	\$2,058,237	\$963,021	\$892,016	\$1,117,240	\$88,494	\$265,962	\$342,935	\$1,895,516	\$376,080	\$105,896,000	
INDIRECT COSTS	Mobilization and Demobilization	1.0%	\$64,679	\$172,833	\$362,610	\$109,420	\$66,768	\$11,370	\$62,548	\$109,354	7369.208998	\$12,013	\$20,582	\$9,630	\$8,920	\$11,172	\$885	\$2,660	\$3,429	\$18,955	\$3,761	\$1,059,000	
	Contingencies	2.0%	\$129,358	\$345,666	\$725,221	\$218,839	\$133,537	\$22,740	\$125,095	\$218,709	14738.418	\$24,025	\$41,165	\$19,260	\$17,840	\$22,345	\$1,770	\$5,319	\$6,859	\$37,910	\$7,522	\$2,118,000	
	Engineering Redesign Fee	2.5%	\$161,697	\$432,082	\$906,526	\$273,549	\$166,921	\$28,425	\$156,369	\$273,386	\$18,423	\$30,031	\$51,456	\$24,076	\$22,300	\$27,931	\$2,212	\$6,649	\$8,573	\$47,388	\$9,402	\$2,647,000	
	Contractor Profit and Overhead	15.0%	\$970,184	\$2,592,495	\$5,439,155	\$1,641,293	\$1,001,525	\$170,549	\$938,213	\$1,640,316	\$110,538	\$180,188	\$308,736	\$144,453	\$133,802	\$167,586	\$13,274	\$39,894	\$51,440	\$284,327	\$56,412	\$15,884,000	
	Project Management Fee	2.0%	\$129,358	\$345,666	\$725,221	\$218,839	\$133,537	\$22,740	\$125,095	\$218,709	\$14,738	\$24,025	\$41,165	\$19,260	\$17,840	\$22,345	\$1,770	\$5,319	\$6,859	\$37,910	\$7,522	\$2,118,000	
	State Procurement Cost	0.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Indirect Percentage Sum =	22.5%																					
	Subtotal, Indirect Costs		\$1,455,276	\$3,888,742	\$8,158,733	\$2,461,939	\$1,502,287	\$255,823	\$1,407,319	\$2,460,474	\$165,807	\$270,281	\$463,103	\$216,680	\$200,704	\$251,379	\$19,911	\$59,842	\$77,160	\$426,491	\$84,618	\$23,827,000	
TOTAL COST PER STOCKPILE			\$7,923,171	\$21,172,040	\$44,419,767	\$13,403,891	\$8,179,117	\$1,392,814	\$7,662,072	\$13,395,916	\$902,728	\$1,471,532	\$2,521,340	\$1,179,701	\$1,092,720	\$1,368,619	\$108,405	\$325,804	\$420,096	\$2,322,007	\$460,698	\$129,722,000	
TOTAL COST			\$126,194,000																				

¹ Other includes fencing, abandonment of exploration holes, well installation/closure, outslope channels, downdrains, benches, and seepage collection/interceptor trench installation.

Facility Characteristics

Facility	1A and 1B Leach	2A Leach and 2B Waste	3A / 3B	5A	San Salvador Pit	Savanna Pit	4C	2C, 4A, 7B, 4B	8C sludge disposal area	6B	6C	9A	Exploration Holes & Wells	Fencing	Utility Demolition	1C Top (Haul Road)	Surface Impoundments	Unplanned Disturbed Area	Pipeline Demolition
Reclaimed Acres	273.0	487.0	455.0	371.0	115.0	65.0	183.0	375.0	47.4	54.0	66.0	129.0	-	-	-	17.0	21.2	125.0	-
<u>Item</u>	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost	Capital Cost
Cover Material	\$5,073,328	\$12,150,429	\$10,081,768	\$6,098,908	\$2,296,897	\$895,460	\$4,409,792	\$8,280,108	\$831,535	\$907,137	\$1,273,384	\$0	-	-	\$0	\$302,763	\$371,663	\$2,134,104	\$0
Truck/Shovel	\$0	\$0	\$26,486,125	\$0	\$4,475,445	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-	-	\$0	\$0	\$0	\$0	\$0
Top/Outslope Adjustment	\$299,807	\$5,214,514	\$3,062,590	\$5,081,022	\$603,302	\$409,278	\$1,648,644	\$2,884,950	\$7,020	\$160,333	\$299,316	\$111,418	-	-	\$0	\$0	\$3,147	\$18,528	\$0
Seed & Mulch	\$369,915	\$659,874	\$616,525	\$502,705	\$155,825	\$88,075	\$247,965	\$508,125	\$64,173	\$73,170	\$89,430	\$174,795	-	-	\$0	\$23,041	\$29,417	\$169,375	\$0
Channels, Benches, & Berms	\$2,180,121	\$3,147,224	\$2,205,347	\$1,721,256	\$647,649	\$0	\$1,355,672	\$1,722,733	\$0	\$330,891	\$859,211	\$893,487	-	-	-	\$0	\$0	\$0	\$0
Demolition	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-	-	\$108,405	\$0	\$15,869	\$0	\$460,698
Other ¹	0	0	1,967,411	0	0	0	0	0	0	0	0	0	\$1,092,720	1,368,619	0	\$0	\$0	\$0	\$0
Capital Cost Totals	\$7,923,171	\$21,172,040	\$44,419,767	\$13,403,891	\$8,179,117	\$1,392,814	\$7,662,072	\$13,395,916	\$902,728	\$1,471,532	\$2,521,340	\$1,179,701	\$1,092,720	\$1,368,619	\$108,405	\$325,804	\$420,096	\$2,322,007	\$460,698
Capital Cost/Acre	\$29,023	\$43,475	\$97,626	\$36,129	\$71,123	\$21,428	\$41,869	\$35,722	\$19,061	\$27,251	\$38,202	\$9,145	-	-	-	\$19,160	\$19,788	\$18,576	-
Capital Cost/Acre Cover	18,584	24,950	22,158	16,439	19,973	13,776	24,097	22,080	17,558	16,799	19,294	0	-	-	-	17,805	17506.48175	17,073	-
Capital Cost/Acre Truck Shovel	0	0	58,211	0	38,917	0	0	0	0	0	0	0	-	-	-	0	0	0	-
Capital Cost/Acre Top/Outslope Adjustme	1,098	10,708	6,731	13,695	5,246	6,297	9,009	7,693	148	2,969	4,535	864	-	-	-	0	148.2224112	148	-
Capital Cost/Acre Earthwork Total	\$19,682	\$35,658	\$87,100	\$30,135	\$64,136	\$20,073	\$33,106	\$29,773	\$17,706	\$19,768	\$23,829	\$864	-	-	-	\$17,805	\$17,655	\$17,221	-
Capital Cost/Acre veg	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	\$1,355	-	-	-	\$1,355	\$1,386	\$1,355	-
Capital Cost/Acre Other	\$7,986	\$6,463	\$9,171	\$4,640	\$5,632	\$0	\$7,408	\$4,594	\$0	\$6,128	\$13,018	\$6,926	-	-	-	\$0	\$0	\$0	-

¹ Other includes fencing, abandonment of exploration holes, well installation/closure, outslope channels, downdrains, benches, and seepage collection/interceptor trench installation.

Building Information							Building Demolition							
Post-Mining Land Use Designations of Tyrone Mine Buildings							Means							
Tyrone Tag. No.	Description	Number		Dimensions		PMLU?	Demo?	Quantity	Unit	Unit Cost (\$/unit)	Item Cost (\$)	Line Item	Page	Description
			L	W or Dia	H									
Mine Maintenance Facilities Area														
MM-06	Jerome Building	1	204	63	50	Wildlife Habitat	Y	642600	cu ft	0.23	\$ 146,436	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-07	Plant Warehouse	1	250	100	28	Wildlife Habitat	Y	700000	cu ft	0.23	\$ 159,516	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-09	Electric Shop	1	120	51	50	Wildlife Habitat	Y	306000	cu ft	0.23	\$ 69,731	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-10	Pipe Shop	1	145	41	40	Wildlife Habitat	Y	237800	cu ft	0.23	\$ 54,190	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-11	Carpenter Shop	1	119	69	27	Wildlife Habitat	Y	221697	cu ft	0.23	\$ 50,520	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-12	Lumber Storage	1	102	61	33	Wildlife Habitat	Y	205326	cu ft	0.23	\$ 46,790	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-13	Shovel Repair	1	121	70	66	Wildlife Habitat	Y	559020	cu ft	0.23	\$ 127,389	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MM-14	Environmental Lab	1	112	27	17	Wildlife Habitat	Y	51408	cu ft	0.23	\$ 11,715	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
SX-EW Plant Area														
-	Tank house	1	150	465	30	Wildlife Habitat	Y	2092500	cu ft	0.23	\$ 476,839	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	SX/EW Plant Area Shop	1	31	71	30	Wildlife Habitat	Y	66030	cu ft	0.23	\$ 15,047	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Leach Crew Office	1	15	15	15	Wildlife Habitat	Y	3375	cu ft	0.23	\$ 769	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	SX/EW Warehouse	1	48	150	20	Wildlife Habitat	Y	144000	cu ft	0.23	\$ 32,815	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Gonzales Cells	1	25	52	10	Wildlife Habitat	Y	13000	cu ft	0.23	\$ 2,962	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Jamison Cells	1	35	44	10	Wildlife Habitat	Y	15400	cu ft	0.23	\$ 3,509	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Organic Tanks	4		32	16	Wildlife Habitat	Y	96265	gal	6851.903	\$ 27,408	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Mixer/Settler Tanks	8	200	366	10	Wildlife Habitat	Y	732000	cu ft	0.23	\$ 1,334,465	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Tank Farm	5		19	10	Wildlife Habitat	Y	21211	gal	1509.727	\$ 7,548.64	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Water Tank	1		30	16	Wildlife Habitat	Y	84608	gal	6022.18	\$ 6,022	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Acid Tanks	2		20	16	Wildlife Habitat	Y	37604	gal	2676.525	\$ 5,353	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	MCC Building	1	14	30	12	Wildlife Habitat	Y	5040	cu ft	0.23	\$ 1,149	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Tool room and Storage	1	60	70	12	Wildlife Habitat	Y	50400	cu ft	0.23	\$ 11,485	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Chlorinator Room	1	19	66	12	Wildlife Habitat	Y	15048	cu ft	0.23	\$ 3,429	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	2A West Raff Tank	1		22	16	Wildlife Habitat	Y	45500	gal	3238.595	\$ 3,239	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Rectifiers	1	20	24	12	Wildlife Habitat	Y	5760	cu ft	0.23	\$ 1,313	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Workroom	1	66	75	12	Wildlife Habitat	Y	59400	cu ft	0.23	\$ 13,536	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Pump Mixer Control Room	1	41	41	12	Wildlife Habitat	Y	20172	cu ft	0.23	\$ 4,597	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Cobalt Sulfate Tank	1		18	16	Wildlife Habitat	Y	30459	gal	2167.985	\$ 2,167.98	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Reagent Tanks	2		12	12	Wildlife Habitat	Y	10153	gal	953.72	\$ 1,907	130505.75-0530	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 5,000 thru 10,000 gallon
-	Tool room and Storage	1	8	32	12	Wildlife Habitat	Y	3072	cu ft	0.23	\$ 700	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Diluent Storage Tank	1		18	16	Wildlife Habitat	Y	30459	gal	2167.985	\$ 2,168	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Pacesetter Filters (2)	1	48	80	12	Wildlife Habitat	Y	46080	cu ft	0.23	\$ 10,501	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Wash Pad	1	45	68	-	Wildlife Habitat	Y	3060	sq ft	4.58	\$ 14,024	024116.17-0440	38	Building footing and foundation demolition 6" thick plain concrete, reinforced wire mesh, rods
Lubrication Shop Area														
-	Prill Tanks	2		20	35	Waiver Area	Y	82258	gal	5854.897	\$ 11,710	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
-	Lubrication Shop	1	110	60	35	Waiver Area	Y	231000	cu ft	0.23	\$ 52,640	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Southwest Energy Building	1	42	42	19	Not Specified	Y	33516	cu ft	0.23	\$ 7,638	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Electric Power Substation	1	52	36	10	Waiver Area	Y	18720	cu ft	0.23	\$ 4,266	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Powder Magazines	3	10	10	10	Waiver Area	Y	1000	cu ft	0.23	\$ 684	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Storage Sheds	1	110	60	10	Waiver Area	Y	66000	cu ft	0.23	\$ 15,040	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Lube shop Addition	1	50	70	17	-	Y	59500	cu ft	0.23	\$ 13,559	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	#2 Fuel Dock Concrete Slab for Haul Trucks	1	14	42	-	-	Y	588	sq ft	4.58	\$ 2,695	024116.17-0440	38	Building footing and foundation demolition 6" thick plain concrete, reinforced wire mesh, rods
Acid Unloading Facility & Former Precipitation Area														
-	Acid Unloading Facility	1	20	10	20	Wildlife Habitat	Y	4000	cu ft	0.23	\$ 912	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
-	Former Precipitation Plant Building	1	400	100	-	Wildlife Habitat	Y	40000	sq ft	4.58	\$ 183,317	024116.17-0440	38	Building footing and foundation demolition 6" thick plain concrete, reinforced wire mesh, rods
Mill and Concentrator Area														
MC-15	Warehouse and Core Storage	1	235	101	33	Wildlife Habitat	Y	783255	cu ft	0.23	\$ 178,488	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MC-20	Reagent Building	1	150	50	16	Wildlife Habitat	Y	120000	cu ft	0.23	\$ 27,346	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MC-21	Fuel Station	1	60	50	-	Wildlife Habitat	Y	3000	sq ft	4.58	\$ 13,749	024116.17-0440	38	Building footing and foundation demolition 6" thick plain concrete, reinforced wire mesh, rods
MC-22	Tire Shop	1	79	44	23	Wildlife Habitat	Y	79948	cu ft	0.23	\$ 18,219	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
MC-27	Inactive Diesel Storage Tanks	2		20	15	Wildlife Habitat	Y	35253	gal	2509.242	\$ 5,018	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000
2B Leach / Little Rock Haul Road Fuel Dock Area														
-	Fuel Dock	1	70	40		Wildlife Habitat	Y	2800	sq ft	4.58	\$ 12,832	024116.17-0440	38	Building footing and foundation demolition 6" thick plain concrete, reinforced wire mesh, rods

Data Sources:

RS Means Heavy Construction Cost Data (26th Annual Edition 2012)
Location adjustment: New Mexico 880 Las Cruces 84.40%

Direct Cost Total \$ 3,197,351

Notes

1) Unit cost for tanks larger than 30,000 gallons is scaled based on volume.

		Units	Means	Means	Means
Bare Unit Cost	Local Unit Cost		Line Item	Page	Description
0.27	0.23	\$/ft3	024116.13-0100	37	Building Demolition Large Urban projects, incl 20mi. Haul, No foundation or dump fees, C.F. is vol. of building standing Mixture of Types average
17.34	14.63	\$/sf floor	133419.50-1100	149	Metal Building Systems, Pre-Engineered Steel Buildings, Clear span rigid frame, 26 ga. Colored roofing and siding 50'-100' wide, 24' eave height
5.43	4.58	\$/ft2	024116.17-0440	38	Building footing and foundation demolition 6" thick plain concrete, reinforced wire mesh, rods
1130	953.72	\$/each	130505.75-0530	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 5,000 thru 10,000 gallon
2530	2135.32	\$/each	130505.75-0540	146	Storage Tanks, steel tank, single wall, above ground, not incl fdn, pumps or piping, 15,000 thru 30,000

100% of footprint receives cover materia

Building Information										Cover					
Post-Mining Land Use Designations of Tyrone Mine Building										Unit Cost	Item Cost	Means			
Tyrone Tag. No.	Description	Number	Dimensions			PLMU?	Cover?	Depth	Quantity	Unit	(\$/unit)	(\$)	Line Item	Page	Description
Mine Maintenance Facilities Are:															
			L	W or Dia	H										
MM-06	Jerome Building	1	204	63	50	Wildlife Habitat	Y	3	1428	cy	6.48	\$ 9,256	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-07	Plant Warehouse	1	250	100	28	Wildlife Habitat	Y	3	2778	cy	6.48	\$ 18,005	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-09	Electric Shop	1	120	51	50	Wildlife Habitat	Y	3	680	cy	6.48	\$ 4,408	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-10	Pipe Shop	1	145	41	40	Wildlife Habitat	Y	3	661	cy	6.48	\$ 4,282	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-11	Carpenter Shop	1	119	69	27	Wildlife Habitat	Y	3	912	cy	6.48	\$ 5,914	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-12	Lumber Storage	1	102	61	33	Wildlife Habitat	Y	3	691	cy	6.48	\$ 4,481	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-13	Shovel Repair	1	121	70	66	Wildlife Habitat	Y	3	941	cy	6.48	\$ 6,100	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MM-14	Environmental Field Offices	1	112	27	17	Wildlife Habitat	Y	3	336	cy	6.48	\$ 2,178	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
SX-EW Plant Area															
-	Tank house	1	150	465	30	Wildlife Habitat	Y	3	7750	cy	6.48	\$ 50,235	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	SX/EW Plant Area Shop	1	31	71	30	Wildlife Habitat	Y	3	245	cy	6.48	\$ 1,585	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Leach Crew Office	1	15	15	15	Wildlife Habitat	Y	3	25	cy	6.48	\$ 162	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	SX/EW Warehouse	1	48	150	20	Wildlife Habitat	Y	3	800	cy	6.48	\$ 5,186	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Gonzales Cells	1	25	52	10	Wildlife Habitat	Y	3	144	cy	6.48	\$ 936	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Jamison Cells	1	35	44	10	Wildlife Habitat	Y	3	171	cy	6.48	\$ 1,109	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	MCC Building	1	14	30	12	Wildlife Habitat	Y	3	47	cy	6.48	\$ 302	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Tool room and Storage	1	60	70	12	Wildlife Habitat	Y	3	467	cy	6.48	\$ 3,025	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Chlorinator Room	1	19	66	12	Wildlife Habitat	Y	3	139	cy	6.48	\$ 903	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Rectifiers	1	20	24	12	Wildlife Habitat	Y	3	53	cy	6.48	\$ 346	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Workroom	1	66	75	12	Wildlife Habitat	Y	3	550	cy	6.48	\$ 3,565	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Pump Mixer Control Room	1	41	41	12	Wildlife Habitat	Y	3	187	cy	6.48	\$ 1,211	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Tool room and Storage	1	8	32	12	Wildlife Habitat	Y	3	28	cy	6.48	\$ 184	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Pacesetter Filters (2)	1	48	80	12	Wildlife Habitat	Y	3	427	cy	6.48	\$ 2,766	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Wash Pad	1	45	68	-	Wildlife Habitat	Y	3	340	cy	6.48	\$ 2,204	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
Lubrication Shop Area:															
-	Lubrication Shop	1	110	60	35	Waiver Area	Y	3	733	cy	6.48	\$ 4,753	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Southwest Energy Building	1	42	42	19	Not Specified	Y	3	196	cy	6.48	\$ 1,270	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Electric Power Substation	1	52	36	10	Waiver Area	Y	3	208	cy	6.48	\$ 1,348	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Powder Magazines	3	10	10	10	Waiver Area	Y	3	11	cy	6.48	\$ 216	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Storage Sheds	1	110	60	10	Waiver Area	Y	3	733	cy	6.48	\$ 4,753	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Lube shop Additor	1	50	70	17	-	Y	3	389	cy	6.48	\$ 2,521	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	#2 Fuel Dock Concrete Slab for Haul Trucks	1	14	42	-	-	Y	3	65	cy	6.48	\$ 423	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
Acid Unloading Facility & Former Precipitation Area:															
-	Acid Unloading Facility	1	20	10	20	Wildlife Habitat	Y	3	22	cy	6.48	\$ 144	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
-	Former Precipitation Plant Building	1	400	100	-	Wildlife Habitat	Y	3	4444	cy	6.48	\$ 28,809	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
Mill and Concentrator Area:															
MC-20	Reagent Building	1	150	50	16	Wildlife Habitat	Y	3	833	cy	6.48	\$ 5,402	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
MC-21	Fuel Station	1	60	50	-	Wildlife Habitat	Y	3	333	cy	6.48	\$ 2,161	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R
2B Leach / Little Rock Haul Road Fuel Dock Area:															
-	Fuel Dock	1	70	40	-	Wildlife Habitat	Y	3	311	cy	6.48	\$ 2,017	G1030140-7600	463	Load and Haul earth 5-cy loader, 12 20-cy trailers, 4-mile R

Data Sources:

RS Means Heavy Construction Cost Data (26th Annual Edition 2012)

Direct Cost Total \$ 182,160

Location adjustment: New Mexico 880 Las Cruces: 84.4%

Building Information						Vegetation		
Post-Mining Land Use Designations of Tyrone Mine Buildings								
Tyrone Tag	Description	Number	Dimensions		PMLU?	veg?	Area	Unit
Mine Maintenance Facilities Area			L	W or Dia	H			
MM-06	Jerome Building	1	204	63	50	Wildlife Habitat	Y	0.295 ac
MM-07	Plant Warehouse	1	250	100	28	Wildlife Habitat	Y	0.574 ac
MM-09	Electric Shop	1	120	51	50	Wildlife Habitat	Y	0.140 ac
MM-10	Pipe Shop	1	145	41	40	Wildlife Habitat	Y	0.136 ac
MM-11	Carpenter Shop	1	119	69	27	Wildlife Habitat	Y	0.188 ac
MM-12	Lumber Storage	1	102	61	33	Wildlife Habitat	Y	0.143 ac
MM-13	Shovel Repair	1	121	70	66	Wildlife Habitat	Y	0.194 ac
MM-14	Environmental Field Offices	1	112	27	17	Wildlife Habitat	Y	0.069 ac
SX-EW Plant Area								
-	Tank house	1	150	465	30	Wildlife Habitat	Y	1.601 ac
-	SX/EW Plant Area Shop	1	31	71	30	Wildlife Habitat	Y	0.051 ac
-	Leach Crew Office	1	15	15	15	Wildlife Habitat	Y	0.005 ac
-	SX/EW Warehouse	1	48	150	20	Wildlife Habitat	Y	0.165 ac
-	Gonzales Cells	1	25	52	10	Wildlife Habitat	Y	0.030 ac
-	Jamison Cells	1	35	44	10	Wildlife Habitat	Y	0.035 ac
-	Organic Tanks	4		32	16	Wildlife Habitat	Y	0.074 ac
-	Mixer/Settler Tanks	8	200	366	10	Wildlife Habitat	Y	13.444 ac
-	Tank Farm	5		19	10	Wildlife Habitat	Y	0.033 ac
-	Water Tank	1		30	16	Wildlife Habitat	Y	0.016 ac
-	Acid Tanks	2		20	16	Wildlife Habitat	Y	0.014 ac
-	MCC Building	1	14	30	12	Wildlife Habitat	Y	0.010 ac
-	Tool room and Storage	1	60	70	12	Wildlife Habitat	Y	0.096 ac
-	Chlorinator Room	1	19	66	12	Wildlife Habitat	Y	0.029 ac
-	Rectifiers	1	20	24	12	Wildlife Habitat	Y	0.011 ac
-	Workroom	1	66	75	12	Wildlife Habitat	Y	0.114 ac
-	Pump Mixer Control Room	1	41	41	12	Wildlife Habitat	Y	0.039 ac
-	Cobalt Sulfate Tank	1		18	16	Wildlife Habitat	Y	0.006 ac
-	Reagent Tanks	2		12	12	Wildlife Habitat	Y	0.005 ac
-	Tool room and Storage	1	8	32	12	Wildlife Habitat	Y	0.006 ac
-	Diluent Storage Tank	1		18	16	Wildlife Habitat	Y	0.006 ac
-	Pacesetter Filters (2)	1	48	80	12	Wildlife Habitat	Y	0.088 ac
-	Wash Pad	1	45	68	-	Wildlife Habitat	Y	0.070 ac
Lubrication Shop Area								
-	Prill Tanks	2		20	35	Waiver Area	Y	0.014 ac
-	Lubrication Shop	1	110	60	35	Waiver Area	Y	0.152 ac
-	Southwest Energy Building	1	42	42	19	Not Specified	Y	0.040 ac
-	Electric Power Substation	1	52	36	10	Waiver Area	Y	0.043 ac
-	Powder Magazines	3	10	10	10	Waiver Area	Y	0.007 ac
-	Storage Sheds	1	110	60	10	Waiver Area	Y	0.152 ac
-	Lube shop Addition	1	50	70	17	-	Y	0.080 ac
-	#2 Fuel Dock Concrete Slab for Haul Trucks	1	14	42	-	-	Y	0.013 ac
Acid Unloading Facility & Former Precipitation Area								
-	Acid Unloading Facility	1	20	10	20	Wildlife Habitat	Y	0.005 ac
-	Former Precipitation Plant Building	1	400	100	-	Wildlife Habitat	Y	0.918 ac
Mill and Concentrator Area								
MC-15	Warehouse and Core Storage	1	235	101	33	Wildlife Habitat	Y	0.545 ac
MC-20	Reagent Building	1	150	50	16	Wildlife Habitat	Y	0.172 ac
MC-21	Fuel Station	1	60	50	-	Wildlife Habitat	Y	0.069 ac
MC-27	Inactive Diesel Storage Tanks	2		20	15	Wildlife Habitat	Y	0.014 ac
2B Leach / Little Rock Haul Road Fuel Dock Area								
	Fuel Dock	1	70	40		Wildlife Habitat	Y	0.029 ac

Data Sources:

RS Means Heavy Construction Cost Data (26th Annual Edition 2012)

Location adjustment: New Mexico 880 Las Cruces

Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface.

Vegetation Area: 19.94 acres
 Vegetation unit cost: \$ 1,106.12 \$/acre
Direct Cost Total: \$ 22,058

Facility Demolition Summary

		Current Value
Tyrone Mine		
DIRECT COSTS	Facility and Structure Removal	\$3,197,351
	Ripping & Revegetation	\$22,058
	Cover	\$182,160
	Subtotal, Direct Costs	\$3,402,000
INDIRECT COSTS¹	Mobilization and Demobilization	1.0% \$34,020
	Contingencies	2.0% \$68,040
	Engineering Redesign Fee	2.5% \$85,050
	Contractor Profit and Overhead	15.0% \$510,300
	Project Management Fee	2.0% \$68,040
	State Procurement Cost	0.0% \$0
	Indirect Percentage Sum =	22.5%
	Subtotal, Indirect Costs	\$765,000
TOTAL COST		\$4,167,000

Data Sources:

MMD. 1996. Closeout Plan Guidelines for Existing Mines, Mining Act Reclamation Bureau Mining and Minerals Division
New Mexico Energy, Minerals and Natural Resources Department. April 30, 1996.
OSM. 2000. U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement
Handbook for Calculation of Reclamation Bond Amounts. April 5, 2000.

Notes:

- 1) Indirect costs are based on the guidance available from MMD (1996) and OSM (2000).

Vegetation Maintenance Costs

Activity	Total Area (acres)	Reclamation Complete	Veg Maintenance Complete	# yrs veg Maint.	% loss per year	Quantity	Unit	Unit Cost (\$/unit)	Item Cost (\$)		Description
Veg maintenance Burro Mountain Tailing Dam	58	Dec-04	Dec-16	1.92	2%	1.2	acres	\$1,106	\$2,464	\$2,895	2% of veg fails every year for 12 years.
Veg maintenance 3 Tailing Dam	643	Dec-06	Dec-18	3.92	2%	12.9	acres	\$1,106	\$55,761	\$55,761	"
Veg maintenance 3x Tailing Dam	365	Dec-05	Dec-17	2.92	2%	7.3	acres	\$1,106	\$23,578	\$23,578	"
Burro Mountain	1.3	Dec-05	Dec-17	2.92	2%	0.0	acres	\$1,106	\$84	\$84	"
Mill Initial	45	Apr-07	Apr-19	4.25	2%	0.9	acres	\$1,106	\$4,231	\$4,231	"
Mill (11 redo)	11	Aug-10	Aug-22	7.61	2%	0.2	acres	\$1,106	\$1,852	\$1,852	"
Veg maintenance 1, 1A, 1x Tailing Dam	1547	Sep-09	Sep-21	6.73	2%	30.9	acres	\$1,106	\$230,324	\$230,324	"
Veg maintenance 2 Tailing Dam	606	Sep-09	Sep-21	6.73	2%	12.1	acres	\$1,106	\$90,224	\$90,224	"
Stockpile 1	500	Dec-09	Dec-21	7.00	2%	10.0	acres	\$1,106	\$77,429	\$77,429	"
1C Stockpile	45	Dec-11	Dec-23	9.00	2%	0.9	acres	\$1,106	\$8,960	\$8,960	"
1C Stockpile	111.7	Dec-12	Dec-24	10.00	2%	2.2	acres	\$1,106	\$24,711	\$24,711	"
7AFW Stockpile	34	Dec-10	Dec-22	8.00	2%	0.7	acres	\$1,106	\$6,017	\$6,017	"
7AW Upper	38.2	Dec-10	Dec-22	8.00	2%	0.8	acres	\$1,106	\$6,761	\$6,761	"
7AW Wing	7.7	Dec-10	Dec-22	8.00	2%	0.2	acres	\$1,106	\$1,363	\$1,363	"
7AW Wing	4	Dec-11	Dec-23	9.00	2%	0.1	acres	\$1,106	\$796	\$796	"
7AE Upper	18.3	Dec-11	Dec-23	9.00	2%	0.4	acres	\$1,106	\$3,644	\$3,644	"
7AE Upper	27.2	Dec-12	Dec-24	10.00	2%	0.5	acres	\$1,106	\$6,017	\$6,017	"
No Man's Land	4	Dec-12	Dec-24	10.00	2%	0.1	acres	\$1,106	\$885	\$885	"
Copper Mountain Reclamation Area	51.4	Jan-15	Jan-27	12.00	2%	1.0	acres	\$1,106	\$13,645	\$13,645	"
Remaining lauder line & tailings pipeline / associated features NW of tailing thickeners	100	Jan-15	Jan-27	12.00	2%	2.0	acres	\$1,106	\$26,547	\$26,547	"
Veg maintenance Stockpiles	2784	-	-	12	2%	55.7	acres	\$1,106	\$739,084	\$739,084	"
Building Demolition	19.94	-	-	12	2%	0.4	acres	\$1,106	\$5,294	\$5,294	"

Total Direct Cost: \$1,329,669

Notes:

Reclamation Start Date: Jan-15

Total With Indirects \$1,562,361

[1] Rocky Mountain Reclamation, Laramie WY (March, 2012). Quote includes cost for scarifying (ripping) surface.
1106.12 \$/acre

[2] Crew B-13A (1 Labor Foreman, 2 laborers, 2 equip. operators (med.), 2 truck drivers (heavy), 1 crane (75 ton), 1 crawler loader (4 cy), 2 dump trucks (8 cy, 220 HP))
RS Means Heavy Construction Cost Data (26th Annual Edition, 2012)
7240.48 \$/day
84.40% Location Adjustment
6110.97 \$/day (Adjusted)

Operations & Maintenance

Indirect Cost Percentage 17.5%
Reclamation begins Jan-15 (Year 0)

Tyrone
Worksheet #20
6/12/13

EROSION CONTROL [1]

	Years 0-19	Years 20-39	Years 40-99
Base:	\$5,628.08	\$5,628.08	\$5,628.08 \$/day
Time:	30	24	15 day/yr
Annual:	\$168,842.28	\$135,073.82	\$84,421.14 \$/yr
	Annual		

ROAD MAINTENANCE [2]

	Years 0-19	Years 20-39	Years 40-99
Base:	\$14,104.49	\$14,104.49	\$14,104.49 \$/month
Time:	4	4	4 months/yr
Annual:	\$56,417.95	\$56,417.95	\$56,417.95 \$/yr
	Annual		

TAILING COVER MAINTENANCE [3]

	Years 0-1	Years 2-6
Base:	\$4,256.02	\$4,256.02 \$/day
Time:	90	60 day/yr
Annual:	\$383,041.74	\$255,361.16 \$/yr
	Annual	

				Total Reclaimed Area per Year % reclaimed			
Year	Current Cost (\$)	Year	Current Cost (\$)	Year	Current Cost (\$)	Year	Current Cost (\$)
0	\$101,419 Weighted based on total reclaimed area	0	\$33,889 Weighted based on total reclaimed area	4,218	60%	0	\$383,042
1	\$107,037 Weighted based on total reclaimed area	1	\$35,766 Weighted based on total reclaimed area	4,451	63%	1	\$383,042
2	\$112,656 Weighted based on total reclaimed area	2	\$37,644 Weighted based on total reclaimed area	4,685	67%	2	\$255,361
3	\$118,275 Weighted based on total reclaimed area	3	\$39,521 Weighted based on total reclaimed area	4,919	70%	3	\$255,361
4	\$123,893 Weighted based on total reclaimed area	4	\$41,398 Weighted based on total reclaimed area	5,152	73%	4	\$255,361
5	\$129,512 Weighted based on total reclaimed area	5	\$43,276 Weighted based on total reclaimed area	5,386	77%	5	\$255,361
6	\$135,131 Weighted based on total reclaimed area	6	\$45,153 Weighted based on total reclaimed area	5,620	80%	6	\$255,361
7	\$140,749 Weighted based on total reclaimed area	7	\$47,031 Weighted based on total reclaimed area	5,853	83%	7	
8	\$146,368 Weighted based on total reclaimed area	8	\$48,908 Weighted based on total reclaimed area	6,087	87%	8	
9	\$151,986 Weighted based on total reclaimed area	9	\$50,786 Weighted based on total reclaimed area	6,321	90%	9	
10	\$157,605 Weighted based on total reclaimed area	10	\$52,663 Weighted based on total reclaimed area	6,554	93%	10	
11	\$163,224 Weighted based on total reclaimed area	11	\$54,541 Weighted based on total reclaimed area	6,788	97%	11	
12	\$168,842 Weighted based on total reclaimed area	12	\$56,418 Weighted based on total reclaimed area	7,022	100%	12	
13	\$168,842	13	\$56,418			13	
14	\$168,842	14	\$56,418			14	
15	\$168,842	15	\$56,418			15	
16	\$168,842	16	\$56,418			16	
17	\$168,842	17	\$56,418			17	
18	\$168,842	18	\$56,418			18	
19	\$168,842	19	\$56,418			19	
20	\$135,074	20	\$56,418			20	
21	\$135,074	21	\$56,418			21	
22	\$135,074	22	\$56,418			22	
23	\$135,074	23	\$56,418			23	
24	\$135,074	24	\$56,418			24	
25	\$135,074	25	\$56,418			25	
26	\$135,074	26	\$56,418			26	
27	\$135,074	27	\$56,418			27	
28	\$135,074	28	\$56,418			28	
29	\$135,074	29	\$56,418			29	
30	\$135,074	30	\$56,418			30	
31	\$135,074	31	\$56,418			31	
32	\$135,074	32	\$56,418			32	
33	\$135,074	33	\$56,418			33	
34	\$135,074	34	\$56,418			34	
35	\$135,074	35	\$56,418			35	
36	\$135,074	36	\$56,418			36	
37	\$135,074	37	\$56,418			37	
38	\$135,074	38	\$56,418			38	
39	\$135,074	39	\$56,418			39	
40	\$84,421	40	\$56,418			40	
41	\$84,421	41	\$56,418			41	
42	\$84,421	42	\$56,418			42	
43	\$84,421	43	\$56,418			43	
44	\$84,421	44	\$56,418			44	
45	\$84,421	45	\$56,418			45	
46	\$84,421	46	\$56,418			46	
47	\$84,421	47	\$56,418			47	
48	\$84,421	48	\$56,418			48	
49	\$84,421	49	\$56,418			49	
50	\$84,421	50	\$56,418			50	
51	\$84,421	51	\$56,418			51	
52	\$84,421	52	\$56,418			52	
53	\$84,421	53	\$56,418			53	
54	\$84,421	54	\$56,418			54	
55	\$84,421	55	\$56,418			55	
56	\$84,421	56	\$56,418			56	
57	\$84,421	57	\$56,418			57	
58	\$84,421	58	\$56,418			58	
59	\$84,421	59	\$56,418			59	
60	\$84,421	60	\$56,418			60	
61	\$84,421	61	\$56,418			61	
62	\$84,421	62	\$56,418			62	

EROSION CONTROL [1]

	Years 0-19	Years 20-39	Years 40-99
Base:	\$5,628.08	\$5,628.08	\$5,628.08 \$/day
Time:	30	24	15 day/yr
Annual:	\$168,842.28	\$135,073.82	\$84,421.14 \$/yr
	Annual		

ROAD MAINTENANCE [2]

	Years 0-19	Years 20-39	Years 40-99
Base:	\$14,104.49	\$14,104.49	\$14,104.49 \$/month
Time:	4	4	4 months/yr
Annual:	\$56,417.95	\$56,417.95	\$56,417.95 \$/yr
	Annual		

TAILING COVER MAINTENANCE [3]

	Years 0-1	Years 2-6
Base:	\$4,256.02	\$4,256.02 \$/day
Time:	90	60 day/yr
Annual:	\$383,041.74	\$255,361.16 \$/yr
	3.00 Annual	

		Current Cost (\$)			Current Cost (\$)	Total Reclaimed Area per Year	% reclaimed			Current Cost (\$)
Year			Year					Year		
63		\$84,421	63		\$56,418			63		\$140,839
64		\$84,421	64		\$56,418			64		\$140,839
65		\$84,421	65		\$56,418			65		\$140,839
66		\$84,421	66		\$56,418			66		\$140,839
67		\$84,421	67		\$56,418			67		\$140,839
68		\$84,421	68		\$56,418			68		\$140,839
69		\$84,421	69		\$56,418			69		\$140,839
70		\$84,421	70		\$56,418			70		\$140,839
71		\$84,421	71		\$56,418			71		\$140,839
72		\$84,421	72		\$56,418			72		\$140,839
73		\$84,421	73		\$56,418			73		\$140,839
74		\$84,421	74		\$56,418			74		\$140,839
75		\$84,421	75		\$56,418			75		\$140,839
76		\$84,421	76		\$56,418			76		\$140,839
77		\$84,421	77		\$56,418			77		\$140,839
78		\$84,421	78		\$56,418			78		\$140,839
79		\$84,421	79		\$56,418			79		\$140,839
80		\$84,421	80		\$56,418			80		\$140,839
81		\$84,421	81		\$56,418			81		\$140,839
82		\$84,421	82		\$56,418			82		\$140,839
83		\$84,421	83		\$56,418			83		\$140,839
84		\$84,421	84		\$56,418			84		\$140,839
85		\$84,421	85		\$56,418			85		\$140,839
86		\$84,421	86		\$56,418			86		\$140,839
87		\$84,421	87		\$56,418			87		\$140,839
88		\$84,421	88		\$56,418			88		\$140,839
89		\$84,421	89		\$56,418			89		\$140,839
90		\$84,421	90		\$56,418			90		\$140,839
91		\$84,421	91		\$56,418			91		\$140,839
92		\$84,421	92		\$56,418			92		\$140,839
93		\$84,421	93		\$56,418			93		\$140,839
94		\$84,421	94		\$56,418			94		\$140,839
95		\$84,421	95		\$56,418			95		\$140,839
96		\$84,421	96		\$56,418			96		\$140,839
97		\$84,421	97		\$56,418			97		\$140,839
98		\$84,421	98		\$56,418			98		\$140,839
99		\$84,421	99		\$56,418			99		\$140,839
		\$10,705,338			\$5,495,355					\$2,042,889
Total Indirect Cost		\$18,243,582								

[1] Erosion Control
Modified Crew B-13A (1 Labor Foreman, 2 laborers, 2 equip. operators (med.), 2 truck drivers (heavy), 1 crawler loader (4 cy), 2 dump trucks (8 cy, 220 HP))
RS Means Heavy Construction Cost Data (26th Annual Edition, 2012)

		Inc. Subs O&P	
	#	Hr	Daily Tot.
Labor Foreman (outside)	1	57.10	456.80
Laborers	2	54.00	864.00
Equipment Operators lmed.l	2	70.25	1124.00
Truck Drivers (heavy)	2	53.55	856.80
		Daily	
Crawler Loader, 4 C.Y.	1	1587.30	1587.30
Dump Trucks, 8 C.Y., 220 H.P.	2	393.14	786.28

TOTAL 5675.18 \$/day
84.40% Location Adjustment
4789.85 \$/day (Adjusted)

[2] Road Maintenance Crew

	Owning/	Labor		
	Operating			
	Cost	Rate	Subtotal	Subtotal
	(\$/hr)	(\$/hr)	(\$/hr)	(\$/month)
				24
Cat 16M Motor Grader	152.96	47.70	200.66	4815.84
Off-Hwy Water Tanker Truck, 10,000-gal.	169.93	25.77	195.70	4696.80
Mech. with Truck	15.53	47.19	62.72	1505.22
Oilier with Truck	15.53	25.55	41.08	985.96
TOTAL			500.16	12003.82
	9981.39	4123.10	14104.49	

[3] Tailing Cover Maintenance
Modified Crew B-13A (1 Labor Foreman, 2 laborers, 1 equip. operators (med.), 1 truck drivers (heavy), 1 crawler loader (4 cy), 1 dump trucks (8 cy, 220 HP))

		Inc. Subs O&P	
	#	Hr	Daily Tot.
Labor Foreman (outside)	1	57.10	456.80
Laborers	2	54.00	864.00
Equipment Operators lmed.l	1	70.25	562.00
Truck Drivers (heavy)	1	53.55	428.40
		Daily	
Crawler Loader, 4 C.Y.	1	1587.30	1587.30
Dump Trucks, 8 C.Y., 220 H.P.	1	393.14	393.14

TOTAL 4291.64 \$/day
84.40% Location Adjustment
3622.14 \$/day (Adjusted)

References: Equipment - Equipment Watch Version 5.2.4A, Revised Date: 2nd Half 2012 (<http://www.equipmentwatch.com>). See attachments for rate development.
Labor - NM Department of Labor Type H (Heavy Engineering) labor rates. See attachments for rate development.

Operations and Maintenance Summary

Tyrone Mine		Current Value
DIRECT COSTS	Facility and Structure Removal	\$0
	Earthmoving	\$0
	Vegetation	100% \$0
	Other	\$16,856,000
	Subtotal, Direct Costs	\$16,856,000
INDIRECT COSTS¹	Mobilization and Demobilization	1.0% \$168,560
	Contingencies	2.0% \$337,120
	Engineering Redesign Fee	2.5% \$421,400
	Contractor Profit and Overhead	10.0% \$1,685,600
	Project Management Fee	2.0% \$337,120
	State Procurement Cost	0.0% \$0
	Indirect Percentage Sum =	17.5%
	Subtotal, Indirect Costs	\$2,950,000
TOTAL COST		\$19,806,000

Data Sources:

MMD. 1996. Closeout Plan Guidelines for Existing Mines, Mining Act Reclamation Bureau Mining and Minerals Division
New Mexico Energy, Minerals and Natural Resources Department. April 30, 1996.

OSM. 2000. U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement
Handbook for Calculation of Reclamation Bond Amounts. April 5, 2000.

Notes:

- 1) Indirect costs are based on the guidance available from MMD (1996) and OSM (2000).

EARTHWORK COST ESTIMATE
APPENDIX B
SUPPORTING DOCUMENTATION

APPENDIX B.1

CALCULATION DOCUMENTATION

EQUATIONS USED IN CAPITAL COST SPREADSHEET

Sheet #4 Earthwork:

$$\text{Bank Volume (bcy)} = \text{Area (acre)} * \text{Cover Depth (in)} * \frac{43560(\text{ft}^2 / \text{acre})}{12(\text{in} / \text{ft}) * 27(\text{ft}^3 / \text{cy})}$$

$$\text{Loose Volume (lcy)} = \text{Bank or stockpile Volume (cy)} * [1 + \text{Swell Factor}]$$

Sheet #5 Dozer:

$$\text{Normal Production (cy / hr)} = 228016 * \text{Maximum Push Distance (ft)}^{-.9432}$$

(Curve Fit Cat Handbook Ed 38 D11R page 1 - 43)

$$\begin{aligned} \text{Productivity (cy / hr)} &= \text{Normal Production (cy / hr)} * \text{Operator} * \text{Material} * \frac{\text{Work Hour (min / hr)}}{60 (\text{min / hr})} \\ &* \text{Grade Factor} * \frac{2300(\text{lbs / cy})}{\text{Soil Weight (lbs / cy)}} * \text{Prod. Method} * \text{Visibility} * \text{Elev.} * \text{Drive Trans.} \end{aligned}$$

$$\text{Total Task Time (hr)} = \frac{\text{Loose Volume (cy)}}{\text{Productivity (cy / hr)}}$$

$$\text{Grade (Dozing Factor)} = -0.02 * \text{Grade (\%)} + 1$$

(Curve Fit Cat Handbook Ed 41 1 – 56)

Sheet #6 Grading:

Grade Surface:

$$\text{Grade (Dozing Factor)} = -0.02 * \text{Grade (\%)} + 1$$

(Curve Fit Cat Handbook Ed 41 1 – 56)

$$\begin{aligned} \text{Productivity (acre / hr)} &= \text{Speed (mi / hr)} * \frac{5280 (\text{ft} / \text{mi}) * \text{Effective Blade Width (ft)}}{43560 (\text{ft}^2 / \text{acre})} * \frac{\text{Work Hour (min / hr)}}{60 (\text{min / hr})} \\ &* \text{Operator} * \text{Material} * \text{Grade Factor} * \frac{2300(\text{lbs / cy})}{\text{Soil Weight (lbs / cy)}} * \text{Prod. Method} * \text{Visibility} * \text{Elev.} * \text{Drive Trans.} \end{aligned}$$

$$\text{Task Time (hr)} = \frac{\text{Area (acres)}}{\text{Productivity (acres / hr)}}$$

Grade**Cover:**

D11R Normal Production (cy / hr) = 228016 * Maximum Push Distance (ft)^{-0.9432}

(Curve Fit Cat Handbook Ed 41 1-43)

Grade (Dozing Factor) = -0.02 * Grade (%) + 1

(Curve Fit Cat Handbook Ed 41 1-56)

Productivity (cy / hr) = Normal Production (cy / hr) * $\frac{\text{Work Hour (min/ hr)}}{60 \text{ (min/ hr)}}$ * Operator * Material * Grade Factor
* $\frac{2300 \text{ (lbs / cy)}}{\text{Soil Weight (lbs / cy)}}$ * Production Method * Visibility * Elevation * DriveTrans

Task Time(hr) = $\frac{\text{Area or Volume}}{\text{Productivity}}$

Sheet #7 Ripper NOT USED:

Sheet #8 Excavator NOT USED:

Sheet #9 Trucks:

$$\text{Total Haul Distance (ft)} = \sum \text{Segment Haul Distance (ft)}$$

$$\text{Haul Distance Segment (m)} = \text{Haul Distance (ft)} * 0.3048 \text{ (m / ft)}$$

$$\text{Haul Effective Grade (\%)} = (\text{Haul Grade (\%)} + \text{Rolling Resistance (\%)}) \text{ (unless } < 0 \text{ then } 0)$$

$$\text{Return Effective Grade (\%)} = (\text{Rolling Resistance (\%)} - \text{Haul Grade (\%)}) \text{ (unless } < 0 \text{ then } 0)$$

$$777F \text{ Segment Travel Time Loaded (min/ m)} =$$

$$-1.6825 * \text{Haul Effective Grade Segment (\%)}^3 + 0.4592 * \text{Haul Effective Grade Segment (\%)}^2 \\ + 0.0079 * \text{Haul Effective Grade Segment (\%)} + 0.0009$$

$$777F \text{ Segment Travel Time Empty (min/ m)} =$$

$$-6.2135 * \text{Return Effective Grade Segment (\%)}^4 + 1.0448 * \text{Return Effective Grade Segment (\%)}^3 + 0.1016 * \text{Return Effective Grade Segment (\%)}^2 \\ - 0.0035 * \text{Return Effective Grade Segment (\%)} + 0.0009$$

(Curve Fit Cat Handbook Ed 41 9–42)

$$\text{Loader (cycles / truck)} = \text{Maximum} \left[\frac{\text{Struck Capacity (cy)}}{\text{Loader Net Bucket Capacity (cy)}}, \frac{\text{Heaped Capacity (cy)}}{\text{Loader Net Bucket Capacity (cy)}} \right]$$

$$\text{Haul Time (min)} = \sum (\text{Segment Travel Time Loaded (min/ m)} * \text{Segment Haul Dist (m)})$$

$$\text{Return Time (min)} = \sum (\text{Segment Travel Time Empty (min/ m)} * \text{Segment Haul Dist (m)})$$

$$\text{Loading Time (min)} = \text{Loader Cycle Time (min)} * \text{Loader (cycles / truck)}$$

$$\text{Task Time (hr)} = \text{Maximum} \left[\frac{\text{Volume (cy)}}{\text{Productivity (cy / hr)}}, \text{Loader Task Time (hr)} \right]$$

$$\text{Truck Cycle Time (min)} =$$

$$\text{Haul Time (min)} + \text{Return Time (min)} + \text{Loading Time (min)} \\ + \text{Load / Maneuver Time (min)} + \text{Dump Maneuver Time (min)}$$

$$\text{Productivity (cy / hr)} =$$

$$\text{Work Hour (min/ hr)} * \text{Loader (cycles / truck)} * \text{Loader Net Bucket Cap (cy)} * \frac{\text{Optimum Number of Trucks}}{\text{Truck Cycle Time (min)}}$$

Sheet #10 Loader:

$$\text{Net Bucket Capacity (cy)} = \text{Rated Bucket Capacity (cy)} * \text{Bucket Fill Factor}$$

$$\text{Productivity (cy/hr)} = \frac{\text{Net Bucket Capacity (cy)} * \text{Work Hour (min/hr)}}{\text{Loader Cycle Time (min)}}$$

$$\text{Task Time (hr)} = \frac{\text{Volume (cy)}}{\text{Productivity (cy/hr)}}$$

Sheet #13 Earth Sum:

$$\text{Total Cost (\$)} = [\text{Owning \& Operating Cost (\$/hr)} + \text{Labor Cost (\$/hr)}] * \text{TimeRequired (hr)}$$

$$\text{Unit Cost (\$/unit)} = \frac{\text{Total Cost (\$)}}{\text{Total Production (unit)}}$$

$$\text{Total Cost (\$)} = \sum \text{Total Cost (\$)}$$

Sheet #14 Reveg:

$$\text{Subtotal Cost (\$)} = \text{Area (acres)} * \text{Unit Cost (\$/acre)}$$

$$\text{Total Reveg Cost (\$)} = \sum \text{Subtotal Cost (\$)}$$

Sheet #15 Other:

$$\text{Unit Cost (\$/unit)} = \text{Unadjusted Cost (\$/unit)} * \frac{\text{Location Adjustment (\%)}}{100}$$

$$\text{Current Item Cost (\$)} = \text{Quantity (units)} * \text{Unit Cost (\$/unit)}$$

$$\text{Quantity Soil Removal (cy)} = \text{Area (acres)} * 2 \text{ (ft)} * \frac{43560 \text{ (ft}^2\text{)}}{\text{acre}} * \frac{1 \text{ (cy)}}{27 \text{ (ft}^3\text{)}}$$

$$\text{Total (\$)} = \sum \text{Current Item Cost (\$)}$$

Sheet #16 & 17 BondSum:

$$\text{SubTotal Direct Cost (\$)} = \text{Total Earthmoving (\$)} + \text{Total Reveg (\$)} + \text{Total Other (\$)}$$

$$\text{Indirect Costs \& GrossReceipts Tax(\$)} = \text{SubTotal Direct Cost (\$)} * \frac{\text{Various Costs (\%)}}{100}$$

$$\text{Total Bond Amount (\$)} = \text{Sum Direct Cost (\$)} + \text{Indirect Cost (\$)} + \text{Gross Receipts Tax (\$)}$$

OPTIMIZATION EQUATIONS:

Each Equation for number of trucks (n) from 2 to 25.

Productivity Sheet:

$$\text{Productivity (cy / hr)} =$$

$$\text{Work Hour (min/ hr)} * \text{Loader (cycle / truck)} * \text{Loader Net Buckter Cap (cy)} * \frac{\text{Number of Trucks}[n]}{\text{Truck Cycle Time (min)}}$$

Time Sheet:

$$Time (hr) = Maximum \left(\frac{Volume (cy)}{Productivity (cy / hr)}, Loader Task Time (hr) \right)$$

Truck Cost Sheet:

$$Truck Cost ($) = Time (hr) * Number of Trucks[n] * (Owning \& Operating Cost (\$/hr) + Labor Cost (\$/hr))$$

Loader Cost Sheet:

$$Loader Cost for Number of Trucks[n] ($) = Time (hr) * (Owning \& Operating Cost (\$/hr) + Labor Cost (\$/hr))$$

Total Cost Sheet:

$$Total Cost Number of Trucks[n] ($) = Truck Cost ($) + Loader Cost ($)$$

$$Minimum Cost = Minimum (Total Cost for Number of Trucks[n]($))$$

Optimum Number of Trucks:

$$Number of Trucks[i] = \begin{cases} \text{when } (Total Cost Sheet Minimum Cost ($) \geq Total Cost for Number of Trucks[n]) \\ \text{then } Number of Trucks[n] \\ \text{else } 0 \end{cases}$$

$$Optimum Number of Trucks = \sum_{i=2}^{25} Number of Trucks[i]$$

APPENDIX B.2

LABOR RATES

Labor Rate Detail

Labor	Equipment	Zone	Group	Base rate	Zone Pay	Fringes	Apprentice Rate	Subtotal	FICA 6.200%	Medicare 1.450%	Fed Unempl.	State Unempl.	Workmens Comp	Total per Hour
Power Equipment Operator	Front End Loaders		VI	\$34.03		\$6.98	\$0.35	\$41.36	\$2.56	\$0.60	\$0.02	\$0.21	\$3.083	\$47.84
Power Equipment Operator	Shovel		IV	\$33.88		\$6.98	\$0.35	\$41.21	\$2.56	\$0.60	\$0.02	\$0.21	\$3.098	\$47.70
Power Equipment Operator	Dozer		IV	\$33.88		\$6.98	\$0.35	\$41.21	\$2.56	\$0.60	\$0.02	\$0.21	\$3.098	\$47.70
Power Equipment Operator	Scrapers		IV	\$33.88		\$6.98	\$0.35	\$41.21	\$2.56	\$0.60	\$0.02	\$0.21	\$3.098	\$47.70
Power Equipment Operator	Motor Grader (Rough)		IV	\$33.88		\$6.98	\$0.35	\$41.21	\$2.56	\$0.60	\$0.02	\$0.21	\$3.098	\$47.70
Power Equipment Operator	Excavator		VIII	\$34.23		\$6.98	\$0.35	\$41.56	\$2.58	\$0.60	\$0.02	\$0.21	\$3.072	\$48.05
Power Equipment Operator	Mechanic		VI	\$34.03		\$6.98	\$0.35	\$41.36	\$2.56	\$0.60	\$0.02	\$0.21	\$2.429	\$47.19
Truck Drivers	Haul Trucks		III	\$15.45		\$4.94	\$0.26	\$20.65	\$1.28	\$0.30	\$0.02	\$0.21	\$3.302	\$25.77
Truck Drivers	Oiler		II	\$15.25		\$4.94	\$0.26	\$20.45	\$1.27	\$0.30	\$0.02	\$0.21	\$3.302	\$25.55

<-Base Rate 90% x Dozer Operator Base Rate

	Federal Unemployment - 0.6% on the first \$7,000	New Mexico Unemployment - 2% on the first \$22,400
\$ Max	\$7,000	\$22,400
Unemployment Tax	0.60%	2.00% new employees' first 4 yrs
Unemployment Taxes Paid	\$42.00	\$448.00
Hours per Yr	2,085 (365 * 5/7 * 8 = 2085.71)	2,085
Unemployment rate per Hour	\$0.02	\$0.21

Class	Class Code	Workmen's Comp (WC) Rate / \$100	Base Rate W/ Fringes & Apprentice	WC/Hour (Base rate / \$100 * Base Wage per Hour)	Premium Limits (2.8% of Total Payroll)	Terrorist Premium (0.02% of Total Payroll after Premium)	Total Workman's Comp / \$100
				\$/hr	\$/hr	\$/hr	\$/hr
Operators							
Front End Loaders	6217	\$7.110	\$41.360	\$2.94	\$0.082	\$0.060	\$3.083
Excavator	6217	\$7.110	\$41.210	\$2.930	\$0.082	\$0.060	\$3.072
All Others	6217	\$7.110	\$41.560	\$2.95	\$0.083	\$0.061	\$3.098
Teamster	7228	\$15.250	\$20.650	\$3.149	\$0.088	\$0.065	\$3.302
Mechanic	8380	\$5.600	\$41.360	\$2.316	\$0.065	\$0.048	\$2.429

References 3/28/2012

Base Rate, Fringes, Apprentice	http://www.wia.state.nm.us/Tax/2010Rates.pdf
FICA, Medicare	http://www.ssa.gov/OACT/ProgData/taxRates.html
New Mexico Unemployment Tax	http://www.dws.state.nm.us/dws-newstax.html
Federal Unemployment Tax	http://workforcesecurity.doleta.gov/unemploy/uitaxtopic.asp
Workman's Comp	New Mexico Workman's Comp State Fund workman's comp rates; CoWest Insurance premiums and terrorist tax

Type H - Heavy Engineering, Effective January 1, 2012

Trade Classification	Base Rate	Fringe Rate	Apprenticeship
Asbestos Worker - Heat & Frost Insulator	27.35	10.23	0.20
Boilermaker	18.50	3.31	0.56
Bricklayer/Blocklayer/StoneMason	20.78	4.73	0.54
Carpenter/Lather	20.86	6.00	0.35
Millwright/Piledriver	26.38	5.96	0.40
Cement Mason	21.83	6.98	0.40
Electricians			
Outside Classifications			
Groundman	21.14	10.23	0.25
Equipment Operator	23.96	10.23	0.25
Lineman/Tech	24.55	10.23	0.25
Cable Splicer	25.73	10.23	0.25
Inside Classifications			
Wireman/Tech	26.85	8.36	0.54
Cable Splicer	28.58	8.36	0.54
Sound Classifications			
Installer	0.00	0.00	0.00
Technician	0.00	0.00	0.00
Soundman	0.00	0.00	0.00
Glazier	0.00	0.00	0.00
Ironworker	31.04	9.40	0.42
Painter (Brush/Roller/Spray)	16.00	3.78	0.00
Plumber/Pipefitter	28.30	11.00	0.32
Roofer	19.56	11.34	0.23
SheetmetalWorker	27.56	14.20	0.42
Operators			
Group I	33.08	6.98	0.35
Group II	33.28	6.98	0.35
Group III	33.86	6.98	0.35
Group IV	33.88	6.98	0.35
Group V	33.88	6.98	0.35
Group VI	34.03	6.98	0.35
Group VII	34.08	6.98	0.35
Group VIII	34.23	6.98	0.35
Group IX	34.73	6.98	0.35
Group X	35.53	6.98	0.35
Laborers			
Group I	14.95	4.27	0.26
Group II	15.25	4.27	0.26
Group III	15.55	4.27	0.26
Group IV	16.12	4.27	0.26
Group V	16.37	4.27	0.26
Group VI	15.10	4.27	0.26
Group VII	15.04	4.27	0.26
Group VIII	15.50	4.27	0.26
Group IX	15.70	4.27	0.26
Group X	16.37	4.27	0.26
Truck Drivers			
Group I	15.05	4.94	\$0.26
Group II	15.25	4.94	\$0.26
Group III	15.45	4.94	\$0.26
Group IV	15.65	4.94	\$0.26

NOTE: SUBSISTENCE AND INCENTIVE PAY DO NOT APPLY TO TYPE "H" CONSTRUCTION.

WORKERS COMPENSATION CLASSIFICATION SCHEDULE

Insurance for this coverage part provided by:
ZURICH AMERICAN INSURANCE COMPANY

Policy Number WC 9691148-01

ITEM 4. CLASSIFICATION OF OPERATIONS		PREMIUM BASIS		RATES	
LOC.	Entry in this item, except as specifically provided elsewhere in this policy, does not modify any of the other provisions of this policy.	Code No.	Total Estimated Annual Remuneration	Per \$100 of Remuneration	Estimated Annual Premium
	TELESTO SOLUTIONS INC FEIN # 43-2008253 NAIC CODE 541330 1303 POPE ST SILVER CITY NM 88061 ARCHITECTURAL OR ENGINEERING FIRM-INCLUDING SALESPERSONS & DRIVERS CLERICAL OFFICE EMPLOYEES NOC	 8601 8810	 \$ 125,000 \$ 40,000	 1.05 .45	 \$ 1,313.00 \$ 180.00
	TOTAL CLASS PREMIUM				\$ 1,493.00
	INCREASE LIMITS 2.8%	9812			\$ 42.00
	EMPL MINIMUM DIFFERENCE	9848			\$ 108.00
	TOTAL SUBJECT PREMIUM				\$ 1,643.00
	EXPERIENCE PREMIUM .94	9898			\$ -99.00
	TOTAL MODIFIED PREMIUM				\$ 1,544.00
	STANDARD TOTAL				\$ 1,544.00
	EXPENSE CONSTANT	0900			\$ 160.00
	TERRORISM .02	9740			\$ 33.00
	TOTAL ESTIMATED PREMIUM				\$ 1,737.00
	FINAL TOTAL				\$ 1,737.00
	POLICY TOTAL ESTIMATED COST				\$ 1,737.00

APPENDIX B.3
EQUIPMENT RATES
(EQUIPMENTWATCH)



www.equipmentwatch.com

Custom Cost Evaluator

July 6, 2012

Caterpillar D11R (disc. 2007)

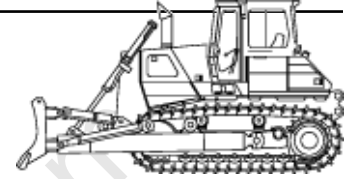
Standard Crawler Dozers

Size Class:

520 HP & Over 520 HP & Over

Weight:

202,847 lbs.



Configuration for D11R

Power Mode	Diesel	Dozer Type	U Blade
Operator Protection	EROPS	Net Horsepower	850.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$87.15/hr	\$81.63/hr	-6.33%
Cost of Facilities Capital (CFC)	\$14.84/hr	\$12.52/hr	-15.63%
Overhead	\$39.73/hr	\$33.13/hr	-16.61%
Overhaul Labor	\$14.87/hr	\$11.52/hr	-22.53%
Overhaul Parts	\$86.33/hr	\$71.99/hr	-16.61%
Total Hourly Ownership Cost:	\$242.92/hr	\$210.79/hr	-13.23%

User Defined Adjustments: Annual Use Hours (1,400 hrs -> 1,679 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$17.40/hr	\$13.49/hr	-22.47%
Field Parts	\$84.09/hr	\$70.11/hr	-16.63%
Ground Engaging Component (GEC)	\$12.40/hr	\$10.34/hr	-16.61%
Tires	\$0.00/hr	\$0.00/hr	-
Electrical/Fuel	\$116.62/hr	\$93.12/hr	-20.15%
Lube	\$23.95/hr	\$23.95/hr	-
Total Hourly Operating Cost:	\$254.46/hr	\$211.01/hr	-17.08%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$242.92/hr	\$210.79/hr	-13.23%
Hourly Operating Cost	\$254.46/hr	\$211.01/hr	-17.08%
Total Hourly Cost	\$497.38/hr	\$421.80/hr	-15.2%

Revised Date: 2nd Half 2012



www.equipmentwatch.com

Custom Cost Evaluator

July 6, 2012

Crawler Tractor Multi-Shank Rippers

Miscellaneous Models

Size Class:

260 HP & Over 260 HP & Over

Configuration for Crawler Tractor Multi-Shank Rippers

Engine Horsepower	520--699	Number of Shanks	3
Ripper Type	Parallelogram		

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$10.15/hr	\$9.60/hr	-5.42%
Cost of Facilities Capital (CFC)	\$0.77/hr	\$0.63/hr	-18.18%
Overhead	\$2.35/hr	\$1.85/hr	-21.28%
Overhaul Labor	\$2.37/hr	\$1.74/hr	-26.58%
Overhaul Parts	\$3.29/hr	\$2.59/hr	-21.28%
Total Hourly Ownership Cost:	\$18.93/hr	\$16.41/hr	-13.31%

User Defined Adjustments: Annual Use Hours (1,285 hrs -> 1,629 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$4.35/hr	\$3.19/hr	-26.67%
Field Parts	\$3.31/hr	\$2.61/hr	-21.15%
Ground Engaging Component (GEC)	\$2.76/hr	\$2.18/hr	-21.01%
Tires	\$0.00/hr	\$0.00/hr	-
Electrical/Fuel	\$0.00/hr	\$0.00/hr	-
Lube	\$0.52/hr	\$0.52/hr	-
Total Hourly Operating Cost:	\$10.94/hr	\$8.50/hr	-22.3%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$18.93/hr	\$16.41/hr	-13.31%
Hourly Operating Cost	\$10.94/hr	\$8.50/hr	-22.3%
Total Hourly Cost	\$29.87/hr	\$24.91/hr	-16.61%

Revised Date: 2nd Half 2012



www.equipmentwatch.com

Custom Cost Evaluator

July 6, 2012

Caterpillar D9T

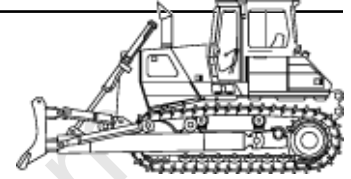
Standard Crawler Dozers

Size Class:

360 - 519 HP 360 - 519 HP

Weight:

105,600 lbs.



Configuration for D9T

Power Mode	Diesel	Dozer Type	Semi-U
Operator Protection	EROPS	Net Horsepower	405.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$46.72/hr	\$43.76/hr	-6.34%
Cost of Facilities Capital (CFC)	\$8.06/hr	\$6.80/hr	-15.63%
Overhead	\$23.14/hr	\$19.30/hr	-16.59%
Overhaul Labor	\$14.87/hr	\$11.52/hr	-22.53%
Overhaul Parts	\$41.50/hr	\$34.60/hr	-16.63%
Total Hourly Ownership Cost:	\$134.29/hr	\$115.98/hr	-13.63%

User Defined Adjustments: Annual Use Hours (1,400 hrs -> 1,679 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$17.40/hr	\$13.49/hr	-22.47%
Field Parts	\$40.42/hr	\$33.70/hr	-16.63%
Ground Engaging Component (GEC)	\$6.74/hr	\$5.62/hr	-16.62%
Tires	\$0.00/hr	\$0.00/hr	-
Electrical/Fuel	\$55.57/hr	\$44.37/hr	-20.15%
Lube	\$12.23/hr	\$12.23/hr	-
Total Hourly Operating Cost:	\$132.36/hr	\$109.41/hr	-17.34%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$134.29/hr	\$115.98/hr	-13.63%
Hourly Operating Cost	\$132.36/hr	\$109.41/hr	-17.34%
Total Hourly Cost	\$266.65/hr	\$225.39/hr	-15.47%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Caterpillar D7R DS LGP SERIES II

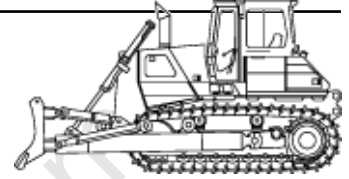
Lgp Crawler Dozers

Size Class:

190 - 259 HP 190 - 259 HP

Weight:

60,503 lbs.



Configuration for D7R DS LGP SERIES II

Power Mode	Diesel	Dozer Type	Straight
Operator Protection	EROPS	Net Horsepower	238.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$30.92/hr	\$28.79/hr	-6.89%
Cost of Facilities Capital (CFC)	\$5.29/hr	\$4.31/hr	-18.53%
Overhead	\$11.74/hr	\$9.44/hr	-19.59%
Overhaul Labor	\$8.49/hr	\$6.35/hr	-25.21%
Overhaul Parts	\$23.10/hr	\$18.59/hr	-19.52%
Total Hourly Ownership Cost:	\$79.54/hr	\$67.48/hr	-15.16%

User Defined Adjustments: Annual Use Hours (1,285 hrs -> 1,597 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$10.47/hr	\$7.83/hr	-25.21%
Field Parts	\$20.42/hr	\$16.43/hr	-19.54%
Ground Engaging Component (GEC)	\$4.25/hr	\$3.42/hr	-19.53%
Tires	\$0.00/hr	\$0.00/hr	-
Electrical/Fuel	\$36.39/hr	\$29.05/hr	-20.17%
Lube	\$6.86/hr	\$6.86/hr	-
Total Hourly Operating Cost:	\$78.39/hr	\$63.59/hr	-18.88%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$79.54/hr	\$67.48/hr	-15.16%
Hourly Operating Cost	\$78.39/hr	\$63.59/hr	-18.88%
Total Hourly Cost	\$157.93/hr	\$131.07/hr	-17.01%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Caterpillar D6T LGP

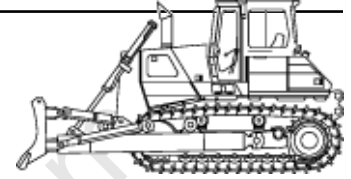
Lgp Crawler Dozers

Size Class:

190 - 259 HP 190 - 259 HP

Weight:

48,024 lbs.



Configuration for D6T LGP

Power Mode	Diesel	Dozer Type	Straight
Operator Protection	EROPS	Net Horsepower	200.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$22.90/hr	\$21.32/hr	-6.9%
Cost of Facilities Capital (CFC)	\$3.91/hr	\$3.19/hr	-18.41%
Overhead	\$10.72/hr	\$8.63/hr	-19.5%
Overhaul Labor	\$8.49/hr	\$6.35/hr	-25.21%
Overhaul Parts	\$17.10/hr	\$13.76/hr	-19.53%
Total Hourly Ownership Cost:	\$63.12/hr	\$53.25/hr	-15.64%

User Defined Adjustments: Annual Use Hours (1,285 hrs -> 1,597 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$10.47/hr	\$7.83/hr	-25.21%
Field Parts	\$15.12/hr	\$12.17/hr	-19.51%
Ground Engaging Component (GEC)	\$3.15/hr	\$2.53/hr	-19.68%
Tires	\$0.00/hr	\$0.00/hr	-
Electrical/Fuel	\$30.58/hr	\$24.41/hr	-20.18%
Lube	\$5.44/hr	\$5.44/hr	-
Total Hourly Operating Cost:	\$64.76/hr	\$52.38/hr	-19.12%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$63.12/hr	\$53.25/hr	-15.64%
Hourly Operating Cost	\$64.76/hr	\$52.38/hr	-19.12%
Total Hourly Cost	\$127.88/hr	\$105.63/hr	-17.4%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Caterpillar 777F

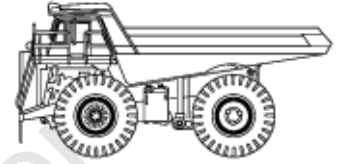
Mechanical Drive Rear Dumps

Size Class:

90 - 104 MTons 90 - 104 MTons

Weight:

154,753 lbs.



Configuration for 777F

Power Mode	Diesel	Rated Payload	90.7 MT
Body Capacity (Struck--Heaped)	54.8--78.8 cy	Net Horsepower	938.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$73.31/hr	\$68.72/hr	-6.26%
Cost of Facilities Capital (CFC)	\$10.87/hr	\$9.92/hr	-8.74%
Overhead	\$31.25/hr	\$28.29/hr	-9.47%
Overhaul Labor	\$25.24/hr	\$21.24/hr	-15.85%
Overhaul Parts	\$28.04/hr	\$25.38/hr	-9.49%
Total Hourly Ownership Cost:	\$168.71/hr	\$153.55/hr	-8.99%

User Defined Adjustments: Annual Use Hours (1,850 hrs -> 2,044 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$15.50/hr	\$13.04/hr	-15.87%
Field Parts	\$17.31/hr	\$15.66/hr	-9.53%
Ground Engaging Component (GEC)	\$0.00/hr	\$0.00/hr	-
Tires	\$23.12/hr	\$23.12/hr	-
Electrical/Fuel	\$73.54/hr	\$58.72/hr	-20.15%
Lube	\$20.53/hr	\$20.53/hr	-
Total Hourly Operating Cost:	\$150.00/hr	\$131.07/hr	-12.62%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$168.71/hr	\$153.55/hr	-8.99%
Hourly Operating Cost	\$150.00/hr	\$131.07/hr	-12.62%
Total Hourly Cost	\$318.71/hr	\$284.62/hr	-10.7%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Caterpillar 992K

4-Wd Articulated Wheel Loaders

Size Class:

500 - 999 HP 500 - 999 HP

Weight:

214,948 lbs.



Configuration for 992K

Power Mode	Diesel	Bucket Capacity - Heaped	14.00 cy
Net Horsepower	801.0	Operator Protection	EROPS

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$107.63/hr	\$99.99/hr	-7.1%
Cost of Facilities Capital (CFC)	\$18.13/hr	\$15.17/hr	-16.33%
Overhead	\$59.04/hr	\$48.73/hr	-17.46%
Overhaul Labor	\$8.78/hr	\$6.74/hr	-23.23%
Overhaul Parts	\$29.08/hr	\$24.00/hr	-17.47%
Total Hourly Ownership Cost:	\$222.66/hr	\$194.63/hr	-12.59%

User Defined Adjustments: Annual Use Hours (1,445 hrs -> 1,751 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$10.71/hr	\$8.22/hr	-23.25%
Field Parts	\$32.09/hr	\$26.48/hr	-17.48%
Ground Engaging Component (GEC)	\$4.37/hr	\$3.61/hr	-17.39%
Tires	\$31.49/hr	\$31.49/hr	-
Electrical/Fuel	\$100.48/hr	\$80.23/hr	-20.15%
Lube	\$22.48/hr	\$22.48/hr	-
Total Hourly Operating Cost:	\$201.62/hr	\$172.51/hr	-14.44%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$222.66/hr	\$194.63/hr	-12.59%
Hourly Operating Cost	\$201.62/hr	\$172.51/hr	-14.44%
Total Hourly Cost	\$424.28/hr	\$367.14/hr	-13.47%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Caterpillar 16M

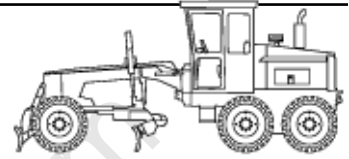
Articulated Frame Graders

Size Class:

250 HP & Over 250 HP & Over

Weight:

59,435 lbs.



Configuration for 16M

Power Mode	Diesel	Operator Protection	EROPS
Moldboard Size	16'	Net Horsepower	297.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$37.86/hr	\$35.29/hr	-6.79%
Cost of Facilities Capital (CFC)	\$7.04/hr	\$5.81/hr	-17.47%
Overhead	\$24.61/hr	\$20.05/hr	-18.53%
Overhaul Labor	\$6.53/hr	\$4.94/hr	-24.35%
Overhaul Parts	\$21.37/hr	\$17.41/hr	-18.53%
Total Hourly Ownership Cost:	\$97.41/hr	\$83.50/hr	-14.28%

User Defined Adjustments: Annual Use Hours (1,400 hrs -> 1,718 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$5.44/hr	\$4.12/hr	-24.26%
Field Parts	\$20.72/hr	\$16.89/hr	-18.48%
Ground Engaging Component (GEC)	\$1.73/hr	\$1.41/hr	-18.5%
Tires	\$8.74/hr	\$8.74/hr	-
Electrical/Fuel	\$37.26/hr	\$29.75/hr	-20.16%
Lube	\$8.55/hr	\$8.55/hr	-
Total Hourly Operating Cost:	\$82.44/hr	\$69.46/hr	-15.74%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$97.41/hr	\$83.50/hr	-14.28%
Hourly Operating Cost	\$82.44/hr	\$69.46/hr	-15.74%
Total Hourly Cost	\$179.85/hr	\$152.96/hr	-14.95%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Off-Highway Water Tanker Trucks

Miscellaneous Models

Size Class:

400 - 499 HP 400 - 499 HP

Configuration for Off-Highway Water Tanker Trucks

Power Mode	Diesel	Tank Capacity	10,000 gal
Horsepower	450.0		

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$37.50/hr	\$34.91/hr	-6.91%
Cost of Facilities Capital (CFC)	\$5.48/hr	\$4.65/hr	-15.15%
Overhead	\$11.91/hr	\$9.97/hr	-16.29%
Overhaul Labor	\$11.17/hr	\$8.69/hr	-22.2%
Overhaul Parts	\$9.02/hr	\$7.55/hr	-16.3%
Total Hourly Ownership Cost:	\$75.08/hr	\$65.77/hr	-12.4%

User Defined Adjustments: Annual Use Hours (1,500 hrs -> 1,793 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$27.07/hr	\$21.06/hr	-22.2%
Field Parts	\$17.41/hr	\$14.56/hr	-16.37%
Ground Engaging Component (GEC)	\$0.00/hr	\$0.00/hr	-
Tires	\$10.47/hr	\$10.47/hr	-
Electrical/Fuel	\$60.15/hr	\$48.03/hr	-20.15%
Lube	\$10.04/hr	\$10.04/hr	-
Total Hourly Operating Cost:	\$125.14/hr	\$104.16/hr	-16.77%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$75.08/hr	\$65.77/hr	-12.4%
Hourly Operating Cost	\$125.14/hr	\$104.16/hr	-16.77%
Total Hourly Cost	\$200.22/hr	\$169.93/hr	-15.13%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

On-Highway Light Duty Trucks

Miscellaneous Models

Size Class:

100 - 199 HP 100 - 199 HP

Configuration for On-Highway Light Duty Trucks

Power Mode	Diesel	Cab Type	Conventional
Axle Configuration	4X4	Ton Rating	1
Horsepower	195.0		

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$3.49/hr	\$3.26/hr	-6.59%
Cost of Facilities Capital (CFC)	\$0.24/hr	\$0.21/hr	-12.5%
Overhead	\$0.56/hr	\$0.48/hr	-14.29%
Overhaul Labor	\$0.69/hr	\$0.54/hr	-21.74%
Overhaul Parts	\$0.80/hr	\$0.69/hr	-13.75%
Total Hourly Ownership Cost:	\$5.78/hr	\$5.18/hr	-10.38%

User Defined Adjustments: Annual Use Hours (2,000 hrs -> 2,343 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$0.86/hr	\$0.68/hr	-20.93%
Field Parts	\$0.78/hr	\$0.66/hr	-15.38%
Ground Engaging Component (GEC)	\$0.00/hr	\$0.00/hr	-
Tires	\$0.56/hr	\$0.56/hr	-
Electrical/Fuel	\$9.17/hr	\$7.32/hr	-20.17%
Lube	\$1.13/hr	\$1.13/hr	-
Total Hourly Operating Cost:	\$12.50/hr	\$10.35/hr	-17.2%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$5.78/hr	\$5.18/hr	-10.38%
Hourly Operating Cost	\$12.50/hr	\$10.35/hr	-17.2%
Total Hourly Cost	\$18.28/hr	\$15.53/hr	-15.04%

Revised Date: 2nd Half 2012



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Custom Cost Evaluator

July 6, 2012

Hitachi EX3600-5 (disc. 2009)

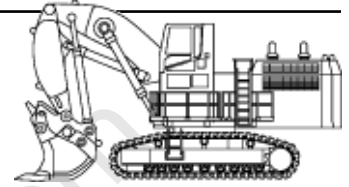
Hydraulic Shovels

Size Class:

150.1 MTons & Over 150.1 MTons & Over

Weight:

772,000 lbs.



Configuration for EX3600-5

Power Mode	Diesel	Bucket Capacity - Heaped	27.4 cy
Operating Weight	350.0 MT	Net Horsepower	1,880.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$158.24/hr	\$148.69/hr	-6.04%
Cost of Facilities Capital (CFC)	\$26.65/hr	\$24.35/hr	-8.63%
Overhead	\$51.89/hr	\$47.10/hr	-9.23%
Overhaul Labor	\$26.34/hr	\$22.23/hr	-15.6%
Overhaul Parts	\$119.13/hr	\$108.14/hr	-9.23%
Total Hourly Ownership Cost:	\$382.25/hr	\$350.51/hr	-8.3%

User Defined Adjustments: Annual Use Hours (1,850 hrs -> 2,038 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$34.98/hr	\$29.52/hr	-15.61%
Field Parts	\$130.44/hr	\$118.41/hr	-9.22%
Ground Engaging Component (GEC)	\$19.91/hr	\$18.08/hr	-9.19%
Tires	\$0.00/hr	\$0.00/hr	-
Electrical/Fuel	\$324.26/hr	\$258.91/hr	-20.15%
Lube	\$64.53/hr	\$64.53/hr	-
Total Hourly Operating Cost:	\$574.12/hr	\$489.45/hr	-14.75%

User Defined Adjustments: Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$382.25/hr	\$350.51/hr	-8.3%
Hourly Operating Cost	\$574.12/hr	\$489.45/hr	-14.75%
Total Hourly Cost	\$956.37/hr	\$839.96/hr	-12.17%

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July 6, 2012

Komatsu HD1500-5 (disc. 2008)

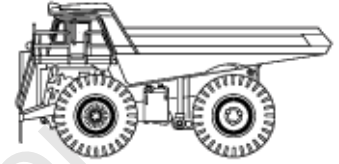
Mechanical Drive Rear Dumps

Size Class:

105 - 139 MTons 105 - 139 MTons

Weight:

221,481 lbs.



Configuration for HD1500-5

Power Mode	Diesel	Rated Payload	136.0 MT
Body Capacity (Struck--Heaped)	71.0--102.0 cy	Net Horsepower	1,406.0

Hourly Ownership Costs

	Standard Value	User Adjusted Value	Variance
Depreciation	\$54.09/hr	\$50.71/hr	-6.25%
Cost of Facilities Capital (CFC)	\$8.77/hr	\$8.12/hr	-7.41%
Overhead	\$22.33/hr	\$20.55/hr	-7.97%
Overhaul Labor	\$30.87/hr	\$26.41/hr	-14.45%
Overhaul Parts	\$23.67/hr	\$21.78/hr	-7.98%
Total Hourly Ownership Cost:	\$139.73/hr	\$127.57/hr	-8.7%

User Defined Adjustments: Annual Use Hours (1,850 hrs -> 2,010 hrs) Sales Tax (5.5% -> 0%)

Hourly Operating Costs

	Standard Value	User Adjusted Value	Variance
Field Labor	\$17.83/hr	\$15.26/hr	-14.41%
Field Parts	\$10.03/hr	\$9.24/hr	-7.88%
Ground Engaging Component (GEC)	\$0.00/hr	\$0.00/hr	-
Tires	\$21.71/hr	\$21.71/hr	-
Electrical/Fuel	\$110.23/hr	\$88.02/hr	-20.15%
Lube	\$21.73/hr	\$21.73/hr	-
Total Hourly Operating Cost:	\$181.53/hr	\$155.96/hr	-14.09%

User Defined Adjustments: Annual Field Parts (\$15,470.19 -> \$15,470.19) Tire Cost (\$61,880.77 -> \$61,880.77) Diesel Cost (\$3.92/gal -> \$3.13/gal) Mechanics Wage (\$50.76 -> \$47.19)

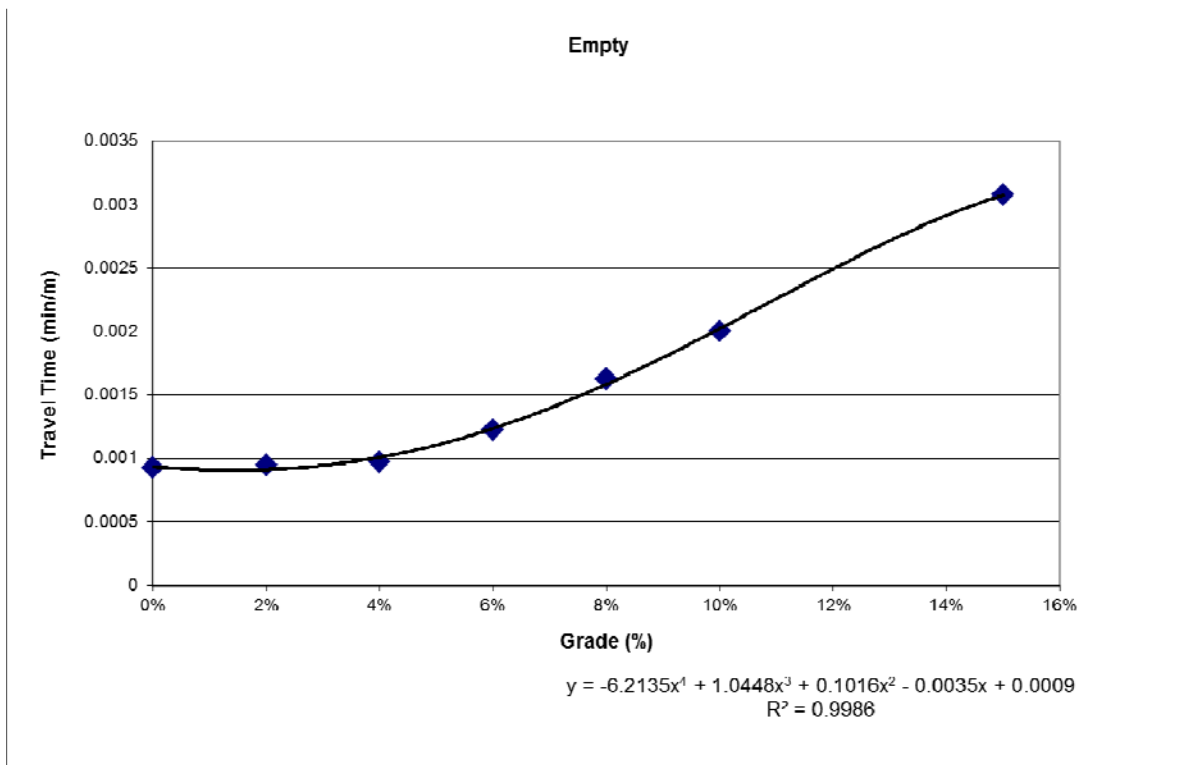
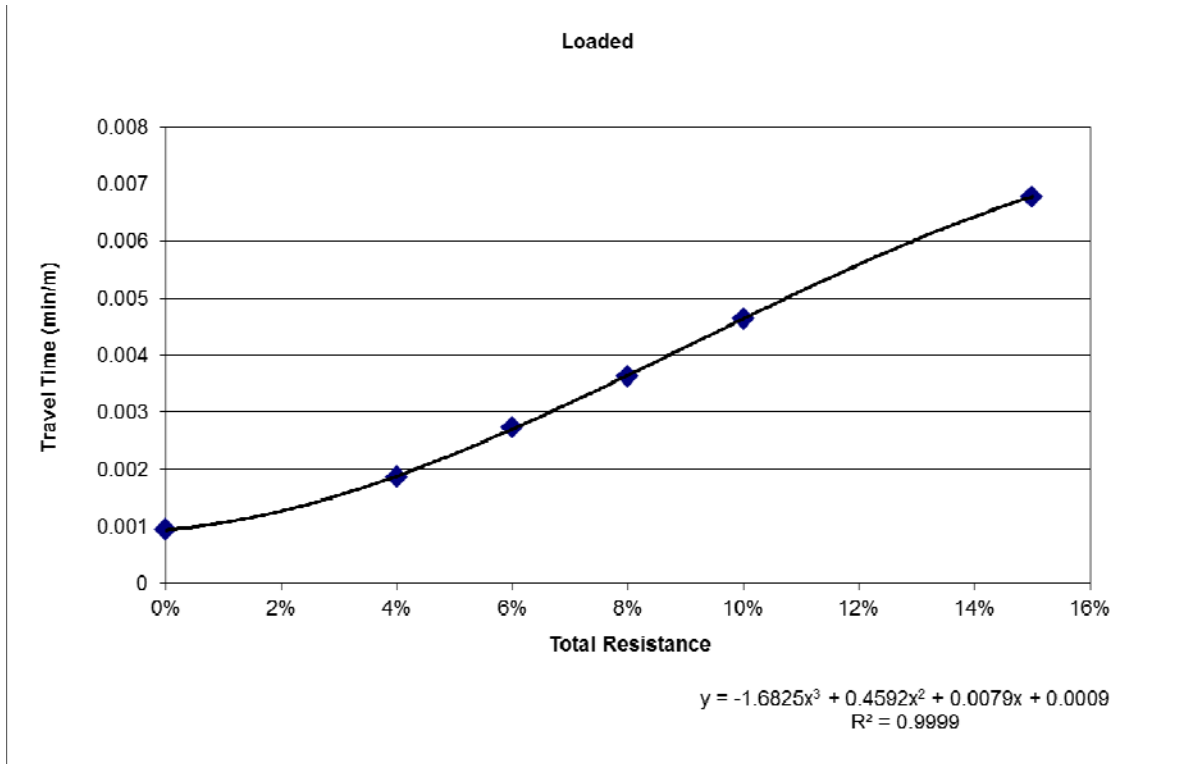
Total

	Standard Value	User Adjusted Value	Variance
Hourly Ownership Cost	\$139.73/hr	\$127.57/hr	-8.7%
Hourly Operating Cost	\$181.53/hr	\$155.96/hr	-14.09%
Total Hourly Cost	\$321.26/hr	\$283.53/hr	-11.74%

Revised Date: 2nd Half 2012

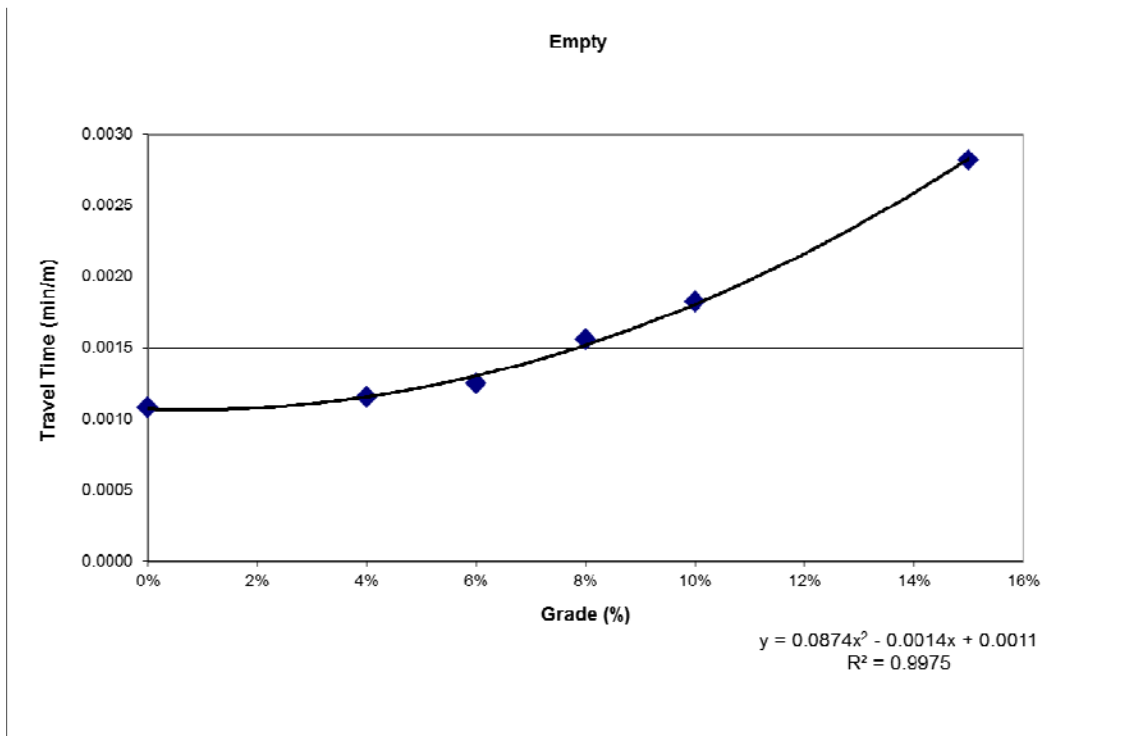
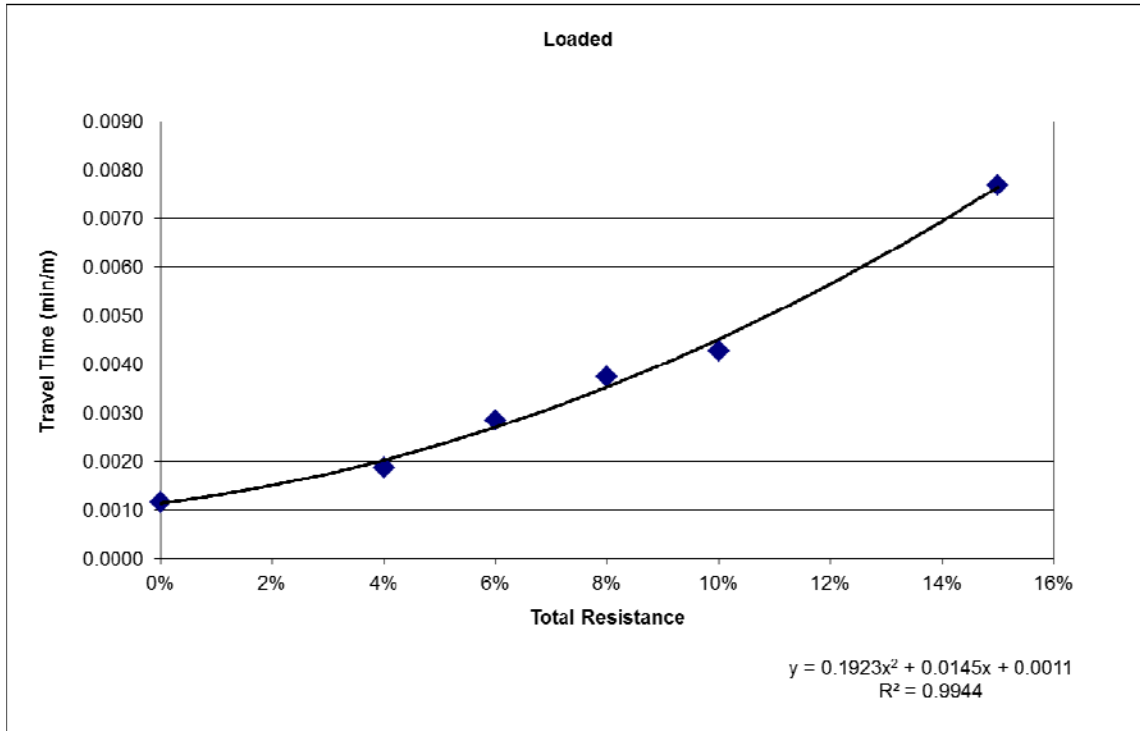
	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
	D11R (520 HP)	D9T (360+ HP)	D7R DS LGP Series II (190-259 HP)	D6T LGP (190-259 HP)	631G	777F	992K	16M	Water Truck	HD1500-5	EX3600-5	Light Duty Truck
Hours per year	2085	2085	2085	2085	2085	2085	2085	2085	2085	2085	2085	2085
Annual overhaul hours	410	410	215	215	400	920	250	180	330	1125	960	27
Subtotal	1675	1675	1870	1870	1685	1165	1835	1905	1755	960	1125	2058
50 minute hour	279	279	312	312	281	194	306	318	293	160	188	343
Annual Use Hours	1396	1396	1558	1558	1404	971	1529	1588	1463	800	938	1715
Adjusted Annual Use Hours	1679	1679	1597	1597	1656	2044	1751	1718	1793	2010	2038	2343
Equipment Watch Annual Use Hours	1400	1400	1285	1285	1375	1850	1445	1400	1500	1850	1850	2000
Delta	-279	-279	-312	-312	-281	-194	-306	-318	-293	-160	-188	-343

APPENDIX B.4
EQUIPMENT PRODUCTIVITY
CURVE FITS



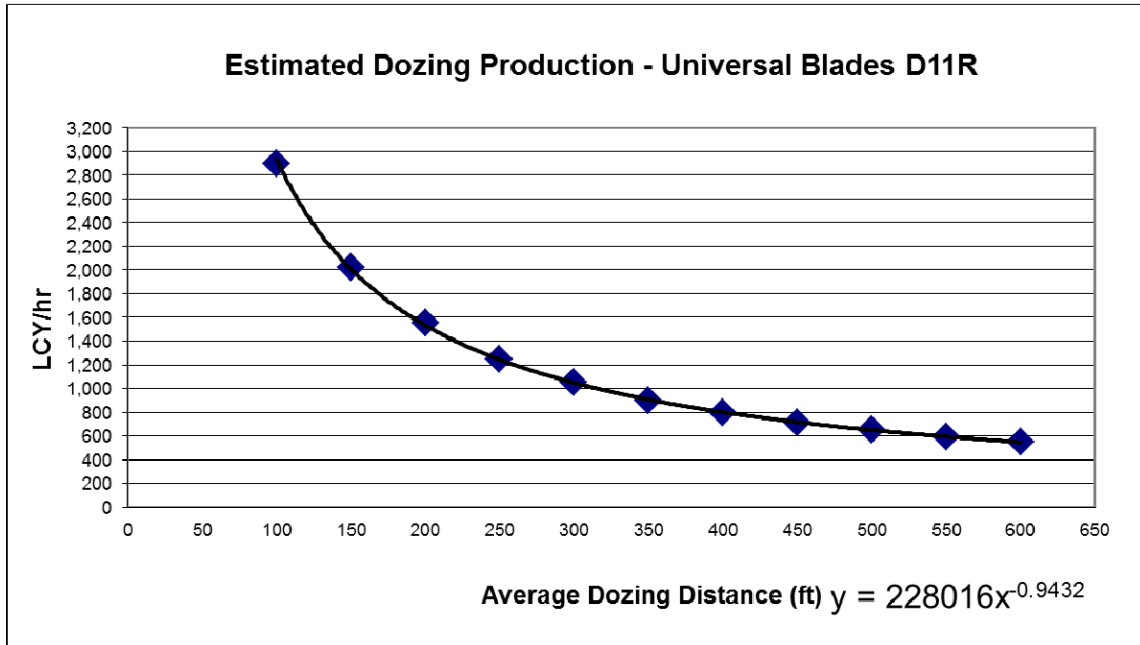
785D

Caterpillar Performance Handbook Edition 41 9-50 Curve Fits



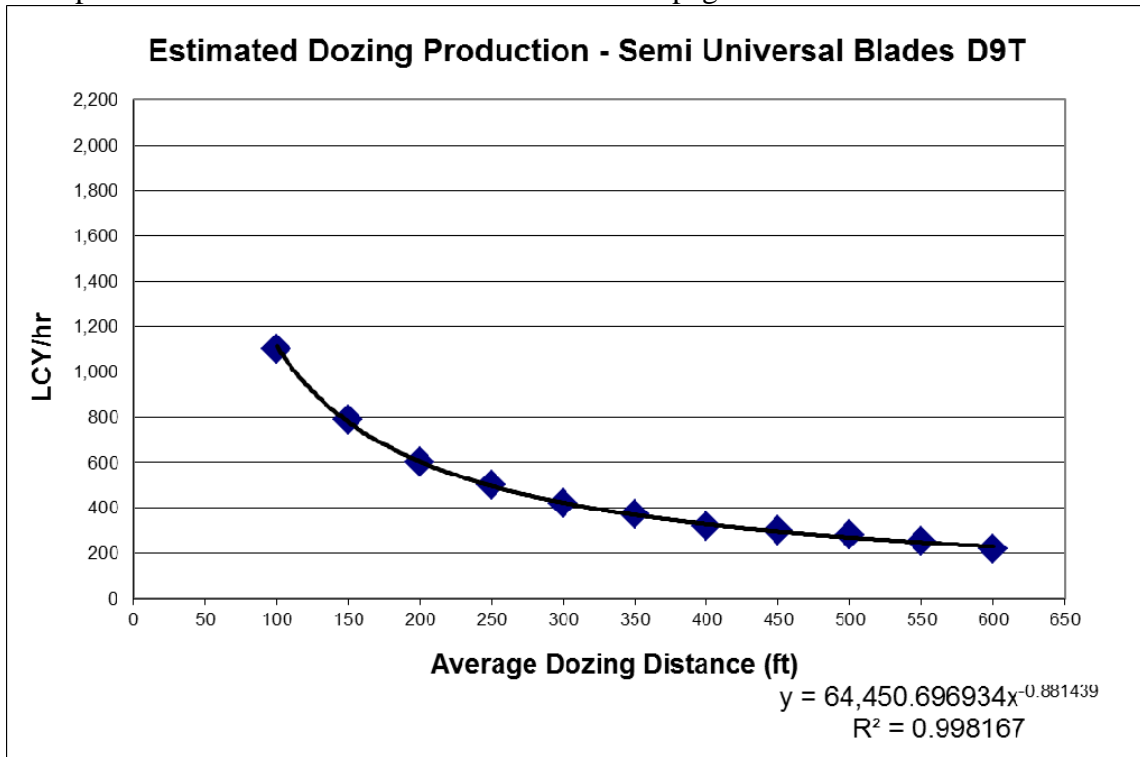
D11R

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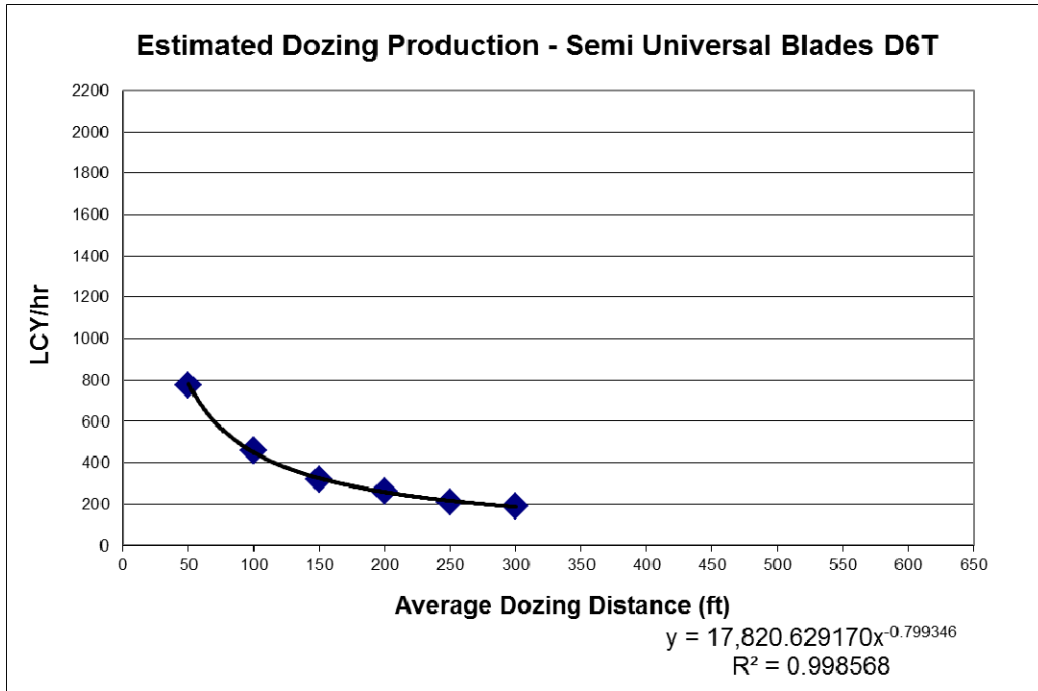
D9T

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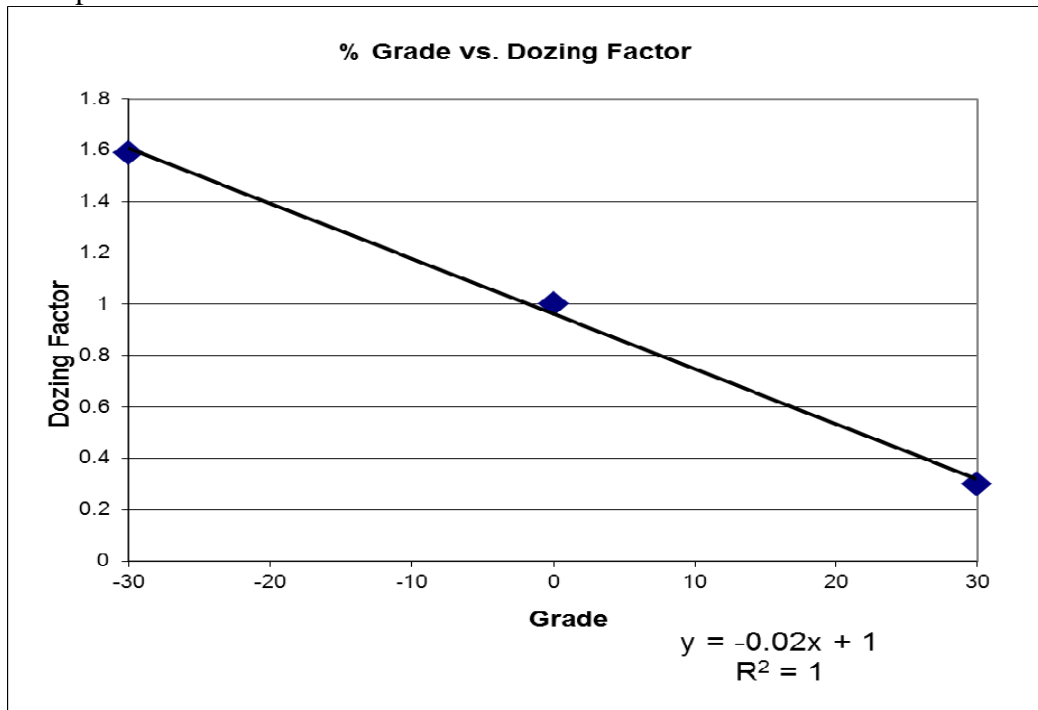
D6T

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Dozing Factor

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APPENDIX B.5
CATERPILLAR PERFORMANCE HANDBOOK
REFERENCES

CATERPILLAR® PERFORMANCE HANDBOOK

a Cat® publication by Caterpillar Inc., Peoria, Illinois, U.S.A.

JANUARY 2008

Performance information in this booklet is intended for estimating purposes only. Because of the many variables peculiar to individual jobs (including material characteristics, operator efficiency, underfoot conditions, altitude, etc.), neither Caterpillar Inc. nor its dealers warrant that the machines described will perform as estimated.

NOTE: Always refer to the appropriate Operation and Maintenance Manual for specific product information.

Materials and specifications are subject to change without notice.

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Track-Type Tractors

Travel Speed

TRAVEL SPEED

POWER SHIFT MODEL	D3K All Models		D4K All Models		D5K All Models		D5N XL/LGP		D5N LGP* PS DD		D6K All Models		D6N FTC	
FORWARD	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	—	—	—	—	—	—	3.1	1.9	2.8	1.7	—	—	3.3	2.0
2	—	—	—	—	—	—	5.4	3.3	5.0	3.1	—	—	5.7	3.5
3	—	—	—	—	—	—	9.1	5.6	8.7	5.4	—	—	10.0	6.2
REVERSE														
1	—	—	—	—	—	—	3.8	2.3			—	—	4.0	2.5
2	—	—	—	—	—	—	6.7	4.1	**		—	—	7.2	4.4
3	—	—	—	—	—	—	11.3	6.9			—	—	12.3	7.6
HYDROSTATIC														
FORWARD	9.0	5.6	9.0	5.6	9.0	5.6	—	—	—	—	0-10.0	0-6.2	—	—
REVERSE	10.0	6.2	10.0	6.2	10.0	6.2	—	—	—	—	0-10.0	0-6.2	—	—

POWER SHIFT MODEL	D6N D/S		D6G/ D6G Series II		D6T		D7G/ D7G Series II		D7R Series II (FTC)		Differential Steer D7R Series II	
FORWARD	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	3.4	2.1	4.0	2.5	3.8	2.3	3.7	2.3	3.7	2.3	3.5	2.2
2	5.9	3.7	6.9	4.3	6.6	4.1	6.4	4.0	6.4	4.0	6.2	3.8
3	9.9	6.2	10.8	6.7	11.4	7.1	10.0	6.2	11.1	6.9	10.7	6.7
REVERSE												
1	3.8	2.4	4.8	3.0	4.8	3.0	4.5	2.8	4.8	3.0	4.6	2.9
2	7.2	4.5	8.4	5.2	8.4	5.2	7.9	4.9	8.3	5.1	8.0	5.0
3	11.7	7.3	12.9	8.0	14.6	9.0	11.9	7.4	14.3	8.9	13.8	8.6

POWER SHIFT MODEL	Differential Steer D8R		D8T		D9R		D9T		D10T		D11R/CD		D11R/CD High Altitude	
FORWARD	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	3.5	2.2	3.4	2.1	3.8	2.4	3.9	2.4	4.0	2.5	3.9	2.4	4.0	2.5
2	6.2	3.9	6.1	3.8	6.8	4.2	6.8	4.2	7.2	4.5	6.8	4.2	7.0	4.4
3	10.8	6.7	10.6	6.6	11.9	7.4	11.7	7.3	12.7	7.9	11.8	7.3	12.0	7.5
REVERSE														
1	4.7	2.9	4.5	2.8	4.7	2.9	4.7	2.9	5.2	3.2	4.7	2.9	4.8	3.0
2	8.1	5.0	8.0	5.0	8.4	5.2	8.4	5.2	9.0	5.6	8.2	5.1	8.3	5.2
3	13.9	8.6	14.2	8.8	14.7	9.1	14.3	8.9	15.8	9.8	14.0	8.7	14.9	9.0

*Power Shift direct drive transmission available for Japan domestic market only.

**Not available at time of printing.

Bulldozers

Blade Specifications

● D8R/D8T ● D9R/D9T

MODEL	D8R/D8T						D9R/D9T			
	8A		8SU		8U		9SU		9U	
Type	Angling		Semi-U		Universal		Semi-U		Universal	
Blade Capacities*	4.7 m³	6.1 yd³	8.7 m³	11.4 yd³	11.7 m³	15.3 yd³	13.5 m³	17.7 yd³	16.4 m³	21.4 yd³
Weight, Shipping** (Dozer)	5459 kg	12,009 lb	4789 kg	10,557 lb	5352 kg	11,800 lb	6543 kg	14,425 lb	7134 kg	15,727 lb
Tractor and Dozer Dimensions:										
A Length (Blade Straight)	6.57 m	21'7"	6.39 m	21'0"	6.79 m	22'3"	6.84 m	22'5"	7.18 m	23'7"
Length (Blade Angled)	7.62 m	25'0"	—	—	—	—	—	—	—	—
Width (Blade Angled)	4.52 m	14'10"	—	—	—	—	—	—	—	—
Width (with C-Frame only)	3.38 m	11'1"	—	—	—	—	—	—	—	—
Blade Dimensions:										
B Width (including std. end bits)	4.99 m	16'4"	3.94 m	12'11"	4.26 m	14'0"	4.31 m	14'2"	4.65 m	15'3"
C Height	1174 mm	3'10.2"	1690 mm	5'6.5"	1740 mm	5'8.5"	1934 mm	6'4.1"	1934 mm	6'4.1"
D Max. Digging Depth	628 mm	2'0.7"	575 mm	22.6"	575 mm	22.6"	606 mm	1'11.9"	606 mm	1'11.9"
E Ground Clearance @ Full Lift	1308 mm	4'3.5"	1225 mm	48.2"	1225 mm	48.2"	1422 mm	4'8"	1422 mm	4'8"
G Max. Pitch Adjustment	—	—	+3.0° to 2.9°	—	+3.0° to 2.9°	—	+3.4° to 2.9°	—	+3.4° to 2.9°	—
Blade Angle (either side)	25°	—	—	—	—	—	—	—	—	—
H Max. Hydraulic Tilt	729 mm	2'4.7"◀	883 mm	34.8"	954 mm	37.5"	940 mm	3'1"	1014 mm	3'3.9"
J Hydraulic Tilt (Manual Brace Centered)	—	—	596 mm	23"	644 mm	25"	570 mm	1'10.4"	616 mm	2'0.3"
K Push Arm Trunnion Width (to Ball Centers)	2.98 m	9'9"	2.98 m	9'9"	2.98 m	9'9"	3.17 m	10'3"	3.17 m	10'3"
Maximum Track Width Permitted	712 mm	2'4"	711 mm	2'4"	711 mm	2'4"	762 mm	2'6"	762 mm	2'6"
Dual Tilt Option	—	—	±4.6°	—	±4.6°	—	+4.8° to 5.2°	—	+4.8° to 4.9°	—
G Dual Pitch Adj.	—	—	879 mm	34.5"	950 mm	37.3"	1139 mm	3'8.8"	1231 mm	4'0.5"
H Dual Max. Hyd. Tilt	—	—	—	—	—	—	—	—	—	—

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

◀ Attachment includes two cylinders.

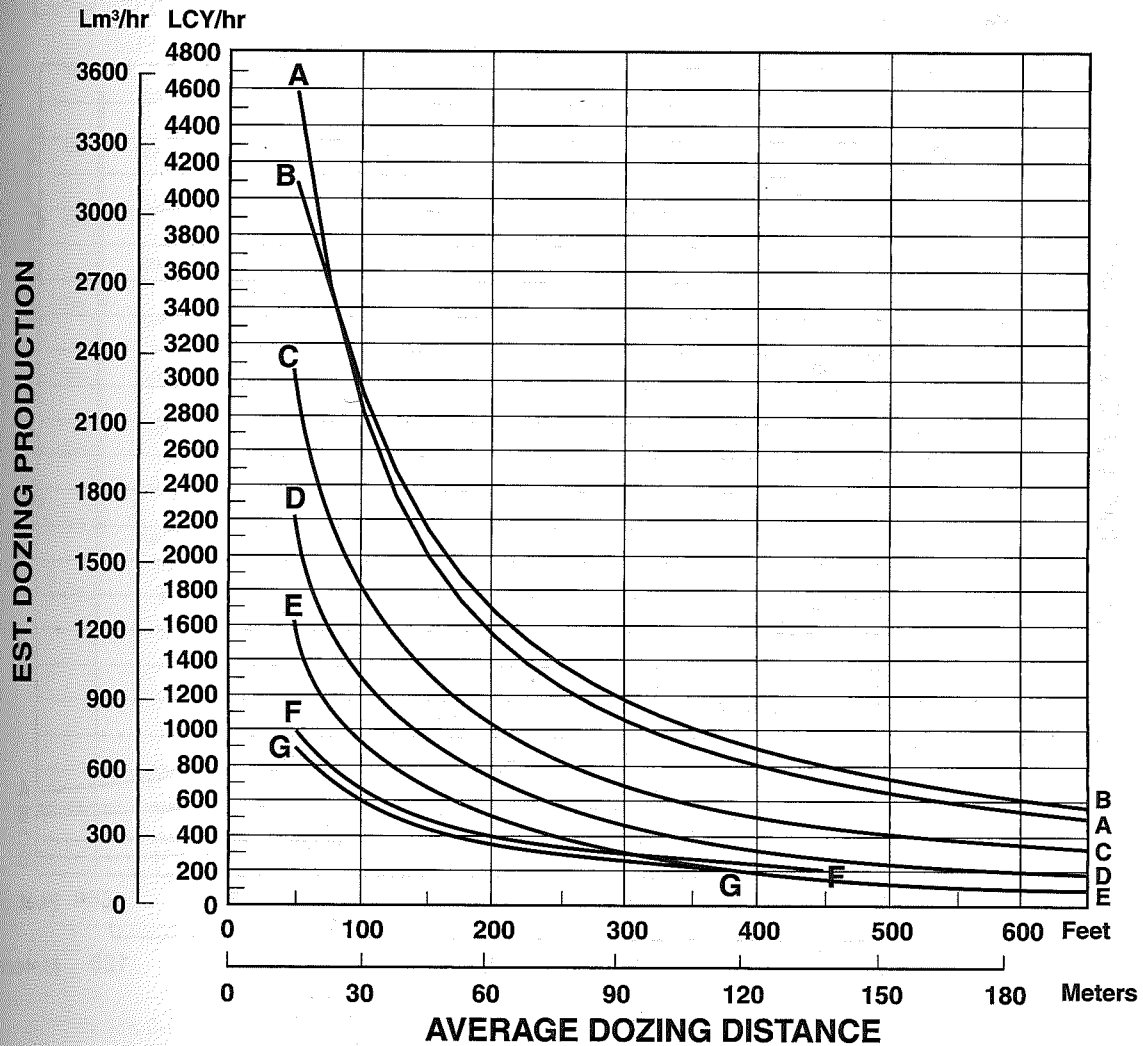
MODEL	D10T				D11R					
	10SU		10U		11SU		11U		11 CD	
Type	Semi-U		Universal		Semi-U		Universal		Universal	
Blade Capacities*	18.5 m³	24.2 yd³	22.0 m³	28.7 yd³	27.2 m³	35.5 yd³	34.4 m³	45.0 yd³	43.6 m³	57.0 yd³
Weight, Shipping**										
Standard Dozer	10 229 kg	22,550 lb	10 784 kg	23,775 lb	14 813 kg	32,658 lb	17 296 kg	38,131 lb	22 070 kg	48,660 lb
Abrasion Dozer	11 069 kg	24,403 lb	12 413 kg	27,366 lb	16 192 kg	35,698 lb	18 823 kg	41,498 lb	—	
Tractor and Dozer Dimensions:										
A Length	7.76 m	25'5"	8.01 m	26'3"	8.38 m	27'6"	8.83 m	28'11"	8.34 m	26'8"
Width	4.86 m	15'11"	5.26 m	17'3"	5.60 m	18'4"	6.35 m	20'10"	6.71 m	22'0"
Blade Dimensions:										
B Width (including std. end bits)	4.86 m	15'11"	5.26 m	17'3"	5.60 m	18'4"	6.35 m	20'10"	6.71 m	22'0"
C Height	2.12 m	6'11"	2.12 m	6'11"	2.37 m	7'9"	2.37 m	7'9"	3.26 m	10'8"
D Max. Digging Depth	674 mm	2'2.5"	674 mm	2'2.5"	766 mm	2'6.2"	766 mm	2'6.2"	766 mm	2'6.2"
E Ground Clearance @ Full Lift	1497 mm	4'10.9"	1497 mm	4'10.9"	1533 mm	5'0.4"	1533 mm	5'0.4"	1533 mm	5'0.4"
G Max. Pitch Adjustment	+1.7° to 2.3°		+1.7° to 2.3°		+2.1° to 2.2°		+2.1° to 2.2°		—	
H Max. Hydraulic Tilt	993 mm	3'3.1"	1074 mm	3'6.3"	1184 mm	3'10.6"	1344 mm	4'4.9"	1344 mm	4'4.9"
J Hydraulic Tilt (Manual Brace Centered)	722 mm	2'4.4"	782 mm	2'6.8"	886 mm	2'10.9"	1006 mm	3'3.6"	—	
K Push Arm Trunnion Width (to Ball Centers)	3.60 m	11'10"	3.60 m	11'10"	4.18 m	13'9"	4.18 m	13'9"	4.18 m	13'9"
Maximum Track Width Permitted	762 mm	2'6"	762 mm	2'6"	914 mm	3'0"	914 mm	3'0"	914 mm	3'0"
Dual Tilt Option					+7.5° to 7.6° or +0° to 13°		+7.5° to 7.6° or +0° to 13°		+47.8° to 10.4°	
G Dual Pitch Adj.	+5.2° to 5.5°		+5.2° to 5.5°							
H Dual Max. Hyd. Tilt	1441 mm	4'8.7"	1560 mm	5'1.4"	1706 mm	5'7.2"	1938 mm	6'4.3"	—	

*Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for relative comparisons of dozer sizes, and not for predicting capacities or productivities in actual field conditions.

**Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

ESTIMATED DOZING PRODUCTION • Universal Blades • D7G through D11R



KEY

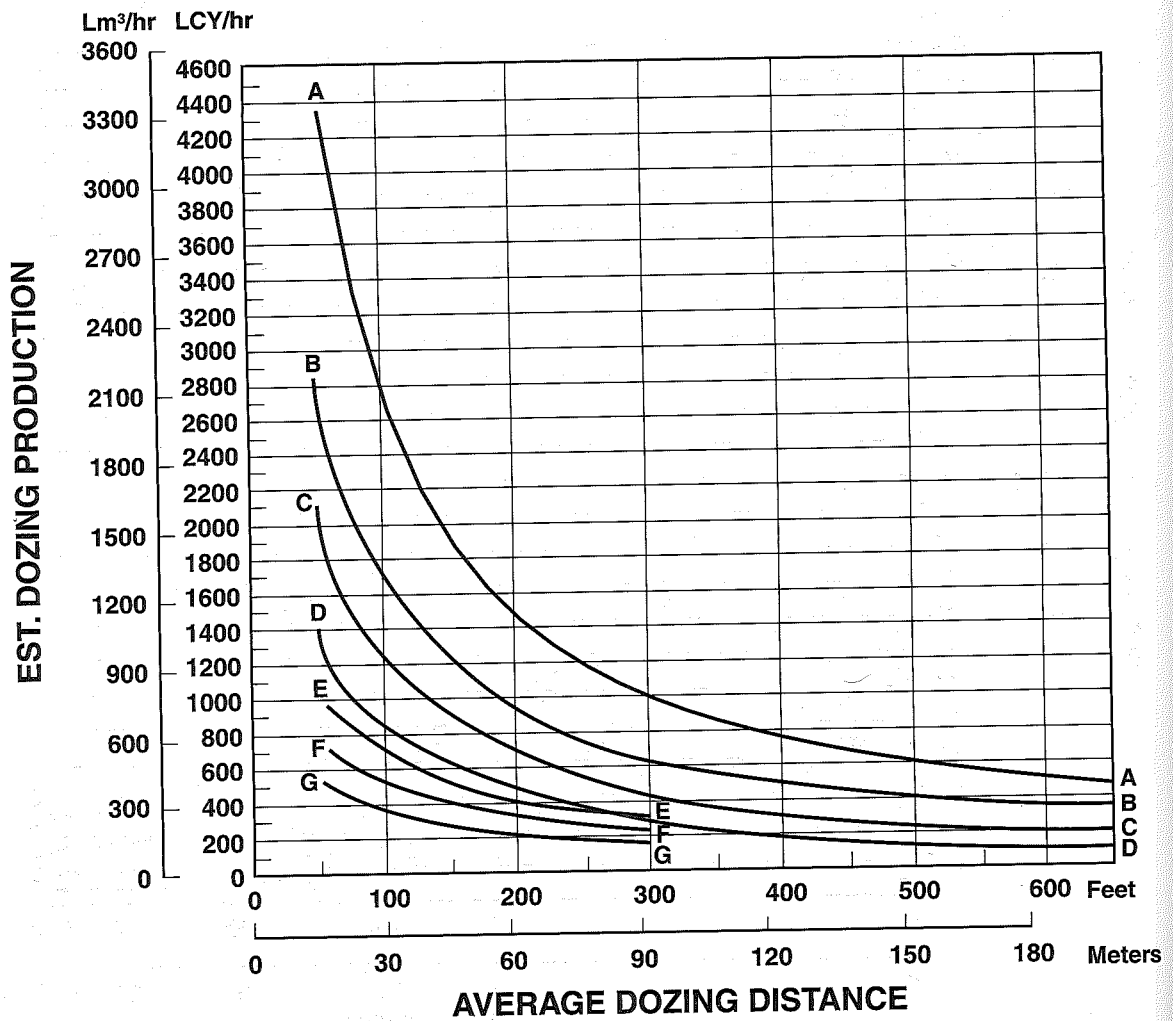
- A — D11R-11U
- B — D11R CD
- C — D10T-10U
- D — D9R/D9T-9U
- E — D8R/D8T-8U
- F — D7R Series II-7U
- G — D7G-7U

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Bulldozers

Estimating Production Off-The-Job
• SU-Blades

ESTIMATED DOZING PRODUCTION • Semi-Universal Blades • D6N through D11R



KEY

- A — D11R-11SU
- B — D10T-10SU
- C — D9R/D9T-9SU
- D — D8R/D8T-8SU
- E — D7R Series II-7SU
- F — D6T

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Rippers

Specifications

● D11R

TRACTOR/RIPPER		D11R		D11R		D11R	
Ripper Type		CD Single Shank		CD Multishank		Multishank	
Dimensions:							
Ripper to Track							
Ripper length behind track, shank vertical, ripper up (A)							
A With Pushblock		N/A		N/A		N/A	
B Without Pushblock		2.04 m	6'8"	1.92 m	6'4"	1.92 m	6'4"
Ripper length behind track, shank vertical, ripper down (A)							
C With Pushblock		N/A		N/A		N/A	
D Without Pushblock		2.48 m	8'2"	1.92 m	6'4"	1.92 m	6'4"
Tip to track distance, shank vertical (A)							
E Ripper Up		622 mm	2'0.5"	651 mm	2'1.6"	651 mm	2'1.6"
F Ripper Down		1041 mm	3'5"	1030 mm	3'4.6"	1030 mm	3'4.6"
Ripper Shank*							
G Maximum digging depth		1612 mm	5'3.5"	1070 mm	3'6.1"	1070 mm	3'6.1"
H Dig adjustment per hole		280 mm	11"	280 mm	11"	280 mm	11"
I Total dig adjustment		840 mm	2'9.1"	280 mm	11"	280 mm	11"
Pitch Adjustment, ripper down:							
J Forward		15°		15°		15°	
K Backward		18.3°		18.5°		18.5°	
L Maximum reach at ground line		1.73 m	5'8"	1.57 m	5'2"	1.57 m	5'2"
M Maximum ground clearance under tooth (shank pinned in bottom hole)		1115 mm	3'7.9"	1137 mm	3'8.8"	1137 mm	3'8.8"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)		33.9°		37.1°		37.1°	
Shank Section		110 × 450 mm		100 × 400 mm		100 × 400 mm	
		4.3" × 17.7"		3.9" × 15.7"		3.9" × 15.7"	
Ripper Beam							
O Overall width		N/A		3.33 m	10'11"	3.33 m	10'11"
P Height		N/A		560 mm	1'10"	560 mm	1'10"
Q Length		N/A		560 mm	1'10"	560 mm	1'10"
Clearance under beam, shank vertical							
R Ripper Up		N/A		2.06 m	6'9"	2.06 m	6'9"
S Ripper Down		N/A		282 mm	11.1"	282 mm	11.1"
Number of Pockets		1		3		3	
T Pocket Spacing		N/A		1500 mm	5'9"	1500 mm	5'9"
U Shank Gauge		N/A		2.99 m	9'10"	2.99 m	9'10"
V Track Clearance with standard shoe		141 mm	5.6"	166 mm	5.6"	166 mm	5.6"
W Width across widest part of lift cylinders		1.9 m	6'3"	1.9 m	6'3"	1.9 m	6'3"
Installed Weights:							
Ripper with standard shank		12 971 kg	28,536 lb	12 389 kg	27,256 lb	9545 kg	21,000 lb
Each additional tooth group		N/A		N/A		N/A	
Ripper Forces:**							
Penetration Force, shank vertical		295 807 N	66,494 lb	274 917 N	61,804 lb	225 680 N	50,715 lb
Prvout Force, shank vertical		625 577 N	140,579 lb	549 834 N	123,608 lb	451 360 N	101,430 lb

*Hydraulic pin puller is standard with deep ripping shank. Deep Ripping Arrangement maximum digging depth is 2.18 m (7'2").

**Forces are for a ripper on a tractor equipped with an EROPS, U-Dozer and performance track. Forces will vary slightly with other vehicle configurations.

CATERPILLAR PERFORMANCE HANDBOOK

a publication by Caterpillar Inc., Peoria, Illinois, U.S.A.

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TRAVEL SPEED

POWER SHIFT MODEL	D3K All Models		D4K All Models		D5K All Models		D6K All Models		D6N FTC	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD										
1	—	—	—	—	—	—	—	—	3.1	1.9
2	—	—	—	—	—	—	—	—	5.7	3.5
3	—	—	—	—	—	—	—	—	10.0	6.2
REVERSE										
1	—	—	—	—	—	—	—	—	3.1	1.9
2	—	—	—	—	—	—	—	—	6.4	4.0
3	—	—	—	—	—	—	—	—	11.6	7.2
HYDROSTATIC										
FORWARD	9.0	5.6	9.0	5.6	9.0	5.6	0-10.0	0-6.2	—	—
REVERSE	10.0	6.2	10.0	6.2	10.0	6.2	0-10.0	0-6.2	—	—

POWER SHIFT MODEL	D6N D/S		D6G/ D6G Series 2 XL/ D6G Series 2 LGP		Differential Steer D6R		Differential Steer D6R Series 3		D6T		D7E		D7E LGP	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD														
1	3.4	2.1	4.0	2.5	3.8	2.3	3.8	2.3	3.8	2.3	—	—	—	—
2	5.9	3.7	6.9	4.3	6.6	4.1	3.8	2.3	6.6	4.1	—	—	—	—
3	9.9	6.2	10.8	6.7	11.5	7.1	11.4	7.1	11.4	7.1	—	—	—	—
REVERSE														
1	3.8	2.4	4.8	3.0	4.8	3.0	4.8	3.0	4.8	3.0	—	—	—	—
2	7.2	4.5	8.4	5.2	8.4	5.2	8.4	5.2	8.4	5.2	—	—	—	—
3	11.7	7.3	12.9	8.0	14.6	9.1	14.5	9.0	14.6	9.0	—	—	—	—
ELECTRIC														
FORWARD	—	—	—	—	—	—	—	—	—	—	11.3	7.0	11.3	7.0
REVERSE	—	—	—	—	—	—	—	—	—	—	11.3	7.0	11.3	7.0

POWER SHIFT MODEL	D7G		D7G Series 2		D7R Series 2	
	km/h	mph	km/h	mph	km/h	mph
FORWARD						
1	3.7	2.3	3.9	2.4	3.5	2.2
2	6.4	4.0	6.9	4.3	6.2	3.8
3	10.0	6.2	9.9	6.1	10.7	6.7
REVERSE						
1	4.5	2.8	4.5	2.8	4.6	2.9
2	7.9	4.9	8.4	5.2	8.0	5.0
3	11.9	7.4	12.7	7.9	13.8	8.6

*Power Shift direct drive transmission available for Japan domestic market only.

**Not available at time of printing.

TRAVEL SPEED

POWER SHIFT MODEL	Differential Steer D8R		D8T		D9R		D9T		D10T		D11T/CD		D11T/CD High Altitude	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD														
1	3.5	2.2	3.4	2.1	3.8	2.4	3.9	2.4	4.0	2.5	3.9	2.4	4.0	2.5
2	6.2	3.9	6.1	3.8	6.8	4.2	6.8	4.2	7.2	4.5	6.8	4.2	7.0	4.4
3	10.8	6.7	10.6	6.6	11.9	7.4	11.7	7.3	12.7	7.9	11.8	7.3	12.0	7.5
REVERSE														
1	4.7	2.9	4.5	2.8	4.7	2.9	4.7	2.9	5.2	3.2	4.7	2.9	4.8	3.0
2	8.1	5.0	8.0	5.0	8.4	5.2	8.4	5.2	9.0	5.6	8.2	5.1	8.3	5.2
3	13.9	8.6	14.2	8.8	14.7	9.1	14.3	8.9	15.8	9.8	14.0	8.7	14.9	9.0

DIRECT DRIVE MODEL	D6R Series 3* P.S./D.D.	
	km/h	mph
FORWARD		
1	3.4	2.1
2	5.9	3.7
3	10.4	6.5
4		—
5		—
6		—
REVERSE		
1	4.3	2.7
2	7.5	4.7
3	13.3	8.3
4		—
5		—
6		—

*Japan only.

GEAR	D6T Powershift with Multi Velocity Program		D6T Powershift with Multi Velocity Program — Sound Suppressed		D6T Tier 4 Interim/Stage IIIB Powershift with Multi Velocity Program		D6T Tier 4 Interim/Stage IIIB Powershift with Multi Velocity Program — Sound Suppressed	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD								
1.5	3.8	2.3	3.2	2.0	3.8	2.3	3.2	2.0
2	5.1	3.2	5.1	3.2	5.1	3.2	5.1	3.2
2.5	6.6	4.1	6.3	3.9	6.6	4.1	6.3	3.9
3	8.5	5.3	8.5	5.3	8.5	5.3	8.5	5.3
3.5	11.4	7.1	10.9	6.8	11.4	7.1	10.9	6.8
REVERSE								
1.5	4.8	3.0	3.9	2.4	4.8	3.0	3.9	2.4
2	6.6	4.1	6.6	4.1	6.6	4.1	6.6	4.1
2.5	8.4	5.2	8.0	5.0	8.4	5.2	8.0	5.0
3	11.0	6.8	11.0	6.8	8.7	5.4	8.7	5.4
3.5	14.6	9.0	13.8	8.6	14.6	9.0	13.8	8.6

MODEL	D6T LGP					
	6A LGP		6S LGP		6VPAT LGP	
Gauge	—		—		2286 mm	90"
Type	Straight		Straight		PAT	
Blade Capacities*	5.22 m³	6.82 yd³	3.70 m³	4.83 yd³	4.2 m³	5.5 yd³
Weight, Shipping** (Dozer)	3712 kg	8185 lb	2840 kg	6262 lb	1642 kg	3620 lb
Tractor and Dozer Dimensions:						
A Length (Blade Straight)	5.82 m	19'1"	5.47 m	17'11"	—	
Width (Blade Angled)	4.63 m	15'2"	—		3.78 m	12'5"
Blade Dimensions:						
B Width (including std. end bits)	5.07 m	16'8"	4.04 m	13'3"	4.16 m	13'8"
C Height	1134 mm	3'9"	1101 mm	3'7.3"	1191 mm	3'10.9"
D Max. Digging Depth	828 mm	2'9"	655 mm	2'1.2"	672 mm	2'2.5"
E Ground Clearance @ Full Lift	1088 mm	3'7"	1083 mm	3'6.6"	1283 mm	4'2.5"
F Manual Tilt	476 mm	1'7"	632 mm	2'0.9"	—	
G Max. Pitch Adjustment	+5.3° to 4.8°		+5.7° to 4.8°		+0° to -4.0°	
H Max. Hydraulic Tilt	476 mm	1'7"	701 mm	2'3.6"	502 mm	1'7.8"
Blade Angle	25°		—		25°	
J Hydraulic Tilt (Manual Brace Centered)	—		385 mm	1'3.2"	—	
K Push Arm Trunnion Width (to Ball Centers)	3.48 m	11'5"	3.48 m	11'5"	—	

MODEL	D7R Series 2					
	7A		7S		7SU	
Type	Angling		Straight		Semi Universal	
Blade Capacities*	3.89 m³	5.08 yd³	5.16 m³	6.75 yd³	6.86 m³	8.98 yd³
Weight, Shipping** (Dozer)	3527 kg	7750 lb	3500 kg	7716 lb	3593 kg	7904 lb
Tractor and Dozer Dimensions:						
A Length (Blade Straight)	6.10 m	20'0"	5.81 m	19'1"	6.03 m	19'9"
Length (Blade Angled)	6.98 m	22'11"	—		—	
Width (Blade Angled)	4.12 m	13'6"	—		—	
Width (with C-Frame only)	3.09 m	10'1"	—		—	
Blade Dimensions:						
B Width (including std. end bits)	4.50 m	14'9"	3.90 m	12'10"	3.69 m	12'1"
C Height	1111 mm	3'7.7"	1363 mm	4'5.7"	1524 mm	5'0"
D Max. Digging Depth	669 mm	2'2.3"	527 mm	1'8.7"	527 mm	1'8.7"
E Ground Clearance @ Full Lift	1115 mm	3'7.9"	1145 mm	3'9.1"	1145 mm	3'9.1"
F Manual Tilt	466 mm	18.3"	—		—	
G Max. Pitch Adjustment	—		+3.1° to 3.9°		+3.1° to 3.9°	
Blade Angle (either side)	25°		—		—	
H Max. Hydraulic Tilt	627 mm	2'0.7"◀	845 mm	2'9.3"	799 mm	2'7.4"
J Hydraulic Tilt (Manual Brace Centered)	—		501 mm	1'7.7"	474 mm	18.6"
K Push Arm Trunnion Width (to Ball Centers)	2.87 m	9'5"	2.87 m	9'5"	2.87 m	9'5"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

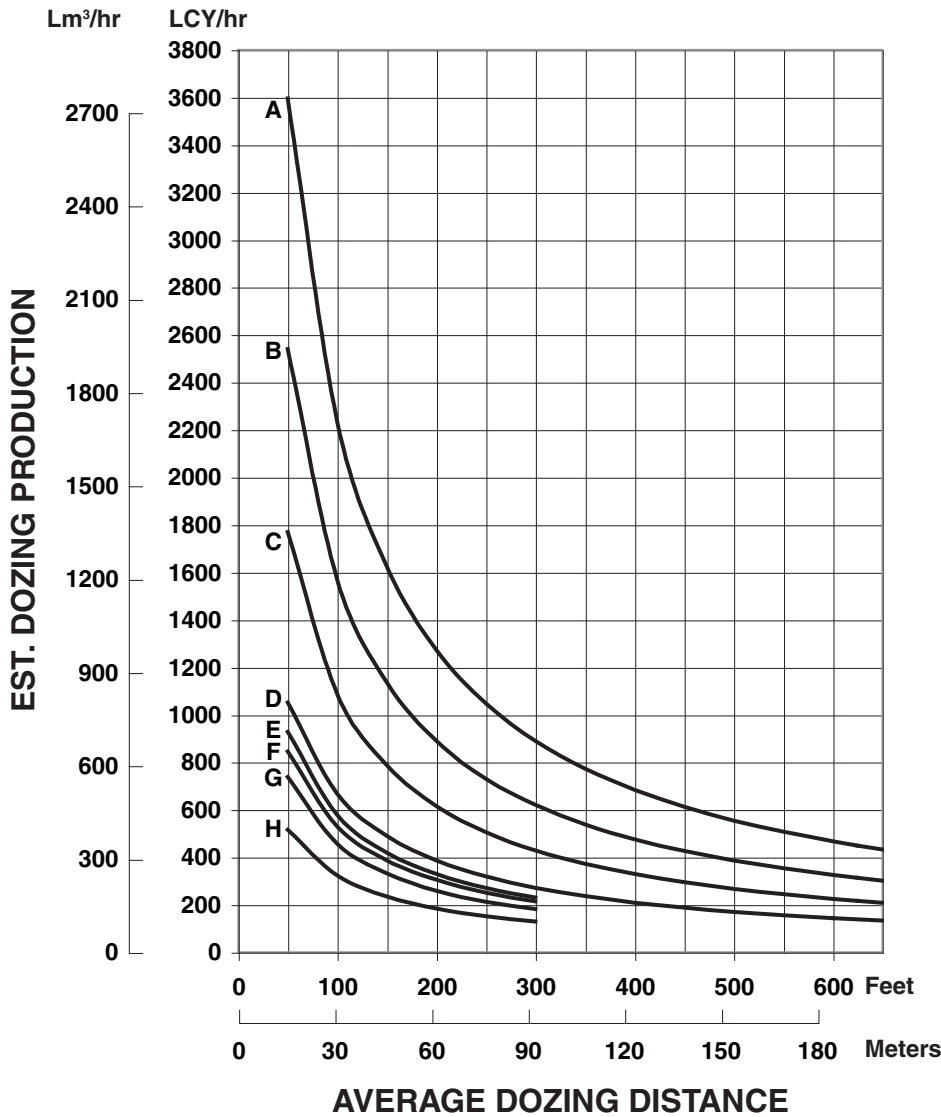
◀ Attachment includes two cylinders.

MODEL	D9R/D9T			
	9SU		9U	
Type	Semi-U		Universal	
Blade Capacities*	13.5 m³	17.7 yd³	16.4 m³	21.4 yd³
Weight, Shipping** (Dozer)	6543 kg	14,425 lb	7134 kg	15,727 lb
Tractor and Dozer Dimensions:				
A Length (Blade Straight)	6.84 m	22'5"	7.18 m	23'7"
Blade Dimensions:				
B Width (including std. end bits)	4.31 m	14'2"	4.65 m	15'3"
C Height	1934 mm	6'4.1"	1934 mm	6'4.1"
D Max. Digging Depth	606 mm	1'11.9"	606 mm	1'11.9"
E Ground Clearance @ Full Lift	1422 mm	4'8"	1422 mm	4'8"
G Max. Pitch Adjustment	+3.4° to 2.9°		+3.4° to 2.9°	
H Max. Hydraulic Tilt	940 mm	3'1"	1014 mm	3'3.9"
J Hydraulic Tilt (Manual Brace Centered)	570 mm	1'10.4"	616 mm	2'0.3"
K Push Arm Trunnion Width (to Ball Centers)	3.17 m	10'3"	3.17 m	10'3"
Maximum Track Width Permitted	762 mm	2'6"	762 mm	2'6"
Dual Tilt Option				
G Dual Pitch Adj.	+4.8° to 5.2°		+4.8° to 4.9°	
H Dual Max. Hyd. Tilt	1139 mm	3'8.8"	1231 mm	4'0.5"

* Blade capacities as determined by SAE J1265.
Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

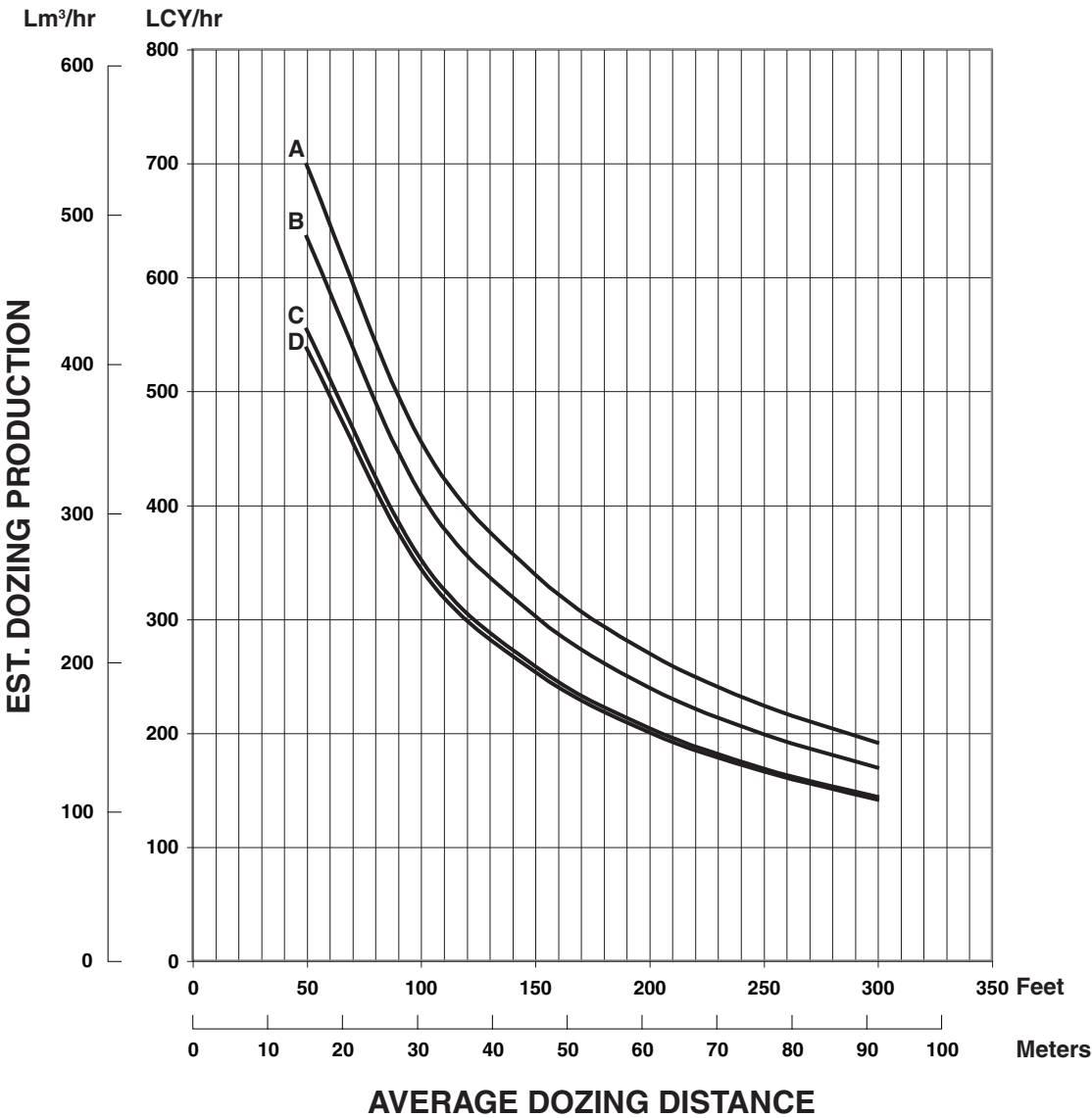
ESTIMATED DOZING PRODUCTION ● Semi-Universal Blades ● D6N through D11T



- KEY
- A — D11T
 - B — D10T
 - C — D9T
 - D — D8T
 - E — D7E
 - F — D7R Series 2
 - G — D6T
 - H — D6N

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

ESTIMATED DOZING PRODUCTION ● Straight Blades ● D6T through D7R Series 2



- KEY
- A — D7E
 - B — D7R Series 2
 - C — D6T
 - D — D7G

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

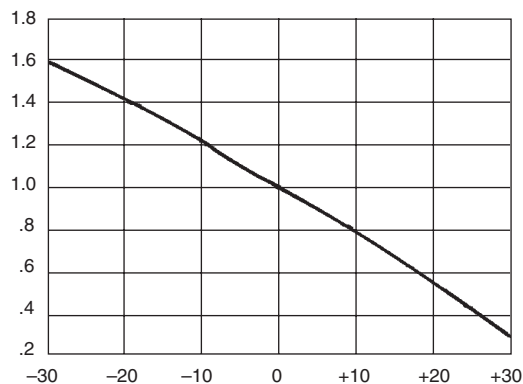
JOB CONDITION CORRECTION FACTORS

	TRACK-TYPE TRACTOR
OPERATOR —	
Excellent	1.00
Average	0.75
Poor	0.60
MATERIAL —	
Loose stockpile	1.20
Hard to cut; frozen —	
with tilt cylinder	0.80
without tilt cylinder	0.70
Hard to drift; "dead" (dry, non-cohesive material) or very sticky material	0.80
Rock, ripped or blasted	0.60-0.80
SLOT DOZING	1.20
SIDE BY SIDE DOZING	1.15-1.25
VISIBILITY —	
Dust, rain, snow, fog or darkness	0.80
JOB EFFICIENCY —	
50 min/hr	0.83
40 min/hr	0.67
BULLDOZER*	
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.	
GRADES — See following graph.	

*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 50-75% of straight blade production.

% Grade vs. Dozing Factor

(-) Downhill
(+) Uphill



ESTIMATING DOZER PRODUCTION OFF-THE-JOB

Example problem:

Determine average hourly production of a D8T/8SU (with tilt cylinder) moving hard-packed clay an average distance of 45 m (150 feet) down a 15% grade, using a slot dozing technique.

Estimated material weight is 1600 kg/Lm³ (2650 lb/LCY). Operator is average. Job efficiency is estimated at 50 min/hr.

Uncorrected Maximum Production — 458 Lm³/h (600 LCY/hr) (example only)

Applicable Correction Factors:

Hard-packed clay is "hard to cut" material -0.80
 Grade correction (from graph)-1.30
 Slot dozing-1.20
 Average operator-0.75
 Job efficiency (50 min/hr)-0.83
 Weight correction(2300/2650)-0.87

Production = Maximum Production × Correction Factors
 = (600 LCY/hr) (0.80) (1.30) (1.20)
 (0.75) (0.83) (0.87)
 = 405.5 LCY/hr

To obtain production in metric units, the same procedure is used substituting maximum uncorrected production in Lm³.

= 458 Lm³/h × Factors
 = 309.6 Lm³/h

Cycle Time Estimating Chart

Model		307C	308D CR	308D CR SB	311D LRR	312D, 312D L	315D L	319D L, 319D LN	M312, M313C, M315C, M313D, M315D	M315, M316C, M316D	M318C, M318D	M322C, M322D
Bucket Size	L yd ³	280 0.37	220 0.30	220 0.30	450 0.59	520 0.68	520 0.68	800 1.05	610 0.80	750 0.98	900 1.18	1050 1.37
Soil Type		← Packed Earth →						← Sand/Gravel →				
Digging Depth	m ft	1.5 5'0"	1.8 6'0"	1.8 6'0"	1.5 5'0"	1.8 6'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"
Load Bucket	min	0.08	0.09	0.08	0.07	0.07	0.07	0.09	0.05	0.06	0.06	0.08
Swing Loaded	min	0.05	0.03	0.03	0.06	0.06	0.08	0.09	0.05	0.05	0.06	0.06
Dump Bucket	min	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Swing Empty	min	0.06	0.06	0.08	0.05	0.05	0.06	0.07	0.04	0.04	0.05	0.05
Total Cycle Time	min	0.22	0.21	0.22	0.21	0.21	0.24	0.28	0.17	0.18	0.20	0.23

Cycle Time Estimating Chart

Model		320D	320D RR, 321D CR, 323D	324D	328D LCR	329D	336D	345D	365C L	385C
Bucket Size	L yd ³	800 1.05	800 1.05	1000 1.31	N/A	1100 1.44	1400 1.83	2400 3.0	1900 2.5	3760 5.0
Soil Type		← Hard Clay →								
Digging Depth	m ft	2.3 8	2.3 8	3.2 10	N/A	3.2 10	3.4 11	4.0 13	4.2 14	5.6 18
Load Bucket	min	0.09	0.09	0.09	N/A	0.09	0.09	0.13	0.10	0.19
Swing Loaded	min	0.06	0.06	0.06	N/A	0.06	0.07	0.07	0.09	0.06
Dump Bucket	min	0.03	0.03	0.04	N/A	0.04	0.04	0.02	0.04	0.03
Swing Empty	min	0.05	0.05	0.06	N/A	0.06	0.07	0.06	0.07	0.07
Total Cycle Time	min	0.23	0.23	0.25	N/A	0.25	0.27	0.28	0.30	0.35

N/A = Not Applicable

CYCLE TIME ESTIMATING CHART														
CYCLE TIME	MACHINE SIZE CLASS													CYCLE TIME
	307C 308D CR 308D CR SB	311D	M312 M313C M313D M312D	M315C M316C M315D M316D M315D L	M318C 319D L 319D LN	M322C M322D 320D 320D RR 321D CR 323D	324D	328D LCR	329D	336D	345D	365C L	385C	
10 SEC.								N/A						0.17 min.
15								N/A						0.25 min.
20 SEC.								N/A						0.33 min.
25														0.42 min.
30 SEC.														0.50 min.
35														0.58 min.
40 SEC.														0.67 min.
45														0.75 min.
50 SEC.														0.83 min.
55														0.92 min.
60 SEC.														1.0 min.

N/A = Not Applicable



MODEL	777D†		777F	
	Dual Slope Lined		Dual Slope Lined	
Body Type				
Target Gross Machine Weight §	163 360 kg	360,143 lb	163 293 kg	360,000 lb
Basic Machine Weight*	33 951 kg	74,849 lb	33 438 kg	73,718 lb
Attachments**	17 377 kg	38,310 lb	17 114 kg	37,730 lb
Body Weight without Liners***	16 070 kg	35,428 lb	16 420 kg	36,200 lb
Full Liner	5432 kg	11,975 lb	5767 kg	12,714 lb
Operating Machine Weight	72 830 kg	160,562 lb	72 739 kg	160,360 lb
Debris (2% of Operating Machine Weight)	1457 kg	3211 lb	1455 kg	3207 lb
Empty Operating Weight	74 287 kg	163,774 lb	74 194 kg	163,568 lb
Target Payload §	90.9 m tons	100 tons	90.7 m tons	100 tons
Capacity:				
Heaped (2:1) (SAE) Base Body	60.1 m³	78.6 yd³	60.2 m³	78.8 yd³
Distribution Empty:				
Front		47%		45%
Rear		53%		55%
Distribution Loaded:				
Front		33%		33%
Rear		67%		67%
Engine Model		3508B EUI		C32 ACERT
Number of Cylinders		8		12
Bore	170 mm	6.7"	145 mm	5.7"
Stroke	190 mm	7.5"	162 mm	6.4"
Displacement	34.5 L	2105 in³	32.1 L	1959 in³
Net Power	699 kW	938 hp	700 kW	938 hp
Gross Power	746 kW	1000 hp	758 kW	1016 hp
Standard Tires		27.00-R49 (E4)		27.00R49 (E4)
Machine Clearance Turning Circle	28.4 m	93'2"	28.4 m	93'2"
Fuel Tank Refill Capacity	1137 L	300 U.S. gal	1136 L	300 U.S. gal
Top Speed (Loaded)	60.4 km/h	39.9 mph	64.5 km/h	40.1 mph
GENERAL DIMENSIONS (Empty):				
Height to Canopy Rock Guard Rail	5.14 m	16'10"	5.17 m	17'0"
Wheelbase	4.57 m	15'0"	4.56 m	15'0"
Overall Length (Base Body)	9.78 m	32'1"	10.54 m	34'7"
Loading Height (Base Body)	4.38 m	14'4"	4.38 m	14'4"
Height at Full Dump	10.06 m	33'0"	10.33 m	33'11"
Body Length (Target Length)	7.23 m	23'9"	9.83 m	32'3"
Width (Operating)	6.11 m	20'0"	6.49 m	21'4"
Width (Shipping)***	3.51 m	11'5"	3.51 m	11'5"
Front Tire Tread	4.17 m	13'8"	4.17 m	13'8"

*See Weight Definitions and Relations on 9-11. Note: No mandatory or optional attachments or fuel.

**Typical selection of mandatory and optional attachments.

***Data provided is for a representative body and liner package. Several dual slope, flat floor, and mine specific design (MSD) bodies and liner packages are available. All weights, capacities, and dimensions are dependent on the machine configuration (body type, attachments, tires, and optional equipment selected).

§ Reference Caterpillar's latest 10/10/20 Payload Policy for information on gross machine operating weight and target payload.

† India sourced, only available in Asia Pacific.

USE OF BRAKE PERFORMANCE CURVES

The speed that can be maintained when the machine is descending a grade with retarder applied can be determined from the retarder curves in this section when gross machine weight and total effective grade are known.

Select appropriate grade distance chart that covers total downhill haul; don't break haul into individual segments.

To determine brake performance: Read from gross weight down to the percent effective grade. (Effective grade equals actual % grade *minus* 1% for each 10 kg/metric ton (20 lb./U.S. ton) of rolling resistance.) From this weight-effective grade point, read horizontally to the curve with the highest obtainable speed range, then down to maximum descent speed brakes can safely handle without exceeding cooling capacity. When braking, engine RPM should be maintained at the highest possible level without overspeeding. If cooling oil overheats, reduce ground speed to allow transmission to shift to next lower speed range.

USE OF RIMPULL-SPEED-GRADEABILITY CURVES

(See Wheel Tractor Scraper Section)

Total Effective Grade (or Total Resistance) is grade assistance *minus* rolling resistance.

10 kg/metric ton (20 lb./U.S. ton) = 1% adverse grade.

Example —

With a favorable grade of 20% and rolling resistance of 50 kg/metric ton (100 lb./U.S. ton), find Total Effective Grade.

(50 kg/metric ton) = $50 \div 10 = 5\%$ Effective Grade
(from Rolling Resistance)

100 lb/ton = $100 \div 20 = 5\%$ Effective Grade

20% (grade) – 5% (resistance) =
15% Total Effective Grade

TYPICAL FIXED TIMES FOR HAULING UNITS

Wait time, delays and operator efficiency all impact cycle time. Minimizing truck exchange time can have a significant effect on productivity.

Fixed time for hauling units include:

1. Truck load time (various with loading tool)
2. Truck maneuver in load area (Truck exchange) (Typically 0.6-0.8 min.)
3. Maneuver and dump time at dump point (Typically 1.0-1.2 min.)

Total cycle time is the combination of:

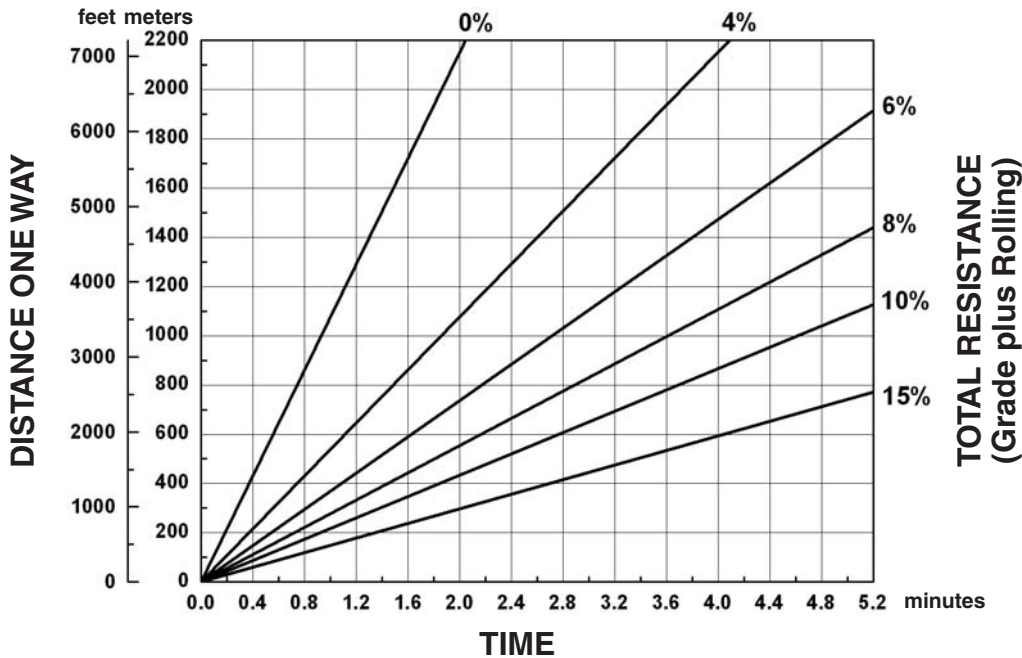
1. The above fixed time
2. Hauling time (Loaded)
3. Return time (Empty)

Example — assume load tool spots hauler with full bucket

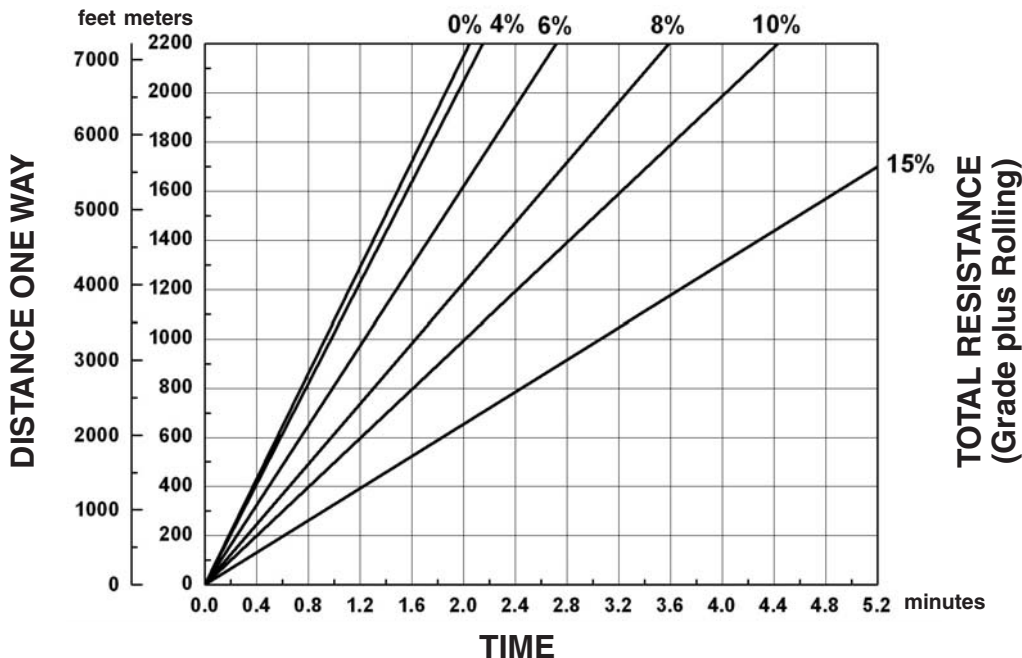
	988F	5130B
cycle times	.60	.45
First pass (dump time)	.10 min.	.05 min.
2 passes (full cycle)	.70	.50
3 passes "	1.30	.95
4 passes "	1.90	1.40
5 passes "	2.50	1.85
6 passes "	3.10	2.30
7 passes "	3.70	2.75
8 passes "	4.30	3.20
9 passes "	4.90	3.65
10 passes "	5.40	4.10

NOTE: Other sizes of loading tools will have different cycle times. See Wheel Loader section for **average** cycle times for truck loading.

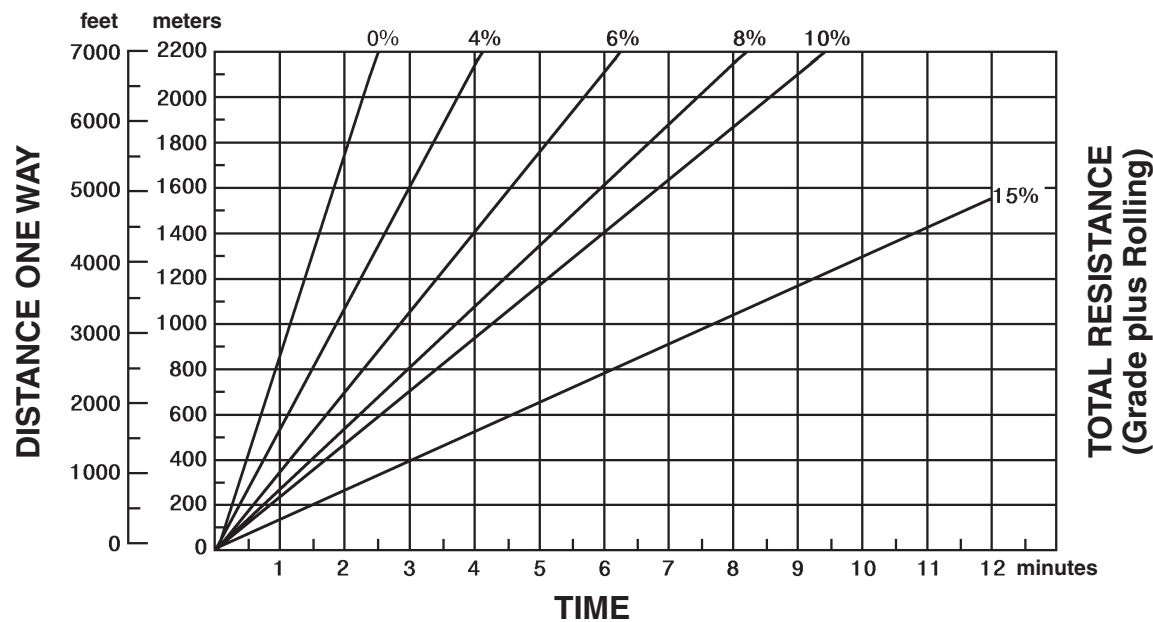
LOADED



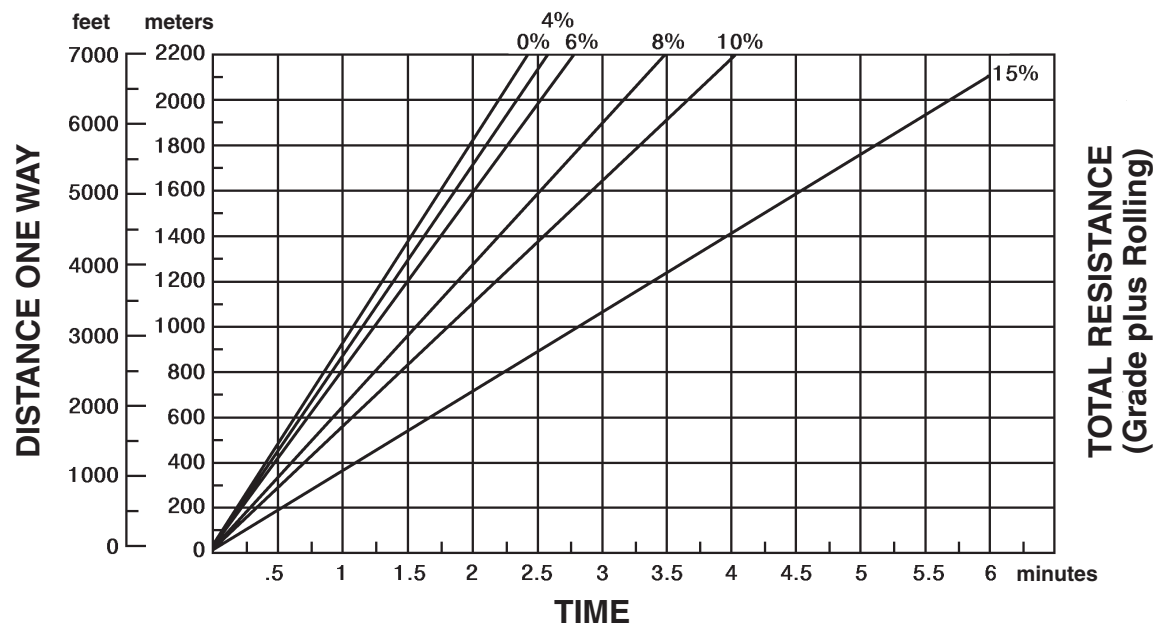
EMPTY



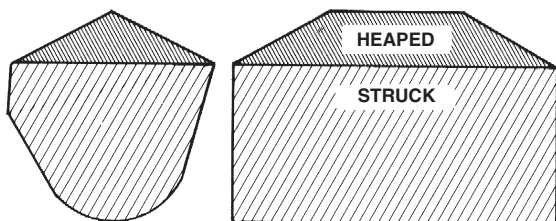
LOADED



EMPTY



SAE BUCKET RATING



SAE Bucket Capacities

Struck capacity is that volume contained in a bucket after a load is leveled by drawing a straight edge resting on the cutting edge and the back of the bucket.

Heaped capacity is a struck capacity plus that additional material that would heap on the struck load at a 2:1 angle of repose with the struck line parallel to the ground.

SAE J742 (FEB85) specifies that the addition of any auxiliary spill guard to protect against spillage which might injure the operator will not be included in bucket capacity ratings. Buckets with irregular shaped cutting edges (vee edge) the strike plane should be drawn at one-third the distance of the protruding portion of the cutting edge. Cat rock buckets are built with integral see-through rock guards. Cat light material buckets come standard with bolt-on edges. These features which add to actual bucket capacity are included in published ratings.

Dump Height

SAE J732 JUN92 specifies that dump height is the vertical distance from the ground to the lowest point of the cutting edge with the bucket hinge pin at maximum height and the bucket at a 45° dump angle. Dump angle is the angle in degrees that the longest flat section of the inside bottom of the bucket will rotate below horizontal.

SELECTING A MACHINE

Steps in selecting the proper size loader:

1. Determine production required or desired.
2. Determine loader cycle time and cycles per hour.
A machine size must be assumed to select a basic cycle time.

3. Determine required payload per cycle in loose cubic yards and pounds (meters and kilograms).
4. Determine bucket size needed.
5. Make machine selection using bucket size and payload as criteria to meet production requirements.
6. Compare the loader cycle time used in calculations to the cycle time of the machine selected. If there is a difference, rework the process beginning at step 2.

1. Production Required

The production required of a wheel or track loader should be slightly greater than the production capability of the other critical units in the earth or material moving system. For example, if a hopper can handle 300 tons per hour, a loader capable of slightly more than 300 tons should be used. Required production should be carefully calculated so the proper machine and bucket selections are made.

2. Loader Cycle Times

When hauling loose granular material on a hard smooth operating surface, a .45-.55 minute basic cycle time is considered reasonable for Cat articulated loaders with a competent operator. This includes load, dump, four reversals of direction, full cycle of hydraulics and minimum travel.

Material type, pile height, and other factors may improve or reduce production, and should be added to or subtracted from the basic cycle time when applicable.

When hauls are involved, obtain the haul and return portion of the cycle from the estimated travel chart (this section). Add the haul and return times to the estimated basic cycle time to obtain total cycle time.

CYCLE TIME FACTORS

A basic cycle time (Load, Dump, Maneuver) of .45-.55 minutes is average for an articulated loader [the basic cycle for large loaders, 3 m³ (4 yd³) and up, can be slightly longer], but variations can be anticipated in the field. The following values for many variable elements are based on normal operations. Adding or subtracting any of the variable times will give the total basic cycle time.

*Minutes added (+)
 or Subtracted (-)
 From Basic Cycle*

Machine

- Material handler-.05

Materials

- Mixed+.02
- Up to 3 mm (1/8 in)+.02
- 3 mm (1/8 in) to 20 mm (3/4 in)-.02
- 20 mm (3/4 in) to 150 mm (6 in)00
- 150 mm (6 in) and over+.03 and Up
- Bank or broken+.04 and Up

Pile

- Conveyor or Dozer piled 3 m (10 ft) and up00
- Conveyor or Dozer piled 3 m (10 ft) or less+.01
- Dumped by truck+.02

Miscellaneous

- Common ownership of trucks and loaders Up to -.04
- Independently owned trucks Up to +.04
- Constant operation Up to -.04
- Inconsistent operation Up to +.04
- Small target Up to +.04
- Fragile target Up to +.05

Using actual job conditions and the above factors, total cycle time can be estimated. Convert total cycle time to cycles per hour.

$$\begin{array}{l} \text{Cycles per hour at} \\ 100\% \text{ Efficiency} \end{array} = \frac{60 \text{ min}}{\text{Total Cycle Time in Minutes}}$$

Job efficiency is an important factor in machine selection. Efficiency is the actual number of minutes worked during an hour. Job efficiency accounts for bathroom breaks and other work interruptions.

$$\begin{array}{l} \text{Cycles per hour} \\ \text{at 50 minutes} \\ \text{per hour} \\ (83\% \text{ efficiency}) \end{array} = \begin{array}{l} \text{Cycles per hour} \\ \text{at 100\%} \\ \text{efficiency} \end{array} \times \begin{array}{l} 50 \text{ min} \\ \text{actual work} \\ \text{time} \\ \hline 60 \text{ min hour} \end{array}$$

TRUCK LOADING

Average loader cycle times

914G-962H	0.45-0.50 min
966H-980H	0.50-0.55 min
988H-990H	0.55-0.60 min
992K-994F	0.60-0.70 min

3. Required Payload Per Cycle

Required payload per cycle is determined by dividing required hourly production by the number of cycles per hour.

4. Bucket Selection

After required payload per cycle has been calculated, the payload should be divided by the loose cubic yard (meter) material weight to determine number of loose cubic yards (meters) required per cycle.

The bulk of material handled does not weigh 1800 kg/m³ (3000 lb/yd³), so a reasonable knowledge of material weight is necessary for accurate production estimates. The Tables Section has average weight for certain materials when actual weights are not known.

The percentage of rated capacity a bucket carries in various materials is estimated below. The bucket size required to handle the required volume per cycle is found with the aid of the percentage of rated bucket capacity called "Bucket Fill Factor."

The bucket size needed is determined by dividing loose cubic meters (or yards) required per cycle by the bucket fill factor.

$$\text{Bucket size} = \frac{\text{Volume Required/Cycle}}{\text{Bucket Fill Factor}}$$

BUCKET FILL FACTORS

The following indicates the approximate amounts of material as a percent of rated bucket capacity which will actually be delivered per bucket per cycle. This is known as "Bucket Fill Factor."

Loose Material	Fill factor
Mixed moist aggregates	95-100%
Uniform aggregates up to 3 mm (1/8 in)	95-100
3 mm (1/8 in) to 9 mm (3/8 in)	90-95
12 mm (1/2 in) to 20 mm (3/4 in)	85-90
24 mm (1.0 in) and over	85-90

992K — Standard

Up to specified density for 100% fill factor

Bucket Volume		Material Density	
m ³	yd ³	kg/m ³	lb/yd ³
12.2	16	1780	3000
11.5	15	1890	3200
10.7	14	2030	3430

992K — High Lift

Up to specified density for 100% fill factor

Bucket Volume		Material Density	
m ³	yd ³	kg/m ³	lb/yd ³
12.2	16	1560	2630
11.5	15	1560	2630
10.7	14	1560	2630

993K — Standard

Up to specified density for 100% fill factor

Bucket Volume		Material Density	
m ³	yd ³	kg/m ³	lb/yd ³
15.3	20	1780	3000
14.5	19	1870	3160
13.8	18	1970	3330

993K — High Lift

Up to specified density for 100% fill factor

Bucket Volume		Material Density	
m ³	yd ³	kg/m ³	lb/yd ³
14.5	19	1720	2890
13.8	18	1810	3060
13.0	17	1920	3240

TABLES

SWELL — VOIDS — LOAD FACTORS

SWELL (%)	VOIDS (%)	LOAD FACTOR
5	4.8	.952
10	9.1	.909
15	13.0	.870
20	16.7	.833
25	20.0	.800
30	23.1	.769
35	25.9	.741
40	28.6	.714
45	31.0	.690
50	33.3	.667
55	35.5	.645
60	37.5	.625
65	39.4	.606
70	41.2	.588
75	42.9	.571
80	44.4	.556
85	45.9	.541
90	47.4	.526
95	48.7	.513
100	50.0	.500

BUCKET FILL FACTORS

Loose Material	Fill Factor
Mixed Moist Aggregates	95-100%
Uniform Aggregates up to 3 mm (1/8")	95-100
3 mm-9 mm (1/8"-3/8")	90-95
12 mm-20 mm (1/2"-3/4")	85-90
24 mm (1") and over	85-90
Blasted Rock	
Well Blasted	80-95%
Average Blasted	75-90
Poorly Blasted	60-75
Other	
Rock Dirt Mixtures	100-120%
Moist Loam	100-110
Soil, Boulders, Roots	80-100
Cemented Materials	85-95

NOTE: Loader bucket fill factors are affected by bucket penetration, breakout force, rackback angle, bucket profile and ground engaging tools such as bucket teeth or bolt-on replaceable cutting edges.

NOTE: For bucket fill factors for hydraulic excavators, see bucket payloads in the hydraulic excavator section.

TYPICAL ROLLING RESISTANCE FACTORS

Various tire sizes and inflation pressures will greatly reduce or increase the rolling resistance. The values in this table are approximate, particularly for the track and track + tire machines. These values can be used for estimating purposes when specific performance information on particular equipment and given soil conditions is not available. See Mining and Earthmoving Section for more detail.

UNDERFOOTING	ROLLING RESISTANCE, PERCENT*			
	Tires Bias	Tires Radial	Track **	Track +Tires
A very hard, smooth roadway, concrete, cold asphalt or dirt surface, no penetration or flexing	1.5%*	1.2%	0%	1.0%
A hard, smooth, stabilized surfaced roadway without penetration under load, watered, maintained	2.0%	1.7%	0%	1.2%
A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered	3.0%	2.5%	0%	1.8%
A dirt roadway, rutted or flexing under load, little maintenance, no water, 25 mm (1") tire penetration or flexing	4.0%	4.0%	0%	2.4%
A dirt roadway, rutted or flexing under load, little maintenance, no water, 50 mm (2") tire penetration or flexing	5.0%	5.0%	0%	3.0%
Rutted dirt roadway, soft under travel, no maintenance, no stabilization, 100 mm (4") tire penetration or flexing	8.0%	8.0%	0%	4.8%
Loose sand or gravel	10.0%	10.0%	2%	7.0%
Rutted dirt roadway, soft under travel, no maintenance, no stabilization, 200 mm (8") tire penetration and flexing	14.0%	14.0%	5%	10.0%
Very soft, muddy, rutted roadway, 300 mm (12") tire penetration, no flexing	20.0%	20.0%	8%	15.0%

*Percent of combined machine weight.

**Assumes drag load has been subtracted to give Drawbar Pull for good to moderate conditions. Some resistance added for very soft conditions.

ANGLE OF REPOSE OF VARIOUS MATERIALS

MATERIAL	ANGLE BETWEEN HORIZONTAL AND SLOPE OF HEAPED PILE	
	Ratio	Degrees
Coal, industrial	1.4:1—1.3:1	35-38
Common earth, Dry	2.8:1—1.0:1	20-45
Moist	2.1:1—1.0:1	25-45
Wet	2.1:1—1.7:1	25-30
Gravel, Round to angular	1.7:1—0.9:1	30-50
Sand & clay	2.8:1—1.4:1	20-35
Sand, Dry	2.8:1—1.7:1	20-30
Moist	1.8:1—1.0:1	30-45
Wet	2.8:1—1.0:1	20-45

ALTITUDE DERATION

PERCENT FLYWHEEL HORSEPOWER
AVAILABLE AT SPECIFIED ALTITUDES

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
D3K XL	100	100	100	100	88	85
D3K LGP	100	100	100	100	88	85
D4K XL	100	100	100	100	88	85
D4K LGP	100	100	100	100	88	85
D5K XL	100	100	100	100	88	85
D5K LGP	100	100	100	100	88	85
D5N XL & LGP	100	100	100	100	100	100
D6K XL & LGP	100	100	100	100	N/A	N/A
D6N XL & LGP	100	100	100	100	N/A	N/A
D6N XL & LGP**	100	100	100	100	100	100
D6G	100	100	100	100	94	87
D6G Series 2 XL	100	100	100	94	87	80
D6G Series 2 LGP	100	100	100	94	87	80
D6R	100	100	100	100	92	84
D6R Series 3 (All)	100	100	100	100	92	84
D6T (Tier 4 Interim/Stage IIIB)	100	100	100	100	100	88
D7E	100	100	100	98	95	88
D7G	100*	100*	100*	94	86	80
D7G Series 2	100	100	100	100	100	94
D7R Series 2 (All)	100	100	100	100	100	96
D8R	100	100	100	93	85	77
D8T	100	100	100	100	100	93
D9R	100	100	100	93	85	77
D9T	100	100	100	100	100	93
D10T	100	100	100	100	97	89
D11T/D11T CD	100	100	100	93	85	77
120H STD	100	100	100	100	100	100
120M	100	100	100	100	95	88
135H STD	100	100	100	100	100	98
12H STD	100	89	83	77	71	65
12M	100	100	100	100	95	88
140H STD	100	100	100	100	97	89
140M	100	100	100	100	**	**
160H STD	100	100	100	97	89	82
160M	100	100	100	100	**	**
14M	100	100	100	100	100	**
16M	100	100	100	100	100	100
24M	100	100	100	100	**	**

*Refer to "Captive Vehicle Engine Fuel Specifications" microfiche at your local dealer.

**Information not available at time of printing.

APPENDIX B.6
MISCELLANEOUS UNIT COSTS

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2012

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02 41 Demolition

02 41 13 - Selective Site Demolition

02 41 13.20 Selective Demo, Highway Guard Rails & Barriers

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0800	Median barrier, 6" x 8" box beam	B-80B	240	.133	L.F.		5	.97	5.97	8.70
0850	Precast concrete 3'-6" high x 2' wide	↓	300	.107	↓		4	.77	4.77	6.95
0900	Impact barrier, UTMCD, barrel type	B-16	60	.533	Ea.		19	9.75	28.75	39.50
1000	Resilient guide fence and light shield 6' high	"	120	.267	L.F.		9.50	4.87	14.37	19.95
1100	Concrete posts, 6'-5" triangular	B-6	200	.120	Ea.		4.60	1.67	6.27	8.85
1200	Speed bumps 10-1/2" x 2-1/4" x 48"	↓	300	.080	L.F.		3.07	1.11	4.18	5.90
1300	Pavement marking channelizing	↓	200	.120	Ea.		4.60	1.67	6.27	8.85
1400	Barrier and curb delineators	↓	300	.080	↓		3.07	1.11	4.18	5.90
1500	Rumble strips 24" x 3-1/2" x 1/2"	↓	150	.160	↓		6.15	2.23	8.38	11.80

02 41 13.33 Minor Site Demolition

0010	MINOR SITE DEMOLITION	R024119-10	B-6	7	3.429	Ea.	131	47.50	178.50	254
0015	No hauling, abandon catch basin or manhole		↓	4	6	↓	230	83.50	313.50	440
0020	Remove existing catch basin or manhole, masonry		↓	13	1.846	↓	70.50	25.50	96	137
0030	Catch basin or manhole frames and covers, stored		↓	7	3.429	↓	131	47.50	178.50	254
0040	Remove and reset		B-80	175	.183	↓	6.90	3.82	10.72	14.75
0100	Roadside delineators, remove only		"	100	.320	↓	12.10	6.70	18.80	26
0110	Remove and reset		B-80A	100	.240	L.F.	8.40	2.64	11.04	15.85
0800	Guiderail, corrugated steel, remove only		"	40	.600	"	21	6.60	27.60	40
0850	Remove and reset		B-80B	120	.267	Ea.	10	1.94	11.94	17.45
0860	Guide posts, remove only		B-55	50	.480	↓	16.75	19.65	36.40	47
0870	Remove and reset		B-21A	5	8	↓	350	89.50	439.50	630
0900	Hydrants, fire, remove only		"	2	20	↓	875	224	1,099	1,575
0950	Remove and reset		B-5	1800	.031	C.F.	1.20	.73	1.93	2.64
1000	Masonry walls, block, solid		↓	900	.062	↓	2.41	1.46	3.87	5.30
1200	Brick, solid		↓	900	.062	↓	2.41	1.46	3.87	5.30
1400	Stone, with mortar		↓	1500	.037	↓	1.44	.88	2.32	3.17
1500	Dry set		B-3	430	.112	L.F.	4.18	5.30	9.48	12.15
1600	Median barrier, precast concrete, remove and store		"	390	.123	↓	4.60	5.85	10.45	13.45
1610	Remove and reset		B-6	175	.137	↓	5.25	1.91	7.16	10.15
2900	Pipe removal, sewer/water, no excavation, 12" diameter		B-12Z	150	.160	↓	6.30	11	17.30	21.50
2930	15"-18" diameter		↓	120	.200	↓	7.85	13.75	21.60	27
2960	21"-24" diameter		↓	90	.267	↓	10.50	18.35	28.85	36
3000	27"-36" diameter		B-6	160	.150	↓	5.75	2.09	7.84	11.10
3200	Steel, welded connections, 4" diameter		"	80	.300	↓	11.50	4.18	15.68	22
3300	10" diameter		B-13	330	.170	↓	6.45	2.11	8.56	12.20
3500	Railroad track removal, ties and track		B-14	500	.096	C.Y.	3.56	.67	4.23	6.20
3600	Ballast		↓	50	.960	L.F.	35.50	6.70	42.20	62
3700	Remove and re-install, ties & track using new bolts & spikes		↓	1	48	Ea.	1,775	335	2,110	3,100
3800	Turnouts using new bolts and spikes		B-6	325	.074	S.Y.	2.83	1.03	3.86	5.45
4000	Sidewalk removal, bituminous, 2-1/2" thick		↓	185	.130	↓	4.97	1.81	6.78	9.60
4050	Brick, set in mortar		↓	160	.150	↓	5.75	2.09	7.84	11.10
4100	Concrete, plain, 4"		↓	150	.160	↓	6.15	2.23	8.38	11.80
4200	Mesh reinforced		B-5	45	1.244	C.Y.	48	29	77	106
4300	Slab on grade removal, plain		↓	33	1.697	↓	65.50	40	105.50	144
4310	Mesh reinforced		↓	25	2.240	↓	86.50	52.50	139	190
4320	Rod reinforced								200%	200%
4400	For congested sites or small quantities, add up to		B-11A	232	.069	↓	2.82	5.35	8.17	10.20
4450	For disposal on site, add		B-34D	76	.105	↓	3.72	8.70	12.42	15.20
4500	To 5 miles, add		B-59A	35	.686	M.S.F.	34.50	24	13	71.50
6850	Runways, remove rubber skid marks, 4-6 passes		"	35	.686	"	51.50	24	13	88.50
6860	6-10 passes									108

02 41

02 41 13

02 41 13.34

0010	SELECT
0015	Excl
0020	See
0100	
0200	
0300	
0400	
0500	

02 41 13.36

0010	SELECT
0015	Excl
0100	
0200	
0300	
0400	
0500	
0600	

02 41 13.38

0010	SELECT
0015	Exc
0020	See
0090	
0100	
0200	
0300	
0400	
0450	
0480	
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1800	
1900	
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1920	
2000	
2100	
2200	
2210	
2220	

02 41 Demolition

02 41 13 – Selective Site Demolition

02 41 13.34 Selective Demolition, Utility Materials				Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs		Total	Total Incl O&P
									Labor	Equipment		
0010	SELECTIVE DEMOLITION, UTILITY MATERIALS			R024119-10								
0015	Excludes excavation											
0020	See other utility items in Section 02 41 13.33											
0100	Fire Hydrant extensions			B-20	14	1.714	Ea.		67		67	104
0200	Precast Utility boxes up to 8' x 14' x 7'			B-13	2	28			1,075	350	1,425	2,000
0300	Handholes and meter pits			B-6	2	12			460	167	627	885
0400	Utility valves 4"-12"			B-20	4	6			235		235	365
0500	14"-24"			B-21	2	14			565	66	631	945

02 41 13.36 Selective Demolition, Utility Valves and Accessories

0010	SELECTIVE DEMOLITION, UTILITY VALVES & ACCESSORIES											
0015	Excludes excavation											
0100	Utility valves 4"-12" diam.			B-20	4	6	Ea.		235		235	365
0200	14"-24" diam.			B-21	2	14			565	66	631	945
0300	Crosses 4"-12"			B-20	8	3			118		118	181
0400	14"-24"			B-21	4	7			283	33	316	470
0500	Utility cut-in valves 4"-12" diam.			B-20	20	1.200			47		47	72.50
0600	Curb boxes			"	20	1.200			47		47	72.50

02 41 13.38 Selective Demo., Water & Sewer Piping & Fittings

0010	SELECTIVE DEMOLITION, WATER & SEWER PIPING AND FITTINGS											
0015	Excludes excavation											
0020	See other utility items in Section 02 41 13.33											
0090	Concrete pipe 4"-10" dia			B-6	250	.096	L.F.		3.68	1.34	5.02	7.05
0100	42"-48" diameter			B-13B	96	.583			22	11.45	33.45	46.50
0200	60"-84" diameter			"	80	.700			26.50	13.75	40.25	56
0300	96" diameter			B-13C	80	.700			26.50	20.50	47	63.50
0400	108"-144" diameter			"	64	.875			33.50	25.50	59	79
0450	Concrete fittings 12" diameter			B-6	24	1	Ea.		38.50	13.90	52.40	74
0480	Concrete end pieces 12" diameter				200	.120	L.F.		4.60	1.67	6.27	8.85
0485	15" diameter				150	.160			6.15	2.23	8.38	11.80
0490	18" diameter				150	.160			6.15	2.23	8.38	11.80
0500	24"-36" diameter				100	.240			9.20	3.34	12.54	17.70
0600	Concrete fittings 24"-36" diameter				12	2	Ea.		76.50	28	104.50	148
0700	48"-84" diameter			B-13B	12	4.667			178	91.50	269.50	375
0800	96" diameter			"	8	7			267	137	404	555
0900	108"-144" diameter			B-13C	4	14			535	405	940	1,275
1000	Ductile iron pipe 4" diameter			B-21B	200	.200	L.F.		7.60	3.06	10.66	15
1100	6"-12" diameter				175	.229			8.70	3.50	12.20	17.15
1200	14"-24" diameter				120	.333			12.70	5.10	17.80	25
1300	Ductile iron fittings 4"-12" diameter				24	1.667	Ea.		63.50	25.50	89	125
1400	14"-16" diameter				18	2.222			84.50	34	118.50	167
1500	18"-24" diameter				12	3.333			127	51	178	250
1600	Plastic pipe 3/4"-4" diameter			B-20	700	.034	L.F.		1.34		1.34	2.07
1700	6"-8" diameter				500	.048			1.88		1.88	2.90
1800	10"-18" diameter				300	.080			3.14		3.14	4.83
1900	20"-36" diameter				200	.120			4.70		4.70	7.25
1910	42"-48" diameter				180	.133			5.25		5.25	8.05
1920	54"-60" diameter				160	.150			5.90		5.90	9.05
2000	Plastic fittings 4"-8" diameter			B-6	75	.320	Ea.		12.25	4.45	16.70	23.50
2100	10"-14" diameter				50	.480			18.40	6.70	25.10	35.50
2200	16"-24" diameter				20	1.200			46	16.70	62.70	88.50
2210	30"-36" diameter				15	1.600			61.50	22.50	84	118
2220	42"-48" diameter				12	2			76.50	28	104.50	148

02 41 Demolition

02 41 13 - Selective Site Demolition

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs		Total	Total Incl O&P
02 41 13.78 Selective Demolition, Radio Towers							Labor	Equipment		
0800	120'	K-2	.80	30	Ea.		1,350	330	1,680	2,700
0900	190'		.40	60			2,700	660	3,360	5,375

02 41 13.80 Selective Demolition, Utility Poles and Cross Arms

02 41 13.80 SELECTIVE DEMOLITION, UTILITY POLES & CROSS ARMS										
0010		R-3	6	3.333	Ea.		170	22	192	280
0100	Utility poles, wood, 20' - 30' high	"	5	4			204	26.50	230.50	335
0200	35' - 45' high								82.50	123
0300	Cross arms, wood, 4' - 6' long	1 Elec	5	1.600						

02 41 13.82 Selective Removal, Pavement Lines and Markings

02 41 13.82 SELECTIVE REMOVAL, PAVEMENT LINES & MARKINGS										
0010	Does not include traffic control costs									
0020	See other items in Section 32 17 23.13									
0100	Remove permanent painted traffic lines and markings	B-78A	500	.016	C.L.F.		.72	1.60	2.32	2.84
0200	Temporary traffic line tape	2 Clab	1500	.011	L.F.		.37		.37	.58
0300	Thermoplastic traffic lines and markings	B-79A	500	.024	C.L.F.		1.07	2.48	3.55	4.35
0400	Painted pavement markings	B-78B	500	.036	S.F.		1.30	.69	1.99	2.76

02 41 13.84 Selective Demolition, Walks, Steps and Pavers

02 41 13.84 SELECTIVE DEMOLITION, WALKS, STEPS AND PAVERS										
0010		1 Clab	300	.027	S.F.		.94		.94	1.44
0100	Splash blocks	"	50	.160	Ea.		5.60		5.60	8.65
0200	Tree grates	2 Clab	150	.107	S.F.		3.74		3.74	5.75
0300	Walks, limestone pavers		600	.027			.94		.94	1.44
0400	Redwood sections		480	.033			1.17		1.17	1.80
0500	Redwood planks		300	.053			1.87		1.87	2.88
0600	Shale paver		675	.024			.83		.83	1.26
0700	Tile thinset paver	B-1	350	.069	Ea.		2.45		2.45	3.77
0800	Wood round	2 Clab	450	.036	S.F.		1.25		1.25	1.92
0900	Asphalt block		450	.036			1.25		1.25	1.92
1000	Bluestone		675	.024			.83		.83	1.26
1100	Slate, 1" or thinner		300	.053			1.87		1.87	2.88
1200	Granite blocks		450	.036			1.25		1.25	1.92
1300	Precast patio blocks		600	.027			.94		.94	1.44
1400	Planter blocks		300	.053			1.87		1.87	2.88
1500	Brick paving, dry set		180	.089			3.12		3.12	4.80
1600	Mortar set		240	.067			2.34		2.34	3.60
1700	Dry set on edge		200	.080	L.F.		2.81		2.81	4.30
1800	Steps, brick		150	.107			3.74		3.74	5.75
1900	Railroad tie		180	.089			3.12		3.12	4.80
2000	Bluestone		1000	.016			.56		.56	.84
2100	Wood/steel edging for steps		400	.040			1.40		1.40	2.16
2200	Timber or railroad tie edging for steps									

02 41 13.86 Selective Demolition, Athletic Surfaces

02 41 13.86 SELECTIVE DEMOLITION, ATHLETIC SURFACES										
0010		2 Clab	2000	.008	S.F.		.28		.28	.43
0100	Synthetic grass	"	2000	.008	"		.28		.28	.43
0200	Surface coat latex rubber	B-11C	16	1	Ea.		41	21	62	85
0300	Tennis court posts									

02 41 13.88 Selective Demolition, Lawn Sprinkler Systems

02 41 13.88 SELECTIVE DEMOLITION, LAWN SPRINKLER SYSTEMS										
0010		4 Skwk	.10	320	Ea.		14,500		14,500	22,500
0100	Golf course sprinkler system, 9 hole	B-20	110	.218	Head		8.55		8.55	13.20
0200	Sprinkler system, 24' diam. @ 15' O.C., per head	"	52	.462	"		18.10		18.10	28
0300	60' diam. @ 24' O.C., per head								4.84	7.50
0400	Sprinkler heads, plastic	2 Skwk	150	.107	Ea.		4.84		9.70	15
0500	Impact circle pattern, 28' - 76' diam.		75	.213			9.70			

02 41 Demolition

02 41 13 - Selective Site Demolition

02 41 13.88 Selective Demolition, Lawn Sprinkler Systems

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs Labor	Equipment	Total	Total Incl O&P
0600	Pop-up, 42' - 76' diam.	2 Skwk	50	.320	Ea.		14.55		14.55	22.50
0700	39' - 99' diameter		50	.320			14.55		14.55	22.50
0800	Sprinkler valves		40	.400			18.15		18.15	28
0900	Valve boxes		40	.400			18.15		18.15	28
1000	Controls		2	8			365		365	560
1100	Backflow preventer		4	4			182		182	281
1200	Vacuum breaker		4	4			182		182	281

02 41 13.90 Selective Demolition, Retaining Walls

0010	SELECTIVE DEMOLITION, RETAINING WALLS									
0020	See other retaining wall items in Section 02 41 13.33	B-9	12.70	3.150	L.F.		112	16.45	128.45	190
0100	Concrete retaining wall, 6' high, no reinforcing		10	4			142	21	163	241
0200	8' high		7.80	5.128			182	27	209	310
0300	10' high		11.50	3.478			123	18.20	141.20	210
0400	With reinforcing, 6' high		9	4.444			158	23	181	269
0500	8' high		7	5.714			203	30	233	345
0600	10' high		4	10			355	52.50	407.50	605
0700	20' high		126	.317	S.F.		11.25	1.66	12.91	19.20
0800	Concrete cribbing, 12' high, open/closed face	B-62	800	.030			1.15	.20	1.35	1.98
0900	Interlocking segmental retaining wall	"	600	.040			1.53	.27	1.80	2.63
1000	Wall caps	B-13	1200	.047			1.78	.58	2.36	3.36
1100	Metal bin retaining wall, 10' wide, 4-12' high		1000	.056			2.13	.70	2.83	4.03
1200	10' wide, 16-28' high		170	.329	Ea.		12.55	4.10	16.65	23.50
1300	Stone filled gabions, 6' x 3' x 1'		75	.747			28.50	9.30	37.80	54
1400	6' x 3' x 1'-6"		25	2.240			85.50	28	113.50	161
1500	6' x 3' x 3'		75	.747			28.50	9.30	37.80	54
1600	9' x 3' x 1'		33	1.697			64.50	21	85.50	123
1700	9' x 3' x 1'-6"		12	4.667			178	58	236	335
1800	9' x 3' x 3'		42	1.333			51	16.60	67.60	96
1900	12' x 3' x 1'		20	2.800			107	35	142	202
2000	12' x 3' x 1'-6"		6	9.333			355	116	471	675
2100	12' x 3' x 3'									

02 41 13.92 Selective Demolition, Parking Appurtenances

0010	SELECTIVE DEMOLITION, PARKING APPURTENANCES									
0100	Bumper rails, garage, 6" wide	B-6	300	.080	L.F.		3.07	1.11	4.18	5.90
0200	12" channel rail		300	.080			3.07	1.11	4.18	5.90
0300	Parking bumper, timber		1000	.024			.92	.33	1.25	1.77
0400	Folding, with locks	B-1	100	.240	Ea.		8.60		8.60	13.20
0500	Flexible fixed garage stanchion	B-6	150	.160			6.15	2.23	8.38	11.80
0600	Wheel stops, precast concrete		120	.200			7.65	2.78	10.43	14.75
0700	Thermoplastic		120	.200			7.65	2.78	10.43	14.75
0800	Pipe bollards, 6" - 12" dia		80	.300			11.50	4.18	15.68	22

02 41 16 - Structure Demolition

02 41 16.13 Building Demolition

0010	BUILDING DEMOLITION Large urban projects, incl. 20 mi. haul R024119-10									
0011	No foundation or dump fees, C.F. is vol. of building standing	B-8	21500	.003	C.F.		.12	.14	.26	.33
0020	Steel		15300	.004			.16	.19	.35	.46
0050	Concrete		20100	.003			.12	.15	.27	.35
0080	Masonry		20100	.003			.12	.15	.27	.35
0100	Mixture of types	B-3	14800	.003			.12	.15	.27	.35
0500	Small bldgs, or single bldgs, no salvage included, steel		11300	.004			.16	.20	.36	.46
0600	Concrete		14800	.003			.12	.15	.27	.35
0650	Masonry									

02 41 Demolition

02 41 16 - Structure Demolition

02 41 16.13 Building Demolition		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs			Total	Total Incl O&P
							Labor	Equipment			
0700	Wood	B-3	14800	.003	C.F.		.12	.15	.27		.35
0750	For buildings with no interior walls, deduct								50%		
1000	Demolition single family house, one story, wood 1600 S.F.	B-3	1	48	Ea.		1,800	2,275	4,075	5,250	
1020	3200 S.F.		.50	96			3,600	4,550	8,150	10,500	
1200	Demolition two family house, two story, wood 2400 S.F.		.67	71.964			2,700	3,400	6,100	7,850	
1220	4200 S.F.		.38	128			4,800	6,075	10,875	14,000	
1300	Demolition three family house, three story, wood 3200 S.F.		.50	96			3,600	4,550	8,150	10,500	
1320	5400 S.F.		.30	160			5,975	7,575	13,550	17,500	
5000	For buildings with no interior walls, deduct								50%		

02 41 16.15 Explosive/Implosive Demolition

02 41 16.15 Explosive/Implosive Demolition											
0010	EXPLOSIVE/IMPLOSIVE DEMOLITION										
0011	Large projects,										
0020	No disposal fee based on building volume, steel building	B-5B	16900	.003	C.F.		.12	.15	.27	.34	
0100	Concrete building		16900	.003			.12	.15	.27	.34	
0200	Masonry building		16900	.003			.12	.15	.27	.34	
0400	Disposal of material, minimum	B-3	445	.108	C.Y.		4.04	5.10	9.14	11.75	
0500	Maximum	"	365	.132	"		4.92	6.25	11.17	14.35	

02 41 16.17 Building Demolition Footings and Foundations

02 41 16.17 Building Demolition Footings and Foundations											
0010	BUILDING DEMOLITION FOOTINGS AND FOUNDATIONS										
0200	Floors, concrete slab on grade,										
0240	4" thick, plain concrete	B-9	500	.080	S.F.		2.84	.42	3.26	4.83	
0280	Reinforced, wire mesh		470	.085			3.02	.45	3.47	5.15	
0300	Rods		400	.100			3.55	.52	4.07	6.05	
0400	6" thick, plain concrete		375	.107			3.79	.56	4.35	6.45	
0420	Reinforced, wire mesh		340	.118			4.18	.62	4.80	7.15	
0440	Rods		300	.133			4.73	.70	5.43	8.05	
1000	Footings, concrete, 1' thick, 2' wide	B-5	300	.187	L.F.		7.20	4.38	11.58	15.85	
1080	1'-6" thick, 2' wide		250	.224			8.65	5.25	13.90	19.05	
1120	3' wide		200	.280			10.80	6.60	17.40	24	
1140	2' thick, 3' wide		175	.320			12.35	7.50	19.85	27	
1200	Average reinforcing, add								10%	10%	
1220	Heavy reinforcing, add								20%	20%	
2000	Walls, block, 4" thick	1 Clob	180	.044	S.F.		1.56		1.56	2.40	
2040	6" thick		170	.047			1.65		1.65	2.54	
2080	8" thick		150	.053			1.87		1.87	2.88	
2100	12" thick		150	.053			1.87		1.87	2.88	
2200	For horizontal reinforcing, add								10%	10%	
2220	For vertical reinforcing, add								20%	20%	
2400	Concrete, plain concrete, 6" thick	B-9	160	.250			8.90	1.31	10.21	15.10	
2420	8" thick		140	.286			10.15	1.49	11.64	17.25	
2440	10" thick		120	.333			11.85	1.74	13.59	20	
2500	12" thick		100	.400			14.20	2.09	16.29	24.50	
2600	For average reinforcing, add								10%	10%	
2620	For heavy reinforcing, add								20%	20%	
4000	For congested sites or small quantities, add up to								200%	200%	
4200	Add for disposal, on site	B-11A	232	.069	C.Y.		2.82	5.35	8.17	10.20	
4250	To five miles	B-30	220	.109	"		4.26	9.70	13.96	17.10	

02 41 16.33 Bridge Demolition

02 41 16.33 Bridge Demolition											
0010	BRIDGE DEMOLITION										
0100	Bridges, pedestrian, precast, 60' to 150' long	B-21C	250	.224	S.F.		8.55	6.75	15.30	20.50	
0200	Steel, 50' to 160' long, 8' to 10' wide	"	500	.112			4.27	3.38	7.65	10.20	
0300	Laminated wood, 80' to 130' long	C-12	300	.160			6.95	2.04	8.99	12.95	

10 05 Common Work Results for Specialties

10 05 05 – Selective Specialties Demolition

10 05 05.10 Selective Demolition, Specialties

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	SELECTIVE DEMOLITION, SPECIALTIES									
4000	Removal of traffic signs, including supports	B-80B	16	2	Ea.		75	14.50	89.50	131
4020	To 10 S.F.	"	5	6.400			240	46.50	286.50	415
4030	11 S.F. to 20 S.F.	B-14	1.80	26.667			990	186	1,176	1,725
4040	21 S.F. to 40 S.F.	B-13	1.30	43.077			1,650	535	2,185	3,100
4050	41 S.F. to 100 S.F.	B-6	100	.240			9.20	3.34	12.54	17.70
4070	Remove traffic posts to 12'-0" high									

10 14 Signage

10 14 53 – Traffic Signage

10 14 53.20 Traffic Signs

		B-80	70%	.457	Ea.	81.50	17.30	9.55	108.35	127
0010	TRAFFIC SIGNS									
0012	Stock, 24" x 24", no posts, .080" alum. reflectorized		70	.457		81.50	17.30	9.55	108.35	127
0100	High intensity		70	.457		248	17.30	9.55	274.85	310
0300	30" x 30", reflectorized		70	.457		275	17.30	9.55	301.85	340
0400	High intensity		70	.457		34.50	17.30	9.55	61.35	75
0600	Guide and directional signs, 12" x 18", reflectorized		70	.457		57	17.30	9.55	83.85	100
0700	High intensity		70	.457		45.50	17.30	9.55	72.35	87
0900	18" x 24", stock signs, reflectorized		70	.457		50.50	17.30	9.55	77.35	92.50
1000	High intensity		70	.457		55	17.30	9.55	81.85	97.50
1200	24" x 24", stock signs, reflectorized		70	.457		60	17.30	9.55	86.85	103
1300	High intensity		200	.160		42	6.05	3.34	51.39	59.50
1500	Add to above for steel posts, galvanized, 10'-0" upright, bolted		140	.229		39	8.65	4.77	52.42	61.50
1600	12'-0" upright, bolted		350	.091	S.F.	29	3.46	1.91	34.37	39
1800	Highway road signs, aluminum, over 20 S. F., reflectorized		350	.091		29	3.46	1.91	34.37	39
2000	High intensity		165	.194		29	7.35	4.05	40.40	47
2200	Highway, suspended over road, 80 S.F. min., reflectorized		165	.194		29	7.35	4.05	40.40	47
2300	High intensity		500	.064	Ea.	25.50	2.42	1.34	29.26	33
2350	Roadway delineators and reference markers		500	.064		18	2.42	1.34	21.76	25
2360	Delineator post only, 6'								30,800	33,900
2400	Highway sign bridge structure, 45' to 80'								20%	
2410	Cantilever structure, add									
5200	Remove and relocate signs, including supports	B-80B	5	6.400	Ea.	335	240	46.50	621.50	785
5210	To 10 S.F.	"	1.70	18.824		750	705	137	1,592	2,050
5220	11 S.F. to 20 S.F.	B-14	.56	85.714		795	3,175	595	4,565	6,400
5230	21 S.F. to 40 S.F.	B-13	.32	175		1,325	6,675	2,175	10,175	14,100
5240	41 S.F. to 100 S.F.									
8000	For temporary barricades and lights, see Section 01 56 23.10									

13 05 Common Work Results for Special Construction

13 05 05 – Selective Special Construction Demolition

13 05 05.45 Selective Demolition, Lightning Protection

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs Labor	Equipment	Total	Total Incl O&P
0010	SELECTIVE DEMOLITION, LIGHTNING PROTECTION									
0020	Air terminal & base, copper, 3/8" diam. x 10", to 75' h	1 Clab	16	.500	Ea.		17.55		17.55	27
0030	1/2" diam. x 12", over 75' h		16	.500			17.55		17.55	27
0050	Aluminum, 1/2" diam. x 12", to 75' h		16	.500			17.55		17.55	27
0060	5/8" diam. x 12", over 75' h		16	.500			17.55		17.55	27
0070	Cable, copper, 220 lb. per thousand feet, to 75' high		640	.013	L.F.		.44		.44	.68
0080	375 lb. per thousand feet, over 75' high		460	.017			.61		.61	.94
0090	Aluminum, 101 lb. per thousand feet, to 75' high		560	.014			.50		.50	.77
0100	199 lb. per thousand feet, over 75' high		480	.017			.59		.59	.90
0110	Arrester, 175 V AC, to ground		16	.500	Ea.		17.55		17.55	27
0120	650 V AC, to ground		13	.615	"		21.50		21.50	33

13 05 05.50 Selective Demolition, Pre-Engineered Steel Buildings

0010	SELECTIVE DEMOLITION, PRE-ENGINEERED STEEL BUILDINGS									
0500	Pre-engd. steel bldgs., rigid frame, clear span & multi post, excl. salvage	L-10	1000	.024	SF Flr.		1.19	.61	1.80	2.69
0550	3,500 to 7,500 S.F.		1500	.016			.79	.41	1.20	1.80
0600	7,501 to 12,500 S.F.		1650	.015			.72	.37	1.09	1.63
0650	12,500 S.F. or greater									
0700	Pre-engd. steel building components	E-24	8	4	Ea.		195	87	282	430
0710	Entrance canopy, including frame 4' x 4'	"	7	4.571			222	99.50	321.50	495
0720	4' x 8'						91		91	140
0730	H.M. doors, self framing, single leaf	2 Skwk	8	2			145		145	225
0740	Double leaf		5	3.200						
0760	Gutter, eave type		600	.027	L.F.		1.21		1.21	1.87
0770	Sash, single slide, double slide or fixed		24	.667	Ea.		30.50		30.50	47
0780	Skylight, fiberglass, to 30 S.F.		16	1			45.50		45.50	70
0785	Roof vents, circular, 12" to 24" diameter		12	1.333			60.50		60.50	93.50
0790	Continuous, 10' long		8	2			91		91	140
0900	Shelters, aluminum frame									
0910	Acrylic glazing, 3' x 9' x 8' high	2 Skwk	2	8	Ea.		365		365	560
0920	9' x 12' x 8' high	"	1.50	10.667	"		485		485	750

13 05 05.60 Selective Demolition, Silos

0010	SELECTIVE DEMOLITION, SILOS									
0020	Conc stave, indstrl, conical/sloping bott, excl fndtn, 12' diam., 35' h	E-24	.18	177	Ea.		8,650	3,875	12,525	19,200
0030	16' diam., 45' h		.12	266			13,000	5,800	18,800	28,700
0040	25' diam., 75' h		.08	400			19,500	8,725	28,225	43,100
0050	Steel, factory fabricated, 30,000 gal. cap, painted or epoxy lined	L-5	2	28			1,375	350	1,725	2,800

13 05 05.75 Selective Demolition, Storage Tanks

0010	SELECTIVE DEMOLITION, STORAGE TANKS									
0500	Steel tank, single wall, above ground, not incl. fdn., pumps or piping	R024119-10	Q-1	3	5.333	Ea.	262		262	395
0510	Single wall, 275 gallon		B-34P	2	12		545	299	844	1,150
0520	550 thru 2,000 gallon		B-34Q	2	12		550	580	1,130	1,475
0530	5,000 thru 10,000 gallon		B-34S	2	16		780	1,750	2,530	3,075
0540	15,000 thru 30,000 gallon									
0600	Steel tank, double wall, above ground not incl. fdn., pumps & piping		B-34P	2	12	Ea.	545	299	844	1,150
0620	500 thru 2,000 gallon									

13 34 Fabricated Engineered Structures

13 34 19 – Metal Building Systems

13 34 19.50 Pre-Engineered Steel Buildings

13 34 19.50 Pre-Engineered Steel Buildings				Crew	Daily Output	Labor- Hours	Unit	Material	2012 Bare Costs			Total	Total Incl O&P
									Labor	Equipment			
1000	20' eave height			E-2	490	.114	SF Flr.	6.90	5.50	3.06	15.46	20.50	
1100	24' eave height			↓	435	.129	↓	7.60	6.20	3.44	17.24	23	
1200	Clear span tapered beam frame, 26 ga. colored roofing/siding												
1300	30' to 39' wide, 10' eave height			E-2	535	.105	SF Flr.	7.40	5.05	2.80	15.25	19.90	
1400	14' eave height			↓	450	.124	↓	8.20	6	3.33	17.53	23	
1500	16' eave height			↓	415	.135	↓	8.60	6.50	3.61	18.71	24.50	
1600	20' eave height			↓	360	.156	↓	9.50	7.50	4.16	21.16	28	
1700	40' wide, 10' eave height			↓	600	.093	↓	6.60	4.50	2.49	13.59	17.70	
1800	14' eave height			↓	510	.110	↓	7.30	5.30	2.94	15.54	20.50	
1900	16' eave height			↓	475	.118	↓	7.60	5.70	3.15	16.45	21.50	
2000	20' eave height			↓	415	.135	↓	8.40	6.50	3.61	18.51	24.50	
2100	50' to 79' wide, 10' eave height			↓	770	.073	↓	6.20	3.51	1.94	11.65	14.95	
2200	14' eave height			↓	675	.083	↓	6.70	4	2.22	12.92	16.70	
2300	16' eave height			↓	635	.088	↓	7	4.26	2.36	13.62	17.60	
2400	20' eave height			↓	490	.114	↓	7.60	5.50	3.06	16.16	21	
2410	80' to 100' wide, 10' eave height			↓	935	.060	↓	5.50	2.89	1.60	9.99	12.75	
2420	14' eave height			↓	750	.075	↓	6.05	3.60	2	11.65	15.05	
2430	16' eave height			↓	685	.082	↓	6.30	3.95	2.19	12.44	16.10	
2440	20' eave height			↓	560	.100	↓	6.75	4.83	2.67	14.25	18.60	
2460	101' to 120' wide, 10' eave height			↓	950	.059	↓	5.05	2.84	1.58	9.47	12.15	
2470	14' eave height			↓	770	.073	↓	5.60	3.51	1.94	11.05	14.30	
2480	16' eave height			↓	675	.083	↓	5.95	4	2.22	12.17	15.85	
2490	20' eave height			↓	560	.100	↓	6.35	4.83	2.67	13.85	18.20	
2500	Single post 2-span frame, 26 ga. colored roofing and siding												
2600	80' wide, 14' eave height			E-2	740	.076	SF Flr.	5.55	3.65	2.02	11.22	14.60	
2700	16' eave height			↓	695	.081	↓	5.90	3.89	2.15	11.94	15.50	
2800	20' eave height			↓	625	.090	↓	6.40	4.32	2.40	13.12	17.05	
2900	24' eave height			↓	570	.098	↓	7	4.74	2.63	14.37	18.75	
3000	100' wide, 14' eave height			↓	835	.067	↓	5.40	3.24	1.79	10.43	13.45	
3100	16' eave height			↓	795	.070	↓	5.05	3.40	1.88	10.33	13.45	
3200	20' eave height			↓	730	.077	↓	6.10	3.70	2.05	11.85	15.30	
3300	24' eave height			↓	670	.084	↓	6.75	4.03	2.23	13.01	16.80	
3400	120' wide, 14' eave height			↓	870	.064	↓	6.25	3.11	1.72	11.08	14.10	
3500	16' eave height			↓	830	.067	↓	5.60	3.26	1.80	10.66	13.75	
3600	20' eave height			↓	765	.073	↓	6.10	3.53	1.96	11.59	14.90	
3700	24' eave height			↓	705	.079	↓	6.65	3.83	2.12	12.60	16.25	
3800	Double post 3-span frame, 26 ga. colored roofing and siding												
3900	150' wide, 14' eave height			E-2	925	.061	SF Flr.	4.43	2.92	1.62	8.97	11.65	
4000	16' eave height			↓	890	.063	↓	4.62	3.04	1.68	9.34	12.15	
4100	20' eave height			↓	820	.068	↓	5.05	3.30	1.83	10.18	13.20	
4200	24' eave height			↓	765	.073	↓	5.55	3.53	1.96	11.04	14.35	
4300	Triple post 4-span frame, 26 ga. colored roofing and siding												
4400	160' wide, 14' eave height			E-2	970	.058	SF Flr.	4.35	2.79	1.54	8.68	11.25	
4500	16' eave height			↓	930	.060	↓	4.54	2.91	1.61	9.06	11.75	
4600	20' eave height			↓	870	.064	↓	4.48	3.11	1.72	9.31	12.15	
4700	24' eave height			↓	815	.069	↓	5.10	3.32	1.84	10.26	13.30	
4800	200' wide, 14' eave height			↓	1030	.054	↓	4.01	2.62	1.45	8.08	10.50	
4900	16' eave height			↓	995	.056	↓	4.15	2.72	1.50	8.37	10.90	
5000	20' eave height			↓	935	.060	↓	4.58	2.89	1.60	9.07	11.75	
5100	24' eave height			↓	885	.063	↓	5.15	3.05	1.69	9.89	12.75	
5200	Accessory items: add to the basic building cost above												
5250	Eave overhang, 2' wide, 26 ga., with soffit			E-2	360	.156	L.F.	30.50	7.50	4.16	42.16	51	
5300	4' wide, without soffit			↓	300	.187	↓	26.50	9	4.99	40.49	50.50	

26 05 Common Work Results for Electrical

26 05 05 – Selective Electrical Demolition

26 05 05.10 Electrical Demolition		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	ELECTRICAL DEMOLITION									
0020	Conduit to 15' high, including fittings & hangers									
0100	Rigid galvanized steel, 1/2" to 1" diameter	1 Elec	242	.033	L.F.		1.70		1.70	2.55
0120	1-1/4" to 2"	"	200	.040	↓		2.06		2.06	3.08
0140	2-1/2" to 3-1/2"	2 Elec	302	.053	↓		2.73		2.73	4.08
0160	4" to 6"	"	160	.100	↓		5.15		5.15	7.70
0200	Electric metallic tubing (EMT), 1/2" to 1"	1 Elec	394	.020	↓		1.05		1.05	1.56
0220	1-1/4" to 1-1/2"	↓	326	.025	↓		1.27		1.27	1.89
0240	2" to 3"	↓	236	.034	↓		1.75		1.75	2.61
0260	3-1/2" to 4"	2 Elec	310	.052	↓		2.66		2.66	3.98
0270	Armored cable, (BX) avg. 50' runs									
0280	#14, 2 wire	1 Elec	690	.012	L.F.		.60		.60	.89
0290	#14, 3 wire	↓	571	.014	↓		.72		.72	1.08
0300	#12, 2 wire	↓	605	.013	↓		.68		.68	1.02
0310	#12, 3 wire	↓	514	.016	↓		.80		.80	1.20
0320	#10, 2 wire	↓	514	.016	↓		.80		.80	1.20
0330	#10, 3 wire	↓	425	.019	↓		.97		.97	1.45
0340	#8, 3 wire	↓	342	.023	↓		1.21		1.21	1.80
0350	Non metallic sheathed cable (Romex)									
0360	#14, 2 wire	1 Elec	720	.011	L.F.		.57		.57	.86
0370	#14, 3 wire	↓	657	.012	↓		.63		.63	.94
0380	#12, 2 wire	↓	629	.013	↓		.66		.66	.98
0390	#10, 3 wire	↓	450	.018	↓		.92		.92	1.37
0400	Wiremold raceway, including fittings & hangers									
0420	No. 3000	1 Elec	250	.032	L.F.		1.65		1.65	2.47
0440	No. 4000	↓	217	.037	↓		1.90		1.90	2.84
0460	No. 6000	↓	166	.048	↓		2.48		2.48	3.71
0500	Channels, steel, including fittings & hangers									
0520	3/4" x 1-1/2"	1 Elec	308	.026	L.F.		1.34		1.34	2
0540	1-1/2" x 1-1/2"	↓	269	.030	↓		1.53		1.53	2.29
0560	1-1/2" x 1-7/8"	↓	229	.035	↓		1.80		1.80	2.69
0600	Copper bus duct, indoor, 3 phase									
0610	Including hangers & supports									
0620	225 amp	2 Elec	135	.119	L.F.		6.10		6.10	9.15
0640	400 amp	↓	106	.151	↓		7.80		7.80	11.65
0660	600 amp	↓	86	.186	↓		9.60		9.60	14.35
0680	1000 amp	↓	60	.267	↓		13.75		13.75	20.50
0700	1600 amp	↓	40	.400	↓		20.50		20.50	31
0720	3000 amp	↓	10	1.600	↓		82.50		82.50	123
1300	Transformer, dry type, 1 phase, incl. removal of									
1320	supports, wire & conduit terminations									
1340	1 kVA	1 Elec	7.70	1.039	Ea.		53.50		53.50	80
1420	75 kVA	2 Elec	2.50	6.400	"		330		330	495
1440	3 phase to 600V, primary									
1460	3 kVA	1 Elec	3.85	2.078	Ea.		107		107	160
1520	75 kVA	2 Elec	2.70	5.926	↓		305		305	455
1550	300 kVA	R-3	1.80	11.111	↓		565	73.50	638.50	930
1570	750 kVA	"	1.10	18.182	↓		925	120	1,045	1,525
1800	Wire, THW-THWN-THHN, removed from									
1810	in place conduit, to 15' high									
1830	#14	1 Elec	65	.123	C.L.F.		6.35		6.35	9.50
1840	#12	↓	55	.145	↓		7.50		7.50	11.20
1850	#10	↓	45.50	.176	↓		9.05		9.05	13.55

31 23 Excavation and Fill

31 23 23 - Fill

31 23 23.13 Backfill		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs			Total Incl O&P
							Labor	Equipment	Total	
1100	Vibrating plate, add	A-1E	90	.089	E.C.Y.		3.12	.45	3.57	5.30
3000	For flowable fill, see Section 03 31 05.35									
31 23 23.14 Backfill, Structural										
0010	BACKFILL, STRUCTURAL									
0011	Dozer or F.E. loader									
0020	From existing stockpile, no compaction									
2000	80 H.P., 50' haul, sand & gravel	B-10L	1100	.011	L.C.Y.		.47	.40	.87	1.15
2010	Sandy clay & loam		1070	.011			.48	.41	.89	1.18
2020	Common earth		975	.012			.53	.45	.98	1.30
2040	Clay		850	.014			.60	.52	1.12	1.49
2200	150' haul, sand & gravel		550	.022			.93	.80	1.73	2.29
2210	Sandy clay & loam		535	.022			.96	.83	1.79	2.36
2220	Common earth		490	.024			1.05	.90	1.95	2.58
2240	Clay		425	.028			1.21	1.04	2.25	2.98
2400	300' haul, sand & gravel		370	.032			1.39	1.20	2.59	3.42
2410	Sandy clay & loam		360	.033			1.42	1.23	2.65	3.51
2420	Common earth		330	.036			1.55	1.34	2.89	3.83
2440	Clay		290	.041			1.77	1.53	3.30	4.36
3000	105 H.P., 50' haul, sand & gravel	B-10W	1350	.009			.38	.41	.79	1.03
3010	Sandy clay & loam		1325	.009			.39	.42	.81	1.05
3020	Common earth		1225	.010			.42	.45	.87	1.13
3040	Clay		1100	.011			.47	.50	.97	1.26
3200	150' haul, sand & gravel		670	.018			.77	.82	1.59	2.06
3210	Sandy clay & loam		655	.018			.78	.84	1.62	2.12
3220	Common earth		610	.020			.84	.90	1.74	2.27
3240	Clay		550	.022			.93	1	1.93	2.51
3300	300' haul, sand & gravel		465	.026			1.10	1.18	2.28	2.97
3310	Sandy clay & loam		455	.026			1.13	1.21	2.34	3.04
3320	Common earth		415	.029			1.24	1.33	2.57	3.33
3340	Clay		370	.032			1.39	1.49	2.88	3.74
4000	200 H.P., 50' haul, sand & gravel	B-10B	2500	.005			.21	.50	.71	.86
4010	Sandy clay & loam		2435	.005			.21	.51	.72	.88
4020	Common earth		2200	.005			.23	.56	.79	.97
4040	Clay		1950	.006			.26	.64	.90	1.10
4200	150' haul, sand & gravel		1225	.010			.42	1.02	1.44	1.76
4210	Sandy clay & loam		1200	.010			.43	1.04	1.47	1.79
4220	Common earth		1100	.011			.47	1.13	1.60	1.95
4240	Clay		975	.012			.53	1.28	1.81	2.20
4400	300' haul, sand & gravel		805	.015			.64	1.54	2.18	2.67
4410	Sandy clay & loam		790	.015			.65	1.57	2.22	2.71
4420	Common earth		735	.016			.70	1.69	2.39	2.92
4440	Clay		660	.018			.78	1.88	2.66	3.25
5000	300 H.P., 50' haul, sand & gravel	B-10M	3170	.004			.16	.54	.70	.85
5010	Sandy clay & loam		3110	.004			.16	.55	.71	.86
5020	Common earth		2900	.004			.18	.59	.77	.92
5040	Clay		2700	.004			.19	.64	.83	.99
5200	150' haul, sand & gravel		2200	.005			.23	.78	1.01	1.21
5210	Sandy clay & loam		2150	.006			.24	.80	1.04	1.24
5220	Common earth		1950	.006			.26	.88	1.14	1.37
5240	Clay		1700	.007			.30	1.01	1.31	1.57
5400	300' haul, sand & gravel		1500	.008			.34	1.15	1.49	1.78
5410	Sandy clay & loam		1470	.008			.35	1.17	1.52	1.82

32 11 Base Courses

32 11 23 – Aggregate Base Courses

32 11 23.23 Base Course Drainage Layers

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Base Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	BASE COURSE DRAINAGE LAYERS									
0011	For roadways and large areas									
0050	Crushed 3/4" stone base, compacted, 3" deep	B-36C	5200	.008	S.Y.	3.04	.33	.72	4.09	4.63
0100	6" deep	↓	5000	.008	↓	6.10	.34	.75	7.19	8.05
0200	9" deep	↓	4600	.009	↓	9.15	.37	.81	10.33	11.50
0300	12" deep	↓	4200	.010	↓	12.20	.40	.89	13.49	15
0301	Crushed 1-1/2" stone base, compacted to 4" deep	B-36B	6000	.011	↓	3.98	.44	.72	5.14	5.85
0302	6" deep	↓	5400	.012	↓	5.95	.49	.80	7.24	8.15
0303	8" deep	↓	4500	.014	↓	7.95	.58	.97	9.50	10.70
0304	12" deep	↓	3800	.017	↓	11.95	.69	1.14	13.78	15.45
0350	Bank run gravel, spread and compacted									
0370	6" deep	B-32	6000	.005	S.Y.	4.44	.23	.35	5.02	5.60
0390	9" deep	↓	4900	.007	↓	6.65	.29	.42	7.36	8.25
0400	12" deep	↓	4200	.008	↓	8.90	.33	.50	9.73	10.85
0600	Cold laid asphalt pavement, see Section 32 12 16.19									
1500	Alternate method to figure base course									
1510	Crushed stone, 3/4", compacted, 3" deep	B-36C	435	.092	E.C.Y.	31.50	3.90	8.60	44	50
1511	6" deep	B-36B	835	.077	↓	31.50	3.15	5.20	39.85	45
1512	9" deep	↓	1150	.056	↓	31.50	2.29	3.78	37.57	42
1513	12" deep	↓	1400	.046	↓	31.50	1.88	3.10	36.48	41
1520	Crushed stone, 1-1/2", compacted 4" deep									
1521	6" deep	↓	665	.096	↓	31.50	3.96	6.55	42.01	47.50
1522	8" deep	↓	900	.071	↓	31.50	2.92	4.83	39.25	44
1523	12" deep	↓	1000	.064	↓	31.50	2.63	4.34	38.47	43.50
1530	Gravel, bank run, compacted, 6" deep	B-36C	1265	.051	↓	31.50	2.08	3.43	37.01	41.50
1531	9" deep	↓	835	.048	↓	23	2.03	4.48	29.51	33
1532	12" deep	↓	1150	.035	↓	23	1.48	3.26	27.74	31
2010	Crushed stone, 3/4" maximum size, 3" deep	B-36	1400	.029	↓	23	1.21	2.68	26.89	30
2011	6" deep	↓	540	.074	Ton	18.90	2.97	2.79	24.66	28.50
2012	9" deep	↓	1625	.025	↓	18.90	.99	.93	20.82	23.50
2013	12" deep	↓	1785	.022	↓	18.90	.90	.84	20.64	23.50
2020	Crushed stone, 1-1/2" maximum size, 4" deep	↓	1950	.021	↓	18.90	.82	.77	20.49	23
2021	6" deep	↓	720	.056	↓	18.90	2.23	2.09	23.22	26.50
2022	8" deep	↓	815	.049	↓	18.90	1.97	1.85	22.72	26
2023	12" deep	↓	835	.048	↓	18.90	1.92	1.81	22.63	26
2030	Bank run gravel, 6" deep	B-32A	975	.041	↓	18.90	1.64	1.55	22.09	25
2031	9" deep	↓	875	.027	↓	15.35	1.17	1.43	17.95	20.50
2032	12" deep	↓	970	.025	↓	15.35	1.06	1.29	17.70	19.90
6000	Stabilization fabric, polypropylene, 6 oz./S.Y.	B-6	1060	.023	↓	15.35	.97	1.18	17.50	19.65
6900	For small and irregular areas, add		10000	.002	S.Y.	1.14	.09	.03	1.26	1.43
7000	Prepare and roll sub-base, small areas to 2500 S.Y.	B-32A			S.Y.		.68	.83	1.51	1.96
8000	Large areas over 2500 S.Y.	"	1500	.016	↓		.29	.36	.65	.83
8050	For roadways	B-32	3500	.007	↓		.35	.52	.87	1.10
			4000	.008	↓					

32 11 26 – Asphaltic Base Courses

32 11 26.13 Plant Mix Asphaltic Base Courses

0010	PLANT MIX ASPHALTIC BASE COURSES									
0011	Roadways and large paved areas									
0500	Bituminous concrete, 4" thick	B-25	4545	.019	S.Y.	13.95	.74	.56	15.25	17.10
0550	6" thick	↓	3700	.024	↓	20.50	.91	.69	22.10	24.50
0560	8" thick	↓	3000	.029	↓	27.50	1.13	.85	29.48	32.50
0570	10" thick	↓	2545	.035	↓	34	1.33	1	36.33	40
2000	Alternate method to figure base course									

32 31 Fences and Gates

32 31 13 - Chain Link Fences and Gates

32 31 13.20 Fence, Chain Link Industrial

		Crew	Daily Output	Labor-Hours	Unit	Material	2012 Bare Costs Labor	Equipment	Total	Total Incl O&P
0010	FENCE, CHAIN LINK INDUSTRIAL									
0011	Schedule 40, including concrete									
0020	3 strands barb wire, 2" post @ 10' O.C., set in concrete, 6' H	B-80C	240	.100	L.F.	18.50	3.49	.91	22.90	27
0200	9 ga. wire, galv. steel, in concrete				S.F.	.68			.68	.75
0248	Fence, add for vinyl coated fabric	B-80C	240	.100	L.F.	18.90	3.49	.91	23.30	27.50
0300	Aluminized steel		240	.100		20	3.49	.91	24.40	28.50
0500	6 ga. wire, galv. steel		240	.100		23	3.49	.91	27.40	32
0600	Aluminized steel		250	.096		18.55	3.35	.87	22.77	26.50
0800	6 ga. wire, 6' high but omit barbed wire, galv. steel		250	.096		22.50	3.35	.87	26.72	30.50
0900	Aluminized steel, in concrete		180	.133		29.50	4.65	1.21	35.36	41
0920	8' H, 6 ga. wire, 2-1/2" line post, galv. steel, in concrete		180	.133		36	4.65	1.21	41.86	48
0940	Aluminized steel, in concrete		10	2.400	Ea.	188	83.50	22	293.50	360
1400	Gate for 6' high fence, 1-5/8" frame, 3' wide, galv. steel		10	2.400	"	188	83.50	22	293.50	360
1500	Aluminized steel, in concrete									
2000	5'-0" high fence, 9 ga., no barbed wire, 2" line post, in concrete									
2010	10' O.C., 1-5/8" top rail, in concrete	B-80C	300	.080	L.F.	18.20	2.79	.73	21.72	25
2100	Galvanized steel, in concrete		300	.080	"	18.90	2.79	.73	22.42	26
2200	Aluminized steel, in concrete		10	2.400	Ea.	82.50	83.50	22	188	243
2400	Gate, 4' wide, 5' high, 2" frame, galv. steel, in concrete		10	2.400	"	96.50	83.50	22	202	258
2500	Aluminized steel, in concrete		38	.632	L.F.	92.50	22	5.75	120.25	142
3100	Overhead slide gate, chain link, 6' high, to 18' wide, in concrete	B-80	30	1.067		92.50	40.50	22.50	155.50	188
3105	8' high, in concrete		24	1.333		262	50.50	28	340.50	395
3108	10' high, in concrete		48	.667		65.50	25	13.90	104.40	126
3110	Cantilever type, in concrete		24	1.333		147	50.50	28	225.50	270
3120	8' high, in concrete		18	1.778		180	67.50	37	284.50	340
3130	10' high, in concrete									
5000	Double swing gates, incl. posts & hardware, in concrete	B-80C	3.40	7.059	Opng.	253	246	64.50	563.50	725
5010	5' high, 12' opening, in concrete		2.80	8.571		292	299	78	669	860
5020	20' opening, in concrete		3.20	7.500		233	261	68.50	562.50	730
5060	6' high, 12' opening, in concrete		2.60	9.231		270	320	84	674	885
5070	20' opening, in concrete	B-80	2.13	15.002		270	570	315	1,155	1,500
5080	8' high, 12' opening, in concrete		1.45	22.069		320	835	460	1,615	2,125
5090	20' opening, in concrete		1.31	24.427		2,000	925	510	3,435	4,150
5100	10' high, 12' opening, in concrete		1.03	31.068		2,175	1,175	650	4,000	4,900
5110	20' opening, in concrete		1.05	30.476		1,425	1,150	635	3,210	4,000
5120	12' high, 12' opening, in concrete		.85	37.647		2,025	1,425	785	4,235	5,275
5130	20' opening, in concrete					20%				
5190	For aluminized steel add	B-80A	960	.025	L.F.	2.17	.88	.28	3.33	4.04
7055	Braces, galv. steel	"	960	.025	"	2.60	.88	.28	3.76	4.51
7056	Aluminized steel				S.F.	20%			20%	
7075	Fence, for small jobs 100 L.F. or less fence w/or wo gate, add									

32 31 13.25 Fence, Chain Link Residential

0010	FENCE, CHAIN LINK RESIDENTIAL									
0011	Schedule 20, 11 gauge wire, 1-5/8" post									
0020	10' O.C., 1-3/8" top rail, 2" corner post, galv. stl. 3' high	B-80C	500	.048	L.F.	2.13	1.67	.44	4.24	5.40
0050	4' high		400	.060		4.86	2.09	.55	7.50	9.15
0100	6' high		200	.120		6.35	4.18	1.09	11.62	14.55
0150	Add for gate 3' wide, 1-3/8" frame, 3' high		12	2	Ea.	69	69.50	18.20	156.70	203
0170	4' high		10	2.400		74	83.50	22	179.50	234
0190	6' high		10	2.400		105	83.50	22	210.50	268
0200	Add for gate 4' wide, 1-3/8" frame, 3' high		9	2.667		74	93	24.50	191.50	250
0220	4' high		9	2.667		78	93	24.50	195.50	255

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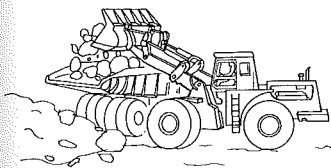
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G10 Site Preparation

G1030 Site Earthwork



The Loading and Hauling of Rock System balances the productivity of loading equipment to hauling equipment. It is assumed that the hauling equipment will encounter light traffic and will move up no considerable grades on the haul route.

The Expanded System Listing shows Loading and Hauling systems that use either a track or wheel front-end loader. Track loaders indicated range from 1-1/2 Cubic Yards capacity to 4-1/2 Cubic Yards capacity. Wheel loaders range from 1-1/2 Cubic Yards to 5 Cubic Yards. Trucks for hauling range from 8 Cubic Yards capacity to 20 Cubic Yards capacity. Each system lists the number of trucks involved and the distance (round trip) that each must travel.

System Components	QUANTITY	UNIT	COST PER C.Y.		
			EQUIP.	LABOR	TOTAL
SYSTEM G1030 150 1000					
LOAD & HAUL ROCK, 1-1/2 C.Y. TRACK LOADER, SIX 8 C.Y. TRUCKS, 1 MRT					
Excavating bulk, F.E. loader, track mtd., 1.5 C.Y.	1.000	B.C.Y.	.93	1.35	2.28
8 C.Y. truck, cycle 2 miles	1.650	L.C.Y.	4.77	5.20	9.97
Spotter at earth fill dump or in cut	.010	Hr.		.76	.76
TOTAL			5.70	7.31	13.01

G1030 150	Load & Haul Rock	COST PER C.Y.		
		EQUIP.	LABOR	TOTAL
1000	Load & haul rock, 1-1/2 C.Y. track loader, six 8 C.Y. trucks, 1 MRT	5.70	7.30	13
1200	Nine 8 C.Y. dump trucks, 3 mile round trip	7.75	9.60	17.35
1400	Six 12 C.Y. dump trucks, 4 mile round trip	8.35	7.10	15.45
1600	Three 16 C.Y. dump trucks, 2 mile round trip	5.80	4.82	10.62
2000	2-1/2 C.Y. track loader, twelve 8 C.Y. dump trucks, 3 mile round trip	8.10	9	17.10
2200	Five 12 C.Y. dump trucks, 1 mile round trip	5.45	4.07	9.52
2400	Eight 12 C.Y. dump trucks, 4 mile round trip	8.70	6.55	15.25
2600	Four 16 C.Y. dump trailers, 2 mile round trip	6.20	4.32	10.52
3000	3-1/2 C.Y. track loader, eight 12 C.Y. dump trucks, 2 mile round trip	7.10	5.10	12.20
3200	Five 16 C.Y. dump trucks, 1 mile round trip	5.35	3.48	8.83
3400	Seven 16 C.Y. dump trailers, 3 mile round trip	7.15	4.76	11.91
3600	Seven 20 C.Y. dump trailers, 4 mile round trip	6.65	4.42	11.07
4000	4-1/2 C.Y. track loader, nine 12 C.Y. dump trucks, 1 mile round trip	5.35	3.68	9.03
4200	Eight 16 C.Y. dump trailers, 2 mile round trip	5.90	3.75	9.65
4400	Eleven 16 C.Y. dump trailers, 4 mile round trip	7.55	4.75	12.30
4600	Seven 20 C.Y. dump trailers, 2 mile round trip	5.15	3.26	8.41
5000	1-1/2 C.Y. wheel loader, nine 8 C.Y. dump trucks, 2 mile round trip	5.95	7.70	13.65
5200	Four 12 C.Y. dump trucks, 1 mile round trip	4.79	4.37	9.16
5400	Seven 12 C.Y. dump trucks, 4 mile round trip	7.95	6.75	14.70
5600	Five 16 C.Y. dump trailers, 4 mile round trip	7	5.40	12.40
6000	3 C.Y. wheel loader, eight 12 C.Y. dump trucks, 2 mile round trip	6.25	4.90	11.15
6200	Five 16 C.Y. dump trailers, 1 mile round trip	4.52	3.26	7.78
6400	Seven 16 C.Y. dump trailers, 3 mile round trip	5.45	4.03	9.48
6600	Seven 20 C.Y. dump trailers, 4 mile round trip	5.80	4.19	9.99
7000	5 C.Y. wheel loader, twelve 12 C.Y. dump trucks, 1 mile round trip	4.77	3.45	8.22
7200	Nine 16 C.Y. dump trailers, 1 mile round trip	4.73	3.15	7.88
7400	Eight 20 C.Y. dump trailers, 1 mile round trip	4.07	2.70	6.77
7600	Twelve 20 C.Y. dump trailers, 3 mile round trip	5.50	3.56	9.06

Crew No.	Bare Costs		Incl.		Cost	
			Subs O&P		Per Labor-Hour	
Crew B-12M	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Crawler Crane, 20 Ton		832.00		915.20		
1 F.E. Attachment, .75 C.Y.		62.20		68.42	55.89	61.48
16 L.H., Daily Totals		\$1557.40		\$1992.82	\$97.34	\$124.55
Crew B-12N	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Crawler Crane, 25 Ton		1110.00		1221.00		
1 F.E. Attachment, 1 C.Y.		68.00		74.80	73.63	80.99
16 L.H., Daily Totals		\$1841.20		\$2305.00	\$115.08	\$144.06
Crew B-12O	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Crawler Crane, 40 Ton		1115.00		1226.50		
1 F.E. Attachment, 1.5 C.Y.		76.80		84.48	74.49	81.94
16 L.H., Daily Totals		\$1855.00		\$2320.18	\$115.94	\$145.01
Crew B-12P	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Crawler Crane, 40 Ton		1115.00		1226.50		
1 Dragline Bucket, 1.5 C.Y.		33.20		36.52	71.76	78.94
16 L.H., Daily Totals		\$1811.40		\$2272.22	\$113.21	\$142.01
Crew B-12Q	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Hyd. Excavator, 5/8 C.Y.		551.80		606.98	34.49	37.94
16 L.H., Daily Totals		\$1215.00		\$1616.18	\$75.94	\$101.01
Crew B-12S	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Hyd. Excavator, 2.5 C.Y.		1652.00		1817.20	103.25	113.58
16 L.H., Daily Totals		\$2315.20		\$2826.40	\$144.70	\$176.65
Crew B-12T	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Crawler Crane, 75 Ton		1423.00		1565.30		
1 F.E. Attachment, 3 C.Y.		99.60		109.56	95.16	104.68
16 L.H., Daily Totals		\$2185.80		\$2684.06	\$136.61	\$167.75
Crew B-12V	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$41.45	\$63.08
1 Laborer	35.10	280.80	54.00	432.00		
1 Crawler Crane, 75 Ton		1423.00		1565.30		
1 Dragline Bucket, 3 C.Y.		51.80		56.98	92.17	101.39
16 L.H., Daily Totals		\$2138.00		\$2631.48	\$133.63	\$164.47
Crew B-12Y	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$39.33	\$60.05
2 Laborers	35.10	561.60	54.00	864.00		
1 Hyd. Excavator, 3.5 C.Y.		2211.00		2432.10	92.13	101.34
24 L.H., Daily Totals		\$3155.00		\$3873.30	\$131.46	\$161.39

Crew No.	Bare Costs		Incl.		Cost	
			Subs O&P		Per Labor-Hour	
Crew B-12Z	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Equip. Oper. (crane)	\$47.80	\$382.40	\$72.15	\$577.20	\$39.33	\$60.05
2 Laborers	35.10	561.60	54.00	864.00		
1 Hyd. Excavator, 2.5 C.Y.		1652.00		1817.20	68.83	75.72
24 L.H., Daily Totals		\$2596.00		\$3258.40	\$108.17	\$135.77
Crew B-13	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Labor Foreman (outside)	\$37.10	\$296.80	\$57.10	\$456.80	\$38.08	\$58.21
4 Laborers	35.10	1123.20	54.00	1728.00		
1 Equip. Oper. (crane)	47.80	382.40	72.15	577.20		
1 Equip. Oper. Oiler	41.25	330.00	62.25	498.00		
1 Hyd. Crane, 25 Ton		697.20		766.92	12.45	13.70
56 L.H., Daily Totals		\$2829.60		\$4026.92	\$50.53	\$71.91
Crew B-13A	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Labor Foreman (outside)	\$37.10	\$296.80	\$57.10	\$456.80	\$38.71	\$58.96
2 Laborers	35.10	561.60	54.00	864.00		
2 Equipment Operators (med.)	46.55	744.80	70.25	1124.00		
2 Truck Drivers (heavy)	35.30	564.80	53.55	856.80		
1 Crawler Crane, 75 Ton		1423.00		1565.30		
1 Crawler Loader, 4 C.Y.		1443.00		1587.30		
2 Dump Trucks, 8 C.Y., 220 H.P.		714.80		786.28	63.94	70.34
56 L.H., Daily Totals		\$5748.80		\$7240.48	\$102.66	\$129.29
Crew B-13B	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Labor Foreman (outside)	\$37.10	\$296.80	\$57.10	\$456.80	\$38.08	\$58.21
4 Laborers	35.10	1123.20	54.00	1728.00		
1 Equip. Oper. (crane)	47.80	382.40	72.15	577.20		
1 Equip. Oper. Oiler	41.25	330.00	62.25	498.00		
1 Hyd. Crane, 55 Ton		1100.00		1210.00	19.64	21.61
56 L.H., Daily Totals		\$3232.40		\$4470.00	\$57.72	\$79.82
Crew B-13C	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Labor Foreman (outside)	\$37.10	\$296.80	\$57.10	\$456.80	\$38.08	\$58.21
4 Laborers	35.10	1123.20	54.00	1728.00		
1 Equip. Oper. (crane)	47.80	382.40	72.15	577.20		
1 Equip. Oper. Oiler	41.25	330.00	62.25	498.00		
1 Crawler Crane, 100 Ton		1628.00		1790.80	29.07	31.98
56 L.H., Daily Totals		\$3760.40		\$5050.80	\$67.15	\$90.19
Crew B-13D	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Laborer	\$35.10	\$280.80	\$54.00	\$432.00	\$41.45	\$63.08
1 Equip. Oper. (crane)	47.80	382.40	72.15	577.20		
1 Hyd. Excavator, 1 C.Y.		748.60		823.46		
1 Trench Box		113.40		124.74	53.88	59.26
16 L.H., Daily Totals		\$1525.20		\$1957.40	\$95.33	\$122.34
Crew B-13E	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Laborer	\$35.10	\$280.80	\$54.00	\$432.00	\$41.45	\$63.08
1 Equip. Oper. (crane)	47.80	382.40	72.15	577.20		
1 Hyd. Excavator, 1.5 C.Y.		960.40		1056.44		
1 Trench Box		113.40		124.74	67.11	73.82
16 L.H., Daily Totals		\$1737.00		\$2190.38	\$108.56	\$136.90
Crew B-13F	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Laborer	\$35.10	\$280.80	\$54.00	\$432.00	\$41.45	\$63.08
1 Equip. Oper. (crane)	47.80	382.40	72.15	577.20		
1 Hyd. Excavator, 3.5 C.Y.		2211.00		2432.10		
1 Trench Box		113.40		124.74	145.28	159.80
16 L.H., Daily Totals		\$2987.60		\$3566.04	\$186.72	\$222.88

City Cost Indexes

DIVISION		NEW JERSEY																			
		NEW BRUNSWICK			NEWARK			PATERSON			POINT PLEASANT			SUMMIT			TRENTON				
		088 - 089			070 - 071			074 - 075			087			079			085 - 086				
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL		
015433	CONTRACTOR EQUIPMENT			98.3	98.3			100.4	100.4			100.4	100.4			98.3	98.3			98.3	98.3
0241, 31 - 34	SITE & INFRASTRUCTURE, DEMOLITION	114.2	104.4	107.5	115.2	104.1	107.5	113.0	104.6	107.2	115.7	104.4	107.9	113.1	104.1	106.9	96.1	104.4	101.8		
0310	Concrete Forming & Accessories	102.1	124.9	121.9	96.0	125.0	121.2	98.1	125.0	121.5	97.5	124.4	120.9	98.8	125.0	121.6	96.7	124.6	121.0		
0320	Concrete Reinforcing	79.8	123.6	101.9	103.6	123.6	113.7	103.6	123.6	113.7	79.8	123.5	101.8	79.8	123.6	101.9	103.6	119.0	111.3		
0330	Cast-in-Place Concrete	105.3	130.2	115.1	109.9	131.0	118.2	105.4	131.0	115.5	105.3	129.8	115.0	88.0	131.0	104.9	101.5	129.9	112.7		
03	CONCRETE	115.3	125.5	120.3	111.4	125.9	118.5	109.3	125.9	117.4	115.0	125.1	119.9	97.4	125.9	111.3	107.3	124.4	115.6		
04	MASONRY	95.5	128.0	115.3	98.2	128.1	116.4	93.5	128.1	114.6	86.9	127.6	111.7	95.2	128.1	115.3	85.8	127.6	111.3		
05	METALS	92.8	109.5	98.3	97.9	111.9	102.5	93.0	111.9	99.3	92.8	109.2	98.2	92.7	111.9	99.1	93.0	107.2	97.7		
06	WOOD, PLASTICS & COMPOSITES	103.6	123.9	115.3	98.2	123.9	113.1	101.3	123.9	114.4	97.2	123.9	112.6	102.4	123.9	114.8	96.6	123.9	112.4		
07	THERMAL & MOISTURE PROTECTION	101.4	125.2	111.1	101.3	126.4	111.5	101.6	123.9	110.7	101.4	125.0	111.0	102.0	126.4	111.9	97.2	124.6	108.3		
08	OPENINGS	94.5	123.6	101.8	108.3	123.6	112.1	108.3	123.6	112.1	96.5	124.5	103.6	110.6	123.6	113.9	103.0	122.1	107.8		
0920	Plaster & Gypsum Board	99.7	124.0	117.1	96.2	124.0	116.1	98.7	124.0	116.8	95.2	124.0	115.8	97.4	124.0	116.4	96.5	124.0	116.1		
0950, 0980	Ceilings & Acoustic Treatment	92.7	124.0	113.4	98.4	124.0	115.3	102.0	124.0	116.5	92.7	124.0	113.4	92.7	124.0	113.4	99.3	124.0	115.6		
0960	Flooring	95.9	164.3	116.0	94.7	164.3	115.1	94.5	164.3	114.9	93.4	133.1	105.1	94.8	164.3	115.2	94.8	164.3	115.2		
0970, 0990	Wall Finishes & Painting/Coating	90.1	123.1	110.5	90.0	123.1	110.4	90.0	123.1	110.4	90.1	121.1	109.2	90.0	123.1	110.4	90.1	121.1	109.2		
09	FINISHES	100.5	131.5	117.8	99.0	131.5	117.2	100.4	131.5	117.8	99.3	125.9	114.1	98.9	131.5	117.1	98.8	131.1	116.9		
COVERS	DIVS. 10 - 14, 25, 28, 41, 43, 44, 46	100.0	110.2	102.0	100.0	110.3	102.1	100.0	110.4	102.1	100.0	107.1	101.4	100.0	110.3	102.1	100.0	110.3	102.1		
21, 22, 23	FIRE SUPPRESSION, PLUMBING & HVAC	99.6	125.0	109.9	100.1	126.1	110.6	100.0	125.7	110.4	99.6	124.5	109.7	99.6	126.1	110.3	100.2	124.7	110.1		
26, 27, 3370	ELECTRICAL, COMMUNICATIONS & UTIL.	98.0	138.0	118.7	105.5	136.9	121.7	103.8	137.0	120.9	97.2	132.7	115.5	99.3	137.0	118.8	105.1	137.6	121.9		
MF2010	WEIGHTED AVERAGE	100.1	124.3	110.8	102.7	124.6	112.4	101.4	124.5	111.6	99.7	122.5	109.7	99.6	124.7	110.7	99.6	123.6	110.2		

DIVISION		NEW JERSEY									NEW MEXICO										
		VINELAND			ALBUQUERQUE			CARRIZOZO			CLOVIS			FARMINGTON			GALLUP				
		080,083			870 - 872			883			881			874			873				
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL		
015433	CONTRACTOR EQUIPMENT			98.7	98.7			111.1	111.1			111.1	111.1			111.1	111.1			111.1	111.1
0241, 31 - 34	SITE & INFRASTRUCTURE, DEMOLITION	104.1	103.5	103.7	78.9	106.9	98.2	100.5	106.9	104.9	87.9	106.9	101.0	85.1	106.9	100.1	93.6	106.9	102.8		
0310	Concrete Forming & Accessories	95.3	124.3	120.5	99.4	65.8	70.2	99.4	65.8	70.2	99.4	65.6	70.0	99.4	65.8	70.2	99.4	65.8	70.2		
0320	Concrete Reinforcing	79.0	114.8	97.0	100.4	71.1	85.6	107.7	71.1	89.2	108.9	71.0	89.8	109.7	71.1	90.2	105.0	71.1	87.9		
0330	Cast-in-Place Concrete	91.9	130.0	106.9	101.4	73.4	90.4	94.3	73.4	86.1	94.3	73.4	86.0	102.3	73.4	90.9	96.3	73.4	87.3		
03	CONCRETE	102.3	123.5	112.6	102.6	70.5	87.0	116.2	70.5	93.9	105.5	70.4	88.4	106.2	70.5	88.8	111.7	70.5	91.6		
04	MASONRY	85.9	127.6	111.3	107.7	62.9	80.4	104.4	62.9	79.1	104.5	62.9	79.1	114.7	62.9	83.1	104.5	62.9	79.2		
05	METALS	92.7	104.7	96.6	100.4	88.2	96.4	97.3	88.2	94.3	96.9	88.1	94.0	98.2	88.2	94.9	97.3	88.2	94.3		
06	WOOD, PLASTICS & COMPOSITES	94.4	123.9	111.5	87.9	66.1	75.3	88.0	66.1	75.4	88.0	66.1	75.4	88.0	66.1	75.4	88.0	66.1	75.4		
07	THERMAL & MOISTURE PROTECTION	101.0	124.8	110.7	100.6	73.4	89.5	102.2	73.4	90.5	101.0	73.4	89.8	100.9	73.4	89.7	101.9	73.4	90.3		
08	OPENINGS	96.0	121.6	102.5	97.1	68.8	90.0	95.8	68.8	89.0	96.0	68.8	89.2	100.1	68.8	92.2	100.1	68.8	92.2		
0920	Plaster & Gypsum Board	93.3	124.0	115.2	89.3	64.7	71.7	81.2	64.7	69.4	81.2	64.7	69.4	81.2	64.7	69.4	81.2	64.7	69.4		
0950, 0980	Ceilings & Acoustic Treatment	92.7	124.0	113.4	112.0	64.7	80.7	108.8	64.7	79.7	108.8	64.7	79.7	108.8	64.7	79.7	108.8	64.7	79.7		
0960	Flooring	92.6	133.1	104.4	98.4	69.1	89.8	100.7	69.1	91.4	100.7	69.1	91.4	100.7	69.1	91.4	100.7	69.1	91.4		
0970, 0990	Wall Finishes & Painting/Coating	90.1	121.1	109.2	103.7	51.7	71.6	98.8	51.7	69.8	98.8	51.7	69.8	98.8	51.7	69.8	98.8	51.7	69.8		
09	FINISHES	97.7	125.9	113.5	100.3	64.6	80.4	101.2	64.6	80.8	99.7	64.6	80.2	99.3	64.6	80.0	100.6	64.6	80.5		
COVERS	DIVS. 10 - 14, 25, 28, 41, 43, 44, 46	100.0	110.5	102.1	100.0	80.2	96.1	100.0	80.2	96.1	100.0	80.2	96.1	100.0	80.2	96.1	100.0	80.2	96.1		
21, 22, 23	FIRE SUPPRESSION, PLUMBING & HVAC	99.6	124.8	109.8	100.1	68.2	87.2	96.6	68.2	85.1	96.6	67.8	84.9	100.0	68.2	87.1	96.4	68.2	85.0		
26, 27, 3370	ELECTRICAL, COMMUNICATIONS & UTIL.	97.2	136.9	117.7	89.5	71.1	80.0	89.5	71.1	80.0	87.2	71.1	78.9	87.8	71.1	79.2	87.1	71.1	78.8		
MF2010	WEIGHTED AVERAGE	97.6	122.4	108.6	98.7	73.6	87.7	99.4	73.6	88.1	97.4	73.5	86.9	99.4	73.6	88.0	98.8	73.6	87.7		

DIVISION		NEW MEXICO																			
		LAS CRUCES			LAS VEGAS			ROSWELL			SANTA FE			SOCORRO			TRUTH/CONSEQUENCES				
		880			877			882			875			878			879				
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL		
015433	CONTRACTOR EQUIPMENT			87.3	87.3			111.1	111.1			111.1	111.1			111.1	111.1			87.3	87.3
0241, 31 - 34	SITE & INFRASTRUCTURE, DEMOLITION	90.5	86.0	87.4	84.4	106.9	99.9	90.0	106.9	101.7	83.4	106.9	99.6	81.0	106.9	98.9	101.7	86.0	90.9		
0310	Concrete Forming & Accessories	96.3	64.6	68.7	99.4	65.8	70.2	99.4	65.8	70.2	98.6	65.8	70.1	99.4	65.8	70.2	96.3	64.6	68.7		
0320	Concrete Reinforcing	103.6	70.9	87.1	106.7	71.1	88.8	108.9	71.1	89.8	107.7	71.1	89.2	108.9	71.1	89.8	102.4	70.9	86.5		
0330	Cast-in-Place Concrete	89.0	65.8	79.9	99.5	73.4	89.2	94.3	73.4	86.1	103.6	73.4	91.7	97.5	73.4	88.0	106.9	65.8	90.7		
03	CONCRETE	85.1	67.0	76.3	103.5	70.5	87.4	106.2	70.5	88.8	104.8	70.5	88.1	102.3	70.5	86.8	96.9	67.0	82.4		
04	MASONRY	100.5	62.6	77.4	104.8	62.9	79.3	115.3	62.9	83.3	108.8	62.9	80.8	104.7	62.9	79.2	102.1	62.6	78.0		
05	METALS	98.1	81.7	92.7	97.0	88.2	94.1	98.2	88.2	94.9	98.2	88.2	94.9	97.3	88.2	94.3	96.9	81.7	91.9		
06	WOOD, PLASTICS & COMPOSITES	79.3	65.0	71.0	88.0	66.1	75.4	88.0	66.1	75.4	87.5	66.1	75.2	88.0	66.1	75.4	79.3	65.0	71.0		
07	THERMAL & MOISTURE PROTECTION	87.1	68.7	79.6	100.5	73.4	89.5	101.1	73.4	89.8	100.2	73.4	89.3	100.4	73.4	89.4	87.6	68.7	79.9		
08	OPENINGS	90.1	68.2	84.6	96.0	68.8	89.2	95.8	68.8	89.0	96.0	68.8	89.1	95.8	68.8	89.0	90.0	68.2	84.5		
0920	Plaster & Gypsum Board	83.3	64.7	70.0	81.2	64.7	69.4	81.2	64.7	69.4											

ASSUMPTIONS**Work Day**

10 hrs
50 min hr

Work Area

Tyrone will mine and stockpile material to be processed into rip rap
40 acres (1300' x 1300' area, required for stockpiling)

Drilling & Blasting

Not applicable. Material stockpiled by Tyrone prior to production.

Equipment Rates

Equipment Watch
Includes 50 min work hour
Includes overhaul labor, parts & time
0% Gross Receipts Tax
\$3.13/gal diesel (Quote, delivered to Tyrone)
\$49.19/hr Mechanic

Labor Rates

NM Dept of Labor
Screen Operator (Truck driver) \$25.77/hr
Equipment Operator IV \$47.70/hr
Mechanic \$47.19/hr
RS Means
Foreman (Crew B-13A) \$37.10/hr

Fuel

\$3.13/gal

Production

Primary plant fed directly by two 769D haul trucks, 300 to 400 yd haul
400 tons input/hr (per Rusty McCauley, equipment peak production is 900 tons/hr)
30% - 60% waste depending on smallest rip rap size used. (per Rusty McCauley, consistent w/ Mc+C63Cain Springs waste rate of 43% - 1" minus)
3650 lb/cy (Caterpillar Performance Handbook p. 27-4, consistent with 1.8 tons/cy rip rap unit weight used by Tyrone)

Mobilization & demobilization

Mobilization \$ 60,000 (50-60k per Rusty McCauley)
Demobilization \$ 45,000 (assumed 75% of Mobilization)

Note: Minimum 30 days prep before screen can be hauled to site.
60 - 90 days setup. Partially dependent on permitting requirements.

Rip Rap Required (2014)

392,500 cy (MWH Takeoffs)

Equipment & Labor**Rate (\$/hr)**

One 988H Loader	203.82 Used to load stockpiled material to 769D
+ 1 Operator	
Three 769D haul trucks	140.3 Two used to directly feed primary screening plant, one used to move material from end of conveyor
One 2 Deck Portable Screening Plant w/ 5x16 screen & 48"x60' conveyor	68.27 Primary screening plant, grizzly used to split oversized, 6" - 12" and 6" minus (2 conveyors)
+ 1 Operator	One operator required in tower to run screening plant
One 3 Deck Portable Screening Plant w/ 5x16 screen & 42"x60' conveyor	68.69 Fed with 6" minus, Produce 6" - 6", 1.5" - 3", 3/8" - 1.5", 3/8 minus
+ 1 Operator	One operator required in tower to run screening plant
One Cat 980H	122.83 Used move material from end of conveyors & load trucks
+ 1 Operator	
One Cat 966H	101.84 Used to move material from end of conveyors & load trucks
+ 1 Operators	
One Water Truck	\$184.64 Dust suppression
+ 1 Driver	
One Foreman	

2012 Rip Rap Production Unit Rate

Equipment	Equipment	# Equip	Operator	# Operator	Total
	(\$/hr)		(\$/hr)		(\$/hr)
988H Loader	\$203.82	1	\$47.70	1	\$251.52
769D Haul Truck	\$140.30	2	\$47.70	2	\$376.00
2 Deck (5x16, 48x60)	\$68.27	1	\$25.77	1	\$94.04
3 Deck (5x16, 48x60)	\$68.69	1	\$25.77	1	\$94.46
980H Loader	\$122.83	1	\$47.70	1	\$170.53
966H Loader	\$101.84	1	\$47.70	1	\$149.54
769D Haul Truck	\$140.30	1	\$47.70	1	\$188.00
Water Truck	\$184.64	1	\$25.77	1	\$210.41
Supervisor	-	-	\$37.10	1	\$37.10

Direct Costs	
	\$1,571.60 \$/hr
	10 hr/day
	\$15,716.00 \$/day
Production	
	400 tons input/hr (total)
	50% % waste
	50% % rip rap
	200 tons produced/hr (net)
	400,000 lb/hr
	3650 lb/cy
	110 cy/hr
	10 hr/day
	1096 cy/day
Sub-Total =	\$14.34 \$/cy
Mob & demob	
	\$0.27 \$/cy (mob & demob)
Total =	\$14.61 \$/cy

APPENDIX B.7
WELL ABANDON AND DRILLING COSTS

Drill Hole Abandonment Unit Costs

Nominal		Hole			w/o		
Casing	Area	Depth	MMD	Indirects	Indirects	Inflation	Unit Cost
Diameter	(in2)	(ft)	(\$/ft)	(%)	(\$/ft)	(%)	\$/ft
6-inch	28.3	0-500	\$ 9.25	22.50%	\$ 7.55	7%	8.08
4-inch	12.6	0-500	-	-	-	-	3.59
2-inch	3.1	0-500	-	-	-	-	0.90
6-inch		501-1000	\$ 8.25	22.50%	\$ 6.73	7%	7.21

Unit cost based on NM EMNRD MMD Guidance:

http://www.emnrd.state.nm.us/MMD/MARP/Documents/20090619_ReclamationCostGuidanceandExamples_Part3_4.pdf

APPENDIX B.8
DOWN DRAIN, CHANNEL, BENCH LINEAR FOOT COSTS

Task Description	Equipment	Productivity (cy/hr)	Material	Grade	Soil Weight (lb/cy)	Production Method/ Blade	Maximum Push Distance (feet)	Normal Production (cy/hr)	Operator	Work Hour (min/hr)	Visibility	Elevation	Direct Drive Trans.
Down Drains													
Excavate	D11R	1,644	1.2	1.80	3,300	1.00	175	1747	0.75	50	1.00	1.00	1.00
Waste	D11R	805	1.2	1.00	3,300	1.00	200	1540	0.75	50	1.00	1.00	1.00
Finish Grade	D6T	270	1.2	1.80	3,300	1.00	175	287	0.75	50	1.00	1.00	1.00

Down Drain Volume:		Excavate	7.3 CY/LF	Dozer Cost		Down Drain Cost	
		Waste	7.3 CY/LF				
		Finish	2.9 CY/LF				
		Excavate	0.004465 HRS/LF	469.5 \$/HR		2.10 \$/LF	
		Waste	0.009117 HRS/LF	469.5 \$/HR		4.28 \$/LF	
		Finish Grade	0.010626 HRS/LF	153.33 \$/HR		1.63 \$/LF	
						8.01 \$/LF	

Volumes based on cross-section area for excavation and waste
Volume assumes unit volume/linear foot of down drain perimeter (198 Feet * 1 Foot/27)

Outslope Bench Grading Unit Cost Development

Task Description	Equipment	Productivity (cy/hr)	Material	Grade	Soil Weight (lb/cy)	Production Method/ Blade	Maximum Push Distance (feet)	Normal Production (cy/hr)	Operator	Work Hour (min/hr)	Visibility	Elevation	Direct Drive Trans.
Excavate	D11R	3004.7	1.2	1.7	3300.0	1.0	86.9	3381	0.75	50.0	1.0	1.0	1.0

		Productivity (lf/hr)	Time (hrs/lf)	# passes	Material	Grade	Task Weight (lb/cy)	Blade	Width (feet)	Soil Speed (miles/hr)	Method/ Operator	Blade Hour (min/hr)	Visibility	Elevation
Finish Grade	D9T	1104.0	0.0009	3	1.2	1.0	3300.0	1.2	14.17	1.0	0.75	50.0	1.0	1.0

Notes:

1. Bench width: Stockpiles 31 ft.

Bench Volume (excavate):	9.26 cy/lf	Dozer Cost (\$/hr)	Bench Cost (\$/lf)
Excavate	0.0031 hrs/lf	469.50	1.45
Finish Grade	0.0009 hrs/lf	273.09	0.25
Excavate + Finish Grade			1.69
Finish Grade Only			0.25

Task Description	Equipment	Productivity (cy/hr)	Material	Grade	Soil Weight (lb/cy)	Production Method/ Blade	Maximum Push Distance (feet)	Normal Production (cy/hr)	Operator	Work Hour (min/hr)	Visibility	Elevation	Direct Drive Trans.
<i>Terrace Channels</i>													
Excavate	D11R	1,461	1.2	1.60	3,300	1.00	175	1747	0.75	50	1.00	1.00	1.00
Waste	D11R	805	1.2	1.00	3,300	1.00	200	1540	0.75	50	1.00	1.00	1.00
Finish Grade	D6T	240	1.2	1.60	3,300	1.00	175	287	0.75	50	1.00	1.00	1.00

Volume: Excavate 1.7 CY/LF
Waste 1.7 CY/LF
Finish 2.9 CY/LF

Dozer Cost

Excavate 0.001163 HRS/LF 469.5 \$/HR
Waste 0.002111 HRS/LF 469.5 \$/HR
Finish Grade 0.011954 HRS/LF 153.3 \$/HR

Outslope Channel Cost

0.55 \$/LF
0.99 \$/LF
1.83 \$/LF
3.37 \$/LF

Equipment	\$/hr	Operator
D11R	421.8	47.7
D11R	421.8	47.7
D6T	105.63	47.7

Volumes based on cross-section area for excavation and waste
Volume assumes unit volume/linear foot of perimeter (28 Feet * 1 Foot/27)
Finish grading based on 1mph at 3 passes

Task Description	Equipment	Productivity (cy/hr)	Material	Grade	Soil Weight (lb/cy)	Production Method/ Blade	Maximum Push Distance (feet)	Normal Production (cy/hr)	Operator	Work Hour (min/hr)	Visibility	Elevation	Direct Drive Trans.
<i>Channels</i>													
Excavate	D11R	913	1.2	1.00	3,300	1.00	175	1747	0.75	50	1.00	1.00	1.00
Waste	D11R	805	1.2	1.00	3,300	1.00	200	1540	0.75	50	1.00	1.00	1.00
Finish Grade	D6T	150	1.2	1.00	3,300	1.00	175	287	0.75	50	1.00	1.00	1.00

Volume: Excavate 5.5 CY/LF
Waste 5.5 CY/LF
Finish 2.9 CY/LF

Dozer Cost

Excavate 0.006042 HRS/LF 469.5 \$/HR
Waste 0.006854 HRS/LF 469.5 \$/HR
Finish Grade 0.019127 HRS/LF 153.3 \$/HR

Top Channel Cost

2.84 \$/LF
3.22 \$/LF
2.93 \$/LF
8.99 \$/LF

Volumes based on cross-section area for excavation and waste
Volume assumes unit volume/linear foot of perimeter (149 Feet * 1 Foot/27)
Finish grading based on 1mph at 3 passes

**EARTHWORK COST ESTIMATE
APPENDIX C
ENGINEERING TAKE-OFFS**

APPENDIX C.1
REGRADE ESTIMATES
PROVIDED BY MWH

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TYRONE MINE STOCKPILE CONCEPTUAL RECLAMATION PLAN													
Quantities													
Area		Task	Length (ft)	Volume (cy)	Area (ac)	Dozer Work		Haul Leg 1		Haul Leg 2		Haul Leg 3	
						Distance (ft)	Slope (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)
1A and 1B Leach	Exterior Slope	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		140,000		250	-29						
		Regrade benches from truck/shovel pullback		1,329,670	240	90	-29						
		Terrace Bench Construction	44,800										
		Cover Placement (Haul)		1,239,000	256			2,320	2.2%	2,170	7.8%	1,770	0.0%
		Cover Placement (Placement)		1,239,000	256	600	-29						
		Terrace Channel Construction	45,200										
		Terrace Gravel Placement		17,600									
		Down Drain Construction	3,727										
		Down Drain Riprap Placement		15,200									
		Down Drain Bedding Layer		2,600									
		Channel Construction	4,813										
		Channel Riprap Placement		7,100									
		Channel Bedding Layer		3,600									
		Revegetation			256								
		Infrastructure Relocation	n/a										
1A and 1B Leach	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		79,000		430	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		82,300	17			2,320	2.2%	2,170	7.8%	1,770	0.0%
		Cover Placement (Placement)		82,300	17	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gavel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	6,743										
		Channel Riprap Placement		10,000									
		Channel Bedding Layer		5,100									
		Revegetation			17								
		Infrastructure Relocation	n/a										
2A Leach and 2B Waste	Exterior Slope	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		8,060,000		470	-29						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	58,600										
		Cover Placement (Haul)		2,182,800	451			7,780	0.8%	6,580	1.4%	4,940	6.9%
		Cover Placement (Placement)		2,182,800	451	600	-29						
		Terrace Channel Construction	58,600										
		Terrace Gravel Placement		22,800									
		Down Drain Construction	7,999										
		Down Drain Riprap Placement		32,700									
		Down Drain Bedding Layer		5,600									
		Channel Construction	9,462										
		Channel Riprap Placement		14,000									
		Channel Bedding Layer		7,100									
		Revegetation			451								
		Infrastructure Relocation	n/a										
2A Leach and 2B Waste	Top/Flat Area	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		143,000		370	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		174,200	36			7,780	0.8%	6,580	1.4%	4,940	6.9%
		Cover Placement (Placement)		174,200	36	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	n/a										
		Channel Riprap Placement	n/a										
		Channel Bedding Layer	n/a										
		Revegetation			36								
		Infrastructure Relocation	n/a										
3A/3B	Exterior Slope	Truck/Shovel Pull Back		17,500,000				3,900	-				
		Dozer Rough Grade		3,500,000		560	-29						
		Regrade benches from truck/shovel pullback		1,590,064	287	90	-29						
		Terrace Bench Construction	65,200										
		Cover Placement (Haul)		2,042,500	422			4,411	-7.0%	6,810	6.6%		
		Cover Placement (Placement)		2,042,500	422	600	-29						
		Terrace Channel Construction	65,200										
		Terrace Gravel Placement		25,400									
		Down Drain Construction	6,069										
		Down Drain Riprap Placement		24,800									
		Down Drain Bedding Layer		4,300									
		Channel Construction	780										
		Channel Riprap placement		1,200									
		Channel Bedding Layer		600									
		Revegetation			422								
		Infrastructure Relocation	n/a										
3A/3B	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		199,000		560	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		159,700	33			4,411	-7.0%	6,810	6.6%		
		Cover Placement (Placement)		159,700	33	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Channel Construction	2,346										
		Channel Riprap placement		3,500									
		Channel Bedding Layer		1,800									
		Revegetation			33								
		Infrastructure Relocation	n/a										
5A	Exterior Slope	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		6,300,000		540	-29						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	44,000										
		Cover Placement (Haul)		1,490,700	308			1,450	6.2%	3,300	0.0%		
		Cover Placement (Placement)		1,490,700	308	600	-29						
		Terrace Channel Construction	44,000										
		Terrace Gravel Placement		17,100									
		Down Drain Construction	2,754										
		Down Drain Riprap Placement		11,300									
		Down Drain Bedding Layer		1,900									
		Channel Construction	6,330										
		Channel Riprap placement		9,400									
		Channel Bedding Layer		4,700									
		Revegetation			308								
		Infrastructure Relocation	n/a										

Regrade Estimates													
Area		Task	Length (ft)	Volume (cy)	Area (ac)	Dozer Work		Haul Leg 1		Haul Leg 2		Haul Leg 3	
						Distance (ft)	Slope (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)
5A	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		413,000		610	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		304,900	63			1,450	6.2%	3,300	0.0%		
		Cover Placement (Placement)		304,900	63	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	3,541										
		Channel Riprap placement		5,200									
		Channel Bedding Layer		2,700									
		Revegetation			63								
		Infrastructure Relocation	n/a										
San Salvador Pit		Truck/Shovel Pit Backfill		3,500,000				1,300	-1				
		Dozer Rough Grade		1,600,000		185	-5						
		Regrade benches from truck/shovel pullback											
		Terrace Bench Construction	4,700										
		Cover Placement (Haul)		556,600	115			7,780	0.8%	3,020	9.9%	1,770	-9.6%
		Cover Placement (Placement)		556,600	115	150	-5						
		Terrace Channel Construction	4,700										
		Terrace Gravel Placement		1,800									
		Down Drain Construction	1,227										
		Down Drain Riprap Placement		5,000									
		Down Drain Bedding Layer		900									
		Channel Construction	5,240										
		Channel Riprap placement		7,800									
		Channel Bedding Layer		3,900									
		Revegetation			115								
		Infrastructure Relocation	n/a										
Savanna Pit	(Backfill)	Flat Area (In-Pit Stockpile)	Truck/Shovel	n/a									
			Dozer Rough Grade		350,000	500	1						
			Dozer Rough Grade (Slopes)		135,000	160	-29						
			Regrade benches from truck/shovel pullback	n/a									
			Terrace Bench Construction	n/a									
			Cover Placement (Haul)		314,600	65		5,730	1.6%				
			Cover Placement (Placement)		314,600	65	200	-5					
			Terrace Channel Construction	n/a									
			Terrace Gravel Placement	n/a									
			Down Drain Construction	n/a									
			Down Drain Riprap Placement	n/a									
			Down Drain Bedding Layer	n/a									
			Channel Construction	n/a									
			Channel Riprap placement	n/a									
			Channel Bedding Layer	n/a									
			Revegetation			65							
			Drilling and Blasting	n/a									
			Infrastructure Relocation	n/a									
4C	Exterior Slopes	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		2,700,000		430	-29						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	16,100										
		Cover Placement (Haul)		822,800	170			7,780	0.8%	3,020	9.9%	7,030	2.6%
		Cover Placement (Placement)		822,800	170	500	-29						
		Terrace Channel Construction	16,100										
		Terrace Gravel Placement		6,300									
		Down Drain Construction	3,125										
		Down Drain Riprap Placement		12,800									
		Down Drain Bedding Layer		2,200									
		Channel Construction	7,401										
		Channel Riprap Placement		11,000									
		Channel Bedding Layer		5,600									
		Revegetation			170								
		Infrastructure Relocation	n/a										
4C	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		67,000		480	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		62,900	13			7,780	0.8%	3,020	9.9%	7,030	2.6%
		Cover Placement (Placement)		62,900	13	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	1,062										
		Channel Riprap Placement		1,600									
		Channel Bedding Layer		800									
		Revegetation			13								
		Infrastructure Relocation	n/a										
2C, 4A, 7B, 4B	Slopes	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		2,300,000		420	-29						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	26,700										
		Cover Placement (Haul)		1,205,200	249			7,780	0.8%	6,210	7.9%		
		Cover Placement (Placement)		1,205,200	249	400	-29						
		Terrace Channel Construction	26,700										
		Terrace Gravel Placement		10,400									
		Down Drain Construction	2,943										
		Down Drain Riprap Placement		12,000									
		Down Drain Bedding Layer		2,100									
		Channel Construction	n/a										
		Channel Riprap placement	n/a										
		Channel Bedding Layer	n/a										
		Revegetation			249								
		Infrastructure Relocation	n/a										
2C, 4A, 7B, 4B	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		1,003,000		740	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		609,800	126			7,780	0.8%	6,210	7.9%		
		Cover Placement (Placement)		609,800	126	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	11,206										
		Channel Riprap placement		16,600									
		Channel Bedding Layer		8,400									
		Revegetation			126								
		Infrastructure Relocation	n/a										

Area		Task	Length (ft)	Volume (cy)	Area (ac)	Dozer Work		Haul Leg 1		Haul Leg 2		Haul Leg 3	
						Distance (ft)	Slope (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)
6B	Slopes	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		183,000		180	-29						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		72,600	15			7,780	0.8%	2,270	6.2%		
		Cover Placement (Placement)		72,600	15	200	-29						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	800										
		Down Drain Riprap Placement		3,300									
		Down Drain Bedding Layer		600									
		Channel Construction	n/a										
		Channel Riprap placement	n/a										
		Channel Bedding Layer	n/a										
		Revegetation			15								
		Infrastructure Relocation	n/a										
6B	Flat Area	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		147,000		350	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		188,800	39			7,780	0.8%	2,270	6.2%		
		Cover Placement (Placement)		188,800	39	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	2,509										
		Channel Riprap placement		3,700									
		Channel Bedding Layer		1,900									
		Revegetation			39								
		Infrastructure Relocation	n/a										
6C	Slopes	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		650,000		325	-29						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	4,100										
		Cover Placement (Haul)		271,000	56			7,780	0.8%	4,053	5.9%		
		Cover Placement (Placement)		271,000	56	400	-29						
		Terrace Channel Construction	4,100										
		Terrace Gravel Placement		1,600									
		Down Drain Construction	550										
		Down Drain Riprap Placement		2,200									
		Down Drain Bedding Layer		400									
		Channel Construction	n/a										
		Channel Riprap placement	n/a										
		Channel Bedding Layer	n/a										
		Revegetation			56								
		Infrastructure Relocation	n/a										
6C	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		19,000		180	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		48,400	10			7,780	0.8%	4,053	5.9%		
		Cover Placement (Placement)		48,400	10	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	9,714										
		Channel Riprap placement		14,400									
		Channel Bedding Layer		7,300									
		Revegetation			10								
		Infrastructure Relocation	n/a										
9A	Exterior Slopes	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade	n/a										
		Regrade benches from truck/shovel pullback		642,674	116	90	-29						
		Terrace Bench Construction	23,700										
		Cover Placement (Haul)	n/a					4,400	2	6,300	1	16,100	1
		Cover Placement (Placement)	n/a			600	-29						
		Terrace Channel Construction	23,700										
		Terrace Gravel Placement		9,200									
		Down Drain Construction	2,500										
		Down Drain Riprap Placement		10,200									
		Down Drain Bedding Layer		1,800									
		Channel Construction	1,448										
		Channel Riprap Placement		2,100									
		Channel Bedding Layer		1,100									
		Revegetation			116								
		Infrastructure Relocation	n/a										
9A	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade		40,000		285	1						
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)	n/a					4,400	2	6,300	1	16,100	1
		Cover Placement (Placement)	n/a			100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	935										
		Channel Riprap Placement		1,400									
		Channel Bedding Layer		700									
		Revegetation			13								
		Infrastructure Relocation	n/a										
1C	Top	Truck/Shovel Pull Back	n/a										
		Dozer Rough Grade	n/a										
		Regrade benches from truck/shovel pullback	n/a										
		Terrace Bench Construction	n/a										
		Cover Placement (Haul)		82,300	17			7,780	0.8%	4,053	5.9%		
		Cover Placement (Placement)		82,300	17	100	1						
		Terrace Channel Construction	n/a										
		Terrace Gravel Placement	n/a										
		Down Drain Construction	n/a										
		Down Drain Riprap Placement	n/a										
		Down Drain Bedding Layer	n/a										
		Channel Construction	n/a										
		Channel Riprap Placement	n/a										
		Channel Bedding Layer	n/a										
		Revegetation			17								
		Infrastructure Relocation	n/a										

Regrade Estimates

Area		Task	Length (ft)	Volume (cy)	Area (ac)	Dozer Work		Haul Leg 1		Haul Leg 2		Haul Leg 3	
						Distance (ft)	Slope (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)	Distance (ft)	Grade (%)
Tailing Series 1													
		Revegetation maintenance			1,547								
Tailing 2													
		Revegetation maintenance			606								
Tailings 3X													
		Revegetation maintenance			365								
Tailings 3													
		Revegetation maintenance			643								
Copper Mountain Pit		Fencing	12,800										
Main Pit		Fencing	25,700										
Savanna Pit		Fencing	8,300										
Gettysburg		Fencing	10,700										

Dozer Push Estimates

2A 2B			
Section	Push Distance (ft)	Grade (%)	
1	149	30	
2	600	30	
3	600	30	
4	543	30	
Average	473	30	

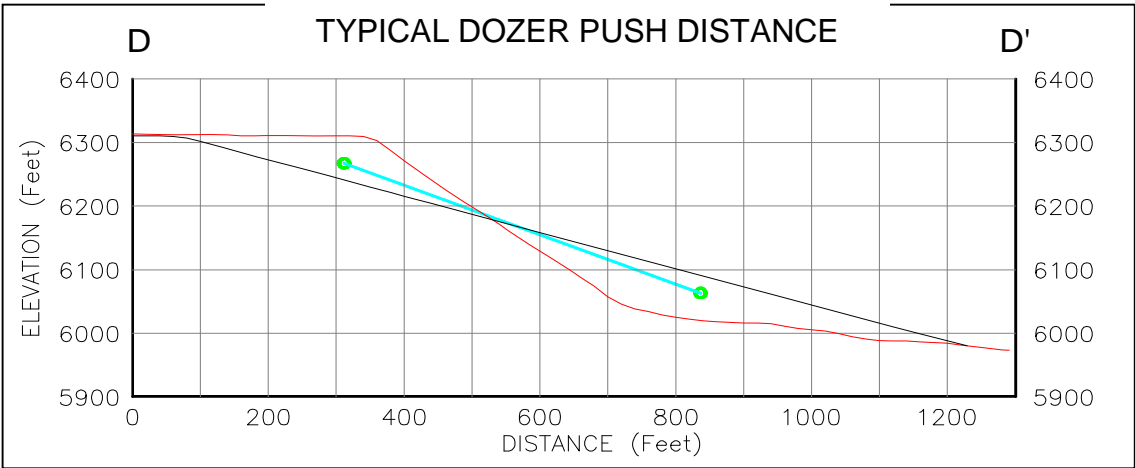
4C			
Section	Push Distance (ft)	Grade (%)	
1	529	30	
2	328	30	
Average	429	30	

7B			
Section	Push Distance (ft)	Grade (%)	
1	231	30	
2	600	30	
Average	416	30	

5A			
Section	Push Distance (ft)	Grade (%)	
1	600	30	
2	487	30	
Average	544	30	

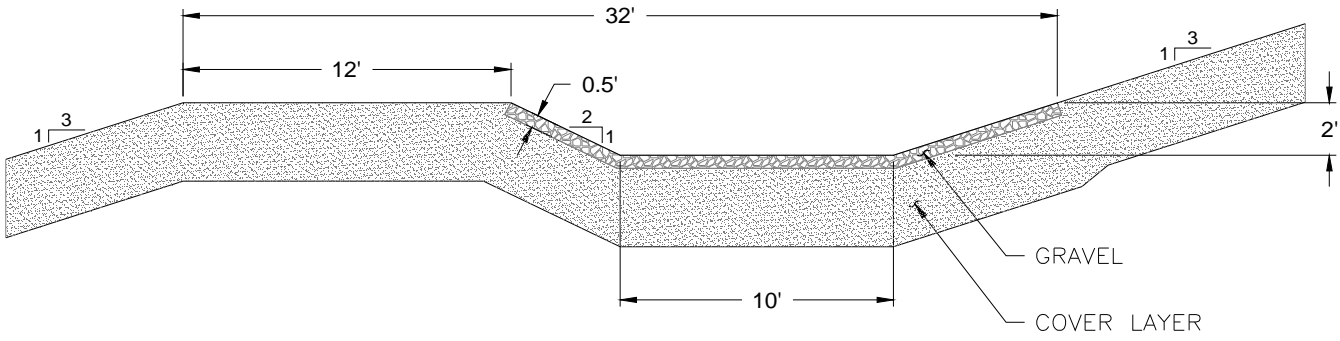
6B			
Section	Push Distance (ft)	Grade (%)	
1	180	30	
Average	180	30	

6C			
Section	Push Distance (ft)	Grade (%)	
1	172	30	
2	477	30	
Average	325	30	



Terrace Volume Estimates

Excavation Volume per Foot	1.50 cy/ft
Gravel Placement	
Gravel Volume per Foot	0.39 cy/ft

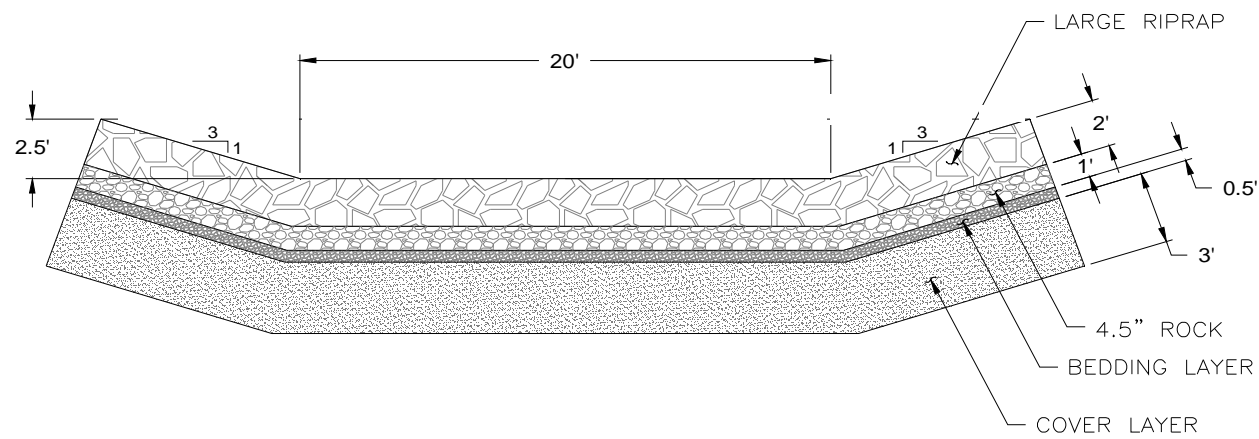


TYPICAL TERRACE CROSS-SECTION

Terrace Cross-Sectional Area	10.5 sf
Terrace Excavation Cross-Sectional Area	40.5 sf

Down Drain Volume Estimates

Riprap & Gravel Placement	
Gravel Volume per Foot	0.70 cy/ft
Riprap	4.09 cy/ft

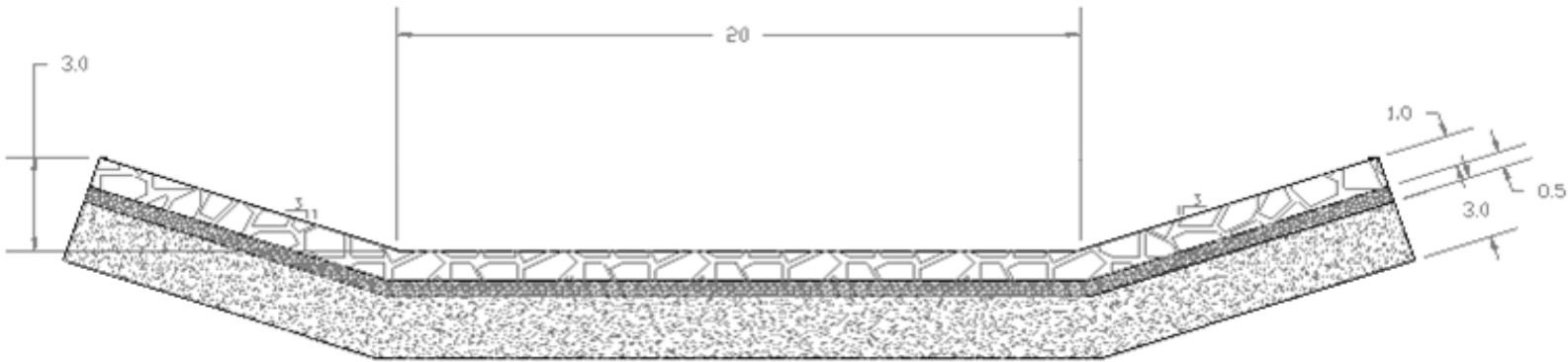


TYPICAL DOWNDRAIN CROSS-SECTION

Down Drain Riprap Cross-Sectional Area	110.3 sf
Down Drain Gravel Cross-Sectional Area	19 sf
Down Drain Excavation Cross-Sectional Area	198.1 sf

Channel Volume Estimates

Riprap & Gravel Placement	
Gravel Volume per Foot	0.75 cy/ft
Riprap	1.48 cy/ft



TYPICAL CHANNEL CROSS-SECTION

Channel Cross-Sectional Area	88.9 sf
Channel Excavation Cross-Sectional Area	149 sf

Truck Shovel Regrade

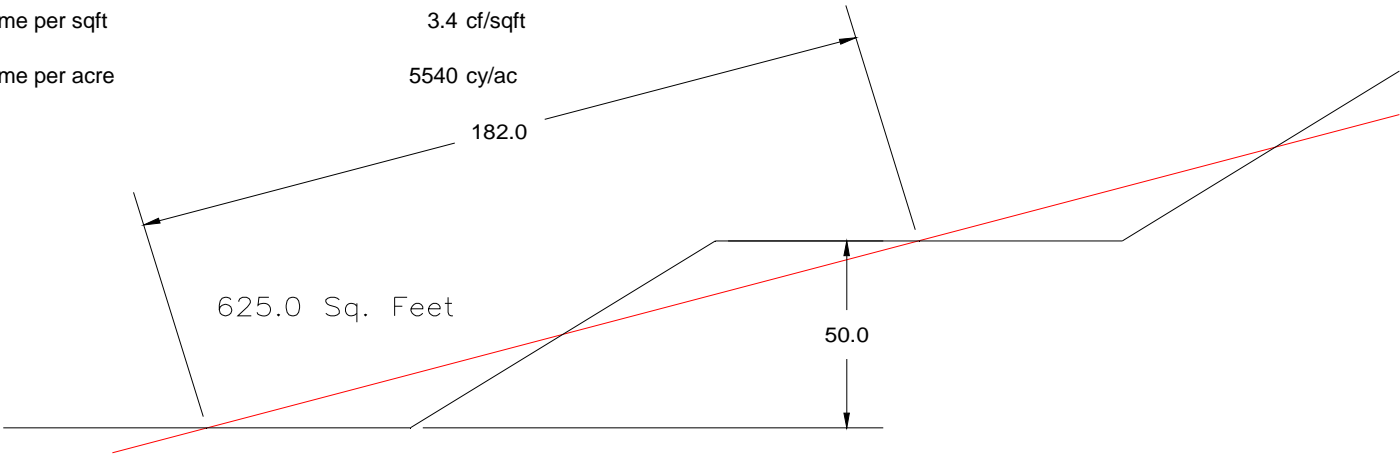
Notes:

- 1) The volume of regrade for the Truck/shovel pullback was determined by measuring the cross sectional area of a typical pullback (see below) and then calculating a volume per acre as shown.

Stockpile	Area (ac)	Volume (cy)
1A and 1B	240	1329670
3A and 3B	287	1590064
9A	116	642674

Cross Sectional Area 625 sqft
Surface Area (slope length * 1') 182 ft

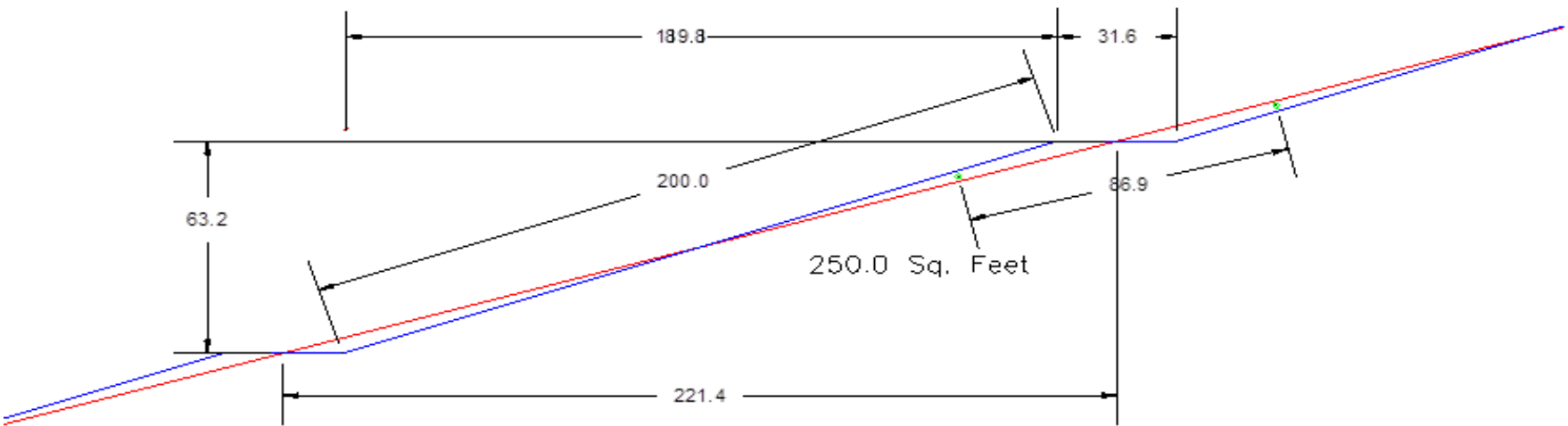
Volume per sqft 3.4 cf/sqft
Volume per acre 5540 cy/ac



TYPICAL TRUCK SHOVEL REGRADE CROSS-SECTION

Terrace Bench Regrade

Volume per foot of Terrace	9.26 cy/ft
Dozer Push	86.9 ft
Grade	33.3% %



TYPICAL TERRACE BENCH REGRADE
CROSS-SECTION
(All dimensions in feet unless indicated otherwise)

APPENDIX C.2
BUILDINGS
PROVIDED BY GOLDER

Post-Mining Land Use Designations of Tyrone Mine Buildings

Tyrone Tag. No.	Description	Dimensions¹	PMLU	Description
Mine Maintenance Facilities Area				
MM-01	General Office	195-114x23	Industrial	Multiple office space, large open bays
MM-02	Mine Operations Office	254x60x33	Industrial	Multiple office space and change rooms
MM-03	Security	41x26x17	Industrial	Truck Scale
MM-04	Safety Building	80x24x20	Industrial	Multiple office spaces and classrooms
MM-05	Human Resources/Training	102x41x20	Industrial	Multiple office spaces and classrooms
MM-06	Jerome Building	204x63x50	Wildlife Habitat	To Be Demolished
MM-07	Plant Warehouse	250x100x_	Wildlife Habitat	To Be Demolished
MM-08	Truck Shop/ Machine Shop/Welding Shop	344x236x60	Industrial	Overhead Cranes (five 35-ton and one 20-ton)
MM-09	Electric Shop	120x51x50	Wildlife Habitat	To Be Demolished
MM-10	Pipe Shop	145x41x40	Wildlife Habitat	To Be Demolished
MM-11	Carpenter Shop	119x69x27	Wildlife Habitat	To Be Demolished
MM-12	Lumber Storage	102x61x33	Wildlife Habitat	To Be Demolished
MM-13	Shovel Repair	121x70x66	Wildlife Habitat	To Be Demolished
MM-14	Environmental Lab	112x27x17	Wildlife Habitat	To Be Demolished
MM-15	Chapel	50x25x_	Industrial	Potential Historic Building; (Poor Condition rating)
MM-16	Electric Building & Chlorine Shack	35x35x10	Industrial	Potable Water Supply
MM-18	Analytical Lab	120x50x14	Industrial	
MM-20	Diesel Tank Farm	120x120x_	Industrial	
MM-21	Electrical Power Substation	180x120x_	Industrial	
MM-24	Fire Truck Barn	25x25x12	Industrial	
MM-25	Ambulance Barn	35x25x12	Industrial	
	Security Building Expansion	20 x 30	Industrial	
SX-EW Plant Area				
	Tankhouse	150x465x30	Wildlife Habitat	To Be Demolished
	SX/EW Plant Area Shop	31x71x30	Wildlife Habitat	To Be Demolished
	Leach Crew Office	15x15x15	Wildlife Habitat	To Be Demolished
	SX/EW Warehouse	48x150x20	Wildlife Habitat	To Be Demolished
	Substation	100x90x10	Industrial	Remain for post-closer use
	Raffinate Storage Tanks (2)	120 dia x 34; 65 dia x 16	Industrial	Remain for post-closer use
	Gonzales Cells	25x52x10	Wildlife Habitat	To Be Demolished
	Jamison Cells	35x44x10	Wildlife Habitat	To Be Demolished
	Organic Tanks (4)	2x32x16	Wildlife Habitat	To Be Demolished
	Mixer/Settler Tanks (8)	200x366x10	Wildlife Habitat	To Be Demolished
	Tank Farm (5)	92x370x10	Wildlife Habitat	To Be Demolished
	Water Tank	1x30x16	Wildlife Habitat	To Be Demolished
	PLS Feed Pond	130x130	Industrial	Remain for post-closer use
	Acid Tanks (2)	2x20x16	Wildlife Habitat	To Be Demolished
	MCC Building	14x30x12	Wildlife Habitat	To Be Demolished
	Toolroom and Storage	60x70x12	Wildlife Habitat	To Be Demolished
	Chlorinator Room	19x66x12	Wildlife Habitat	To Be Demolished
	2A West Raff Tank	30x46x16	Wildlife Habitat	To Be Demolished
	Rectifiers	20x24x12	Wildlife Habitat	To Be Demolished
	Workroom	66x75x12	Wildlife Habitat	To Be Demolished
	Pump Mixer Control Room	41x41x12	Wildlife Habitat	To Be Demolished
	Cobalt Sulfate Tank	1x18x16	Wildlife Habitat	To Be Demolished
	Reagent Tanks	25x36x12	Wildlife Habitat	To Be Demolished
	Toolroom and Storage	8x32x12	Wildlife Habitat	To Be Demolished
	Diluent Storage Tank	1x18x16	Wildlife Habitat	To Be Demolished
	Pacesetter Filters (2)	48x80x12	Wildlife Habitat	To Be Demolished
	Wash Pad	45x68x_	Wildlife Habitat	To Be Demolished

Post-Mining Land Use Designations of Tyrone Mine Buildings

Tyrone Tag. No.	Description	Dimensions¹	PMLU	Description
Lubrication Shop Area				
	Prill Tanks (2 each)	20 ft dia. each	Waiver Area	To be demolished
	Dispatch Building	41x15x_	Waiver Area	Demolished
	Lubrication Shop	110x60x_	Waiver Area	Future borrow pit area
	Southwest Energy Building	42x42x_	Not Specified	Owned by others
	Electric Power Substation	52x36x_	Waiver Area	Future borrow pit area
	Powder Magazines	10x10x_	Waiver Area	Future borrow pit area
	Storage Sheds	110x60x_	Waiver Area	To be demolished
	Lubeshop Addition	50 x 70 x _		
	#2 Fuel Dock Concrete Slab for Haul Trucks	14 x 42		
Acid Unloading Facility & Former Precipitation Area				
	Acid Unloading Facility	20x10x_	Wildlife	Demolish and salvage
	Former Precipitation Plant Building	400x100x_	Wildlife	Demolish and salvage
Mill and Concentrator Area				
MC-01	Tailing Thickeners (8)	325 ft dia.	Industrial	Reserved for water treatment
MC-02	Reclaim Water Storage Tanks (3)	1 at 600 ft dia & 2 at 40 ft dia.	Industrial	Reserved for water supply
MC-04	Reclaim Water Pump House	138x60x10	Industrial	Demolish; (pumps (9X), 7-ton overhead crane (trolley only)
MC-05	Terminal Tanks (3 each)	150 ft dia.	Industrial	Pumps
MC-06	Flotation Units (3 each)	NA	Wildlife Habitat	Demolished
MC-07	Secondary Crusher	NA	Wildlife Habitat	Demolished
MC-08	Mill Pumphouse	NA	Wildlife Habitat	Demolished
MC-09	SX/EW Changeroom	NA	Wildlife Habitat	Demolished
MC-10	Intermediate Ore Storage	NA	Wildlife Habitat	Demolished
MC-11	Primary Crusher	NA	Wildlife Habitat	Demolished
MC-12	Process Water Tanks	NA	Wildlife Habitat	Demolished
MC-13	Concentrator- Filter Plant & Dryer	NA	Wildlife Habitat	Demolished
MC-14	Lime Storage	NA	Industrial	Demolished
MC-15	Warehouse and Core Storage	235x101x33	Wildlife Habitat	To be demolished
MC-16	Warehouse/ Concentrator Unloading	NA	Wildlife Habitat	Demolished
MC-17	Radiators/Power Plant (Powerhouse)	420x120x30	Industrial	15 diesel engine generators
MC-19	Concentrator Building	NA	Wildlife Habitat	Demolished
MC-20	Reagent Building	150x50x16	Wildlife Habitat	Demolished
MC-21	Fuel Station	60x50	Wildlife Habitat	To be demolished
MC-22	Tire Shop	79x44x23	Wildlife Habitat	To be demolished
MC-24	Spigot Underflow Pump House	60x50x_	Wildlife Habitat	Demolished
MC-25	Tailing Pump House	110x50x_	Industrial	Raw water pumps, 5 ton overhead crane
MC-27	Inactive Diesel Storage Tanks (2)	1x20x15	Wildlife Habitat	To be demolished
#1 Fuel Dock Area				
	#1 Fuel Dock	70 x 40	Industrial	
	Water Fill	14 x 31	Industrial	
2B Leach / Little Rock Haul Road Fuel Dock Area				
	Fuel Dock	70 x 40	Wildlife Habitat	To be demolished

¹ Length and width of facility determined from facility map, height of facility assumed.
Cost estimate used actual tank dimensions where possible.

APPENDIX C.3
SURFACE IMPOUNDMENTS
PROVIDED BY GOLDER

Tyrone Mine Surface Impoundments

Impoundment Designation ¹	Surface Area ¹ (acres)	Mine Use ¹	Liner ¹	Status	Post 2014	Reclaimed Prior to 2014 (acres)	Covered (no reveg) (acres)	Reclaimed After 2014 (acres)	Replaced (acres)	PMLU up to and after year 100 (acres)	PMLU up to year 100 (acres)
DP-27 SA Northern Mangas Valley Tailing Area						3.19	0	0	0	0	0
Facility Area 2 - Southern Mangas Valley Tailing											
No. 1X Tailing Seepage Collection Pond (1X-1) ⁴	0.81	Seep	Synthetic	Existing	PMLU						0.81
Totals =						7.59	0	0	0	0	0.81
DP-166 No. 2 Leach System, SX/EX Plant, Open Pits											
Seep Collection DC2-1	0.02	Seep	Synthetic	Existing	PMLU						0.02
Seep 2 Collection	0.002	Seep	None	Existing	PMLU						0.002
Seep 3 Collection	0.02	Seep	Clay	Existing	PMLU						0.02
Seep 4 Collection	0.02	Seep	Clay	Existing	PMLU						0.02
Seep 5E Collection	0.02	Seep	Clay	Existing	Covered & Replace		0.02		0.02		0.02
Seep 9 Collection	NA	Seep	NA	Existing	PMLU						NA
Main Pit Sump ⁴	15.43	Pit Dewatering	None	Existing	PMLU					15.43	
Copper Mountain Pit Sump ⁴	2.64	Pit Dewatering	None	Existing	PMLU					2.64	
Lube Shop Pond	0.09	Stormwater	None	Existing	Covered		0.09				
No. 2 PLS Pond ⁴	1.22	PLS	Synthetic	Existing	PMLU						1.22
No. 2A Decant Ponds ⁴	4.42	Pit Dewatering	Synthetic	Existing	PMLU						4.42
4C PLS Pond ⁴	0.495	PLS	Synthetic	Existing	PMLU						0.495
Future 6150 Pond ⁴	0.46	PLS	Synthetic	Existing in 2014	PMLU						0.460
North Racket PLS Pond ²	0.93	PLS	Synthetic	Existing	PMLU						0.93
SX/EW PLS Feed Pond ⁴	0.39	PLS	Synthetic	Existing	PMLU						0.39
5E Pond 1	NA	Seep	Synthetic	Existing	Covered		NA				
5E Pond 2	0.36	Seep	Synthetic	Existing	PMLU						0.36
Totals =						0.005	0.11	0	0.02	18.07	8.357
DP-286 No. 3 Leach System											
Canyon 1 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 2 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 3 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 4 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 5 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 6 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 7 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 8 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 9 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 10 PLS Catchment	NA	PLS	Clay/Concrete	Existing	PMLU						NA
Canyon 11 PLS Catchment	NA	PLS	Synthetic	Existing	PMLU						NA
No. 3A PLS Pond ⁴	1.67	PLS	Synthetic	Existing	PMLU						1.67
No. 3A PLS Overflow ⁴	1.43	PLS	Synthetic	Existing	PMLU						1.43
Crusher Pond	0.37	Stormwater	None	Existing	PMLU					0.37	
Land Farm and Stage Pond (two)	0.62	Stormwater	Synthetic & Concrete lined	Existing	PMLU						0.62
Niagara Stormwater	0.16	Stormwater	None	Existing	Covered		0.16				
Other Thickeners (six)	0.46	Stormwater	Synthetic & Concrete lined	Existing	PMLU						0.46
Plant Oxidation Pond (a)	0.28	Sewage	Synthetic	Existing	PMLU						0.28
Plant Oxidation Pond (b)	0.3	Sewage	Synthetic	Existing	PMLU						0.3
SPCC Pond	0.96	Stormwater	Synthetic	Existing	PMLU						0.96
Totals =						0.54	0.16	0	0	0.37	5.72

Tyrone Mine Surface Impoundments

Impoundment Designation ¹	Surface Area ¹ (acres)	Mine Use ¹	Liner ¹	Status	Post 2014	Reclaimed Prior to 2014 (acres)	Covered (no reveg) (acres)	Reclaimed After 2014 (acres)	Replaced (acres)	PMLU up to and after year 100 (acres)	PMLU up to year 100 (acres)
DP-363 No. 1A Leach System											
1A PLS Tank ⁴	0.01	PLS/Seepage	Stainless Steel	Existing	PMLU						0.01
No. 1A PLS Overflow Pond ⁴	1.24	PLS	Synthetic	Existing	PMLU						1.24
No. 1A Stormwater Pond	0.11	Stormwater	Clay	Existing	Covered		0.11				
Totals =					Totals =	0.5	0.11	0	0	0	1.25
DP-383 No. 1B Leach System											
1B PLS Tank ⁴	0.02	PLS/Seepage	Stainless Steel	Existing	PMLU						0.02
No. 1B Overflow Pond ⁴	1.24	PLS	Synthetic	Existing	PMLU						1.24
Totals =					Totals =	0.33	0	0	0	0	1.26
DP-396 No. 1C Waste Rock Stockpile											
Oak Grove Pond	0.18	Stormwater	Synthetic	Existing	PMLU						0.18
Oak Grove Sediment Basin	2.2	Stormwater	Unlined	Existing	PMLU						2.2
Totals =					Totals =	0.55	0	0	0	0	2.38
DP-435 No. 2A and 2B Leach Systems, and 2B and 9A Waste Rock Stockpiles											
2A East PLS Tank ⁴	0.01	PLS	Stainless Steel	Existing	PMLU to year 6			0.01			
2A West PLS Tank ⁴	0.01	PLS	Stainless Steel	Existing	PMLU to year 6			0.01			
No. 2A (a) aka Seep 5E Pond Discharge	0.1	Stormwater	None	Existing	Covered		0.1				
No. 2A (b) Surge Pond	0.46	PLS	Synthetic	Existing	PMLU						0.46
No. 2A (b) Surge Pond					PMLU						0
No. 2A East PLS Overflow (Pennington Pond) ⁴	0.49	PLS	Synthetic	Existing	PMLU						0.49
Totals =					Totals =	0.65	0.1	0.02	0	0	0.95
DP-455 Gettysburg Pit and Leach System											
Gettysburg Collection Pit (a)	0.17	PLS	Unlined	Existing	PMLU					0.17	
6C PLS Collection Pond ⁴	0	PLS	Synthetic	Existing	PMLU						0
Totals =					Totals =	0.06	0	0	0	0.17	0
DP-670 Savannah Pit and East Main Leach System											
East Main Booster Pond ⁴	0.16	PLS	Synthetic	Existing	PMLU						0.16
Savannah Pit Seepage Sump	0.07	Stormwater	Synthetic	Existing	PMLU						0.07
Totals =					Totals =	0	0	0	0	0	0.23
DP-896 No. 1 Leach Stockpile											
No. 1 Stockpile Seepage AST	0.001	Seepage Collection	Fiberglass	Existing	PMLU						0.001
No. 1 Overflow Pond	0.17	Overflow for Seepage Collection	Synthetic	Existing	PMLU						0.17
Precipitation Plant Launderers	0.1	Stormwater	Concrete Lined	Existing	PMLU						0.1
Totals =					Totals =	2.84	0	0	0	0	0.271

Notes

NA = not analyzed

PMLU - Post Mining Land Use

PLS = Pregnant leach solution storage, collection, conveyance structure

TDRW = Tailing Decant Return Water

¹ Original information from DBS&A. Tyrone Mine Surface Impoundment Study Work Plan, DP-1341 Condition 87. November 13, 2006, unless otherwise noted. Modified based on current reclamation.

² Based on as-built pond design information provided by FML.

³ Based on digitized area of approximate pond dimensions from 2011 aerial photograph in Stage 2 APP (DBS&A, 2011).

⁴ Based on information provided by Tyrone Hydrometallurgical Division and Environmental Department. The 4C and 6C PLS collection ponds are actually collection points with drains at the base and do not store PLS. The 4C and 6C PLS collection ponds are actually collection points with drains at the base and do not store PLS.

Impoundment Takeoffs (Golder CCP Update, 2013 Table 2-1)

Impoundment Area	Reclaimed Prior to 2014	Covered (no vegetation)	Reclaimed After 2014	Replaced	PMLU up to and after year 100 (acres)	PMLU up to year 100 (acres)
	Area (acres)					
DP-27 SA Northern Mangas Valley Tailing Area	3.19	0.00	0.00	0.00	0.00	0.00
Facility Area 2 - Southern Mangas Valley Tailing	7.59	0.00	0.00	0.00	0.00	0.81
DP-166 No. 2 Leach System, SX/EX Plant, Open Pits	0.01	0.11	0.00	0.02	18.07	8.36
DP-286 No. 3 Leach System	0.54	0.16	0.00	0.00	0.37	5.72
DP-363 No. 1A Leach System	0.50	0.11	0.00	0.00	0.00	1.25
DP-383 No. 1B Leach System	0.33	0.00	0.00	0.00	0.00	1.26
DP-396 No. 1C Waste Rock Stockpile	0.55	0.00	0.00	0.00	0.00	2.38
DP-435 No. 2A and 2B Leach Systems, and 2B and 9A Waste Rock Stockpiles	0.65	0.10	0.02	0.00	0.00	0.95
DP-455 Gettysburg Pit and Leach System	0.06	0.00	0.00	0.00	0.17	0.00
DP-670 Savannah Pit and East Main Leach System	0	0.00	0.00	0.00	0.00	0.23
DP-896 No. 1 Leach Stockpile	2.84	0.00	0.00	0.00	0.00	0.27

Total:	0.48	0.02	0.02	21.23
Notes	Ripping Only See Sheet 1	See PLS Tank Demo cost on Sheet 15 Other	See Seep 5E collection replacment cost on Sheet 15 Other	Remain Post Closure See rip, grade, cover, veg costs on sheets 13 and 14

APPENDIX C.4
WELLS
PROVIDED BY GOLDER

Wells Abandoned After Closure

LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth_Tota
1	Fortuna No. 1	Regional	MW	18377	14942	683
2	Fortuna No. 2	Regional	MW	18210	14870	615
4	Nigger Canyon	Regional	MW	22979	11635	75
5	Thompson Well	Regional	MW	20095	7689	1200
10	Flying A Well	Regional	EXW	31349	-1743	400
11	PWLCO Ranch House Well	Regional	MW	32037	-3485	100
13	Whitehill Well	Regional	MW	43845	-11084	107
14	No. 14 Well	Regional	MW	45368	-11660	100
15	No. 15 Well	Regional	MW	45180	-11860	100
18	Well 18	Regional	MW	28975	-1208	72
19	Well 19	Regional	MW	39298	-5404	80
20	Well 20	Regional	MW	28973	-1212	110
22	Eileen	Regional	MW	21906	12345	170
23	Paws	Regional	MW	27634	5721	260
24	Rowdy	Regional	MW	23792	9272	240
25	Cassie	Regional	MW	22516	10709	216
26	Bosworth	Regional	MW	18250	3385	352
27	Pokey	Regional	MW	18883	4821	303
29	Fang	Regional	MW	18976	5856	252
32	1D Leach Monitor Well 32	Regional	MW	18602	13799	300
33	1D Leach Monitor Well 33	Regional	MW	18860	13200	315
34	1D Leach Monitor Well 34	Regional	MW	17628	13366	340
35	Graves Canyon Well	Regional	MW	19763	-2616	400
36	Foley Well	Regional	MW	23379	10761	380
37	Wind Canyon Well 37	Regional	MW	45490	-11070	100
41	Shorty Water	Regional	MW	34540	-4713	60
42	Mangas Valley Well 42	Regional	MW	31368	-1658	82
43	Mangas Valley Well 43	Regional	MW	34532	-4726	101
44	Mangas Valley Well 44	Regional	MW	38802	-8391	91
45	Mangas Valley Well 45	Regional	MW	28815	810	70
46	Mangas Valley Well 46	Regional	MW	24937	6474	118
47	Mangas Valley Well 47	Regional	MW	39656	-7201	98
2-4	No. 2 Leach Test Well 2-4	Regional	MW	9520	5262	502
2-7	No. 2 Leach Test Well 2-7	Regional	MW	10059	11839	265
2-11	South Side Regional Well 2-11	Regional	MW	2831	5422	175
2-12	South Side Regional Well 2-12	Regional	MW	2809	11104	361
2-13	South Side Regional Well 2-13	Regional	MW	3141	9376	228
2-15		Regional	MW	3596	4811	384
2-16		Regional	MW	5605	3595	520
4-4	No. 2 Leach Test Well 4-4	Regional	MW	9530	10054	333
4-6	No. 2 Leach Test Well 4-6	Regional	MW	12123	6890	765
6-1	No. 2 Leach Test Well 6-1	Regional	MW	2800	3740	460
6-5	No. 2 Leach Test Well 6-5	Regional	MW	10019	11748	263
1236-2012-01	Monitor Well, LRW-6 replacement	Regional	MW	17588	-824	401
166-2006-01	Deadman Canyon Well	Perched	MW	6178	2776	21
166-2006-02	Deadman Canyon Well	Regional	MW	12260	3048	85
166-2006-03	Deadman Canyon Well	Perched	MW	12200	3030	12
166-2006-05	Deadman Canyon Well	Regional	MW	14572	2069	194
166-2006-06	Deadman Canyon Well	Regional	MW	17162	1472	65
166-2009-01		Regional	MW	16361	7721	963
166-2011-01		Regional	MW	7146	3780	250
1A-1	No. 1A Stockpile Well	Perched	MW	8516	19355	14
1A-10	No. 1A Stockpile Well	Perched	EXW	9009	19296	16
1A-11	No. 1A Stockpile Well	Perched	EXW	7781	19253	24
1A-12	No. 1A Stockpile Well	Perched	MW	7788	19258	24
1A-13	No. 1A Stockpile Well	Perched	EXW	7488	19234	27
1A-14	No. 1A Stockpile Well	Perched	EXW	7385	19357	44
1A-15	No. 1A Stockpile Well	Perched	EXW	7290	19333	43
1A-16	No. 1A Stockpile Well	Perched	EXW	7228	19322	44
1A-17A	No. 1A Stockpile Well	Perched	MW	6764	19315	48
1A-19	No. 1A Stockpile Well	Perched	EXW	8585	19297	15
1A-2	No. 1A Stockpile Well	Perched	MW	8806	19408	22
1A-20	No. 1A Stockpile Well	Perched	EXW	8571	19299	15
1A-21	No. 1A Stockpile Well	Perched	EXW	8850	19285	21
1A-22	No. 1A Stockpile Well	Perched	EXW	8864	19286	20
1A-23	No. 1A Stockpile Well	Perched	MW	7763	19280	27
1A-24	No. 1A Stockpile Well	Perched	MW	7750	19274	26
1A-25	No. 1A Stockpile Well	Perched	MW	7747	19270	25
1A-26	No. 1A Stockpile Well	Perched	MW	7342	19402	40
1A-27	No. 1A Stockpile Well	Perched	MW	7382	19406	41
1A-28	No. 1A Stockpile Well	Perched	MW	7310	19398	37
1A-3	No. 1A Stockpile Well	Perched	MW	8770	19354	15
1A-30	No. 1A Stockpile Well	Perched	EXW	7340	19347	50
1A-31	No. 1A Stockpile Well	Perched	MW	7319	19194	39
1A-32	No. 1A Stockpile Well	Perched	MW	7378	19189	42
1A-33	No. 1A Stockpile Well	Perched	MW	8993	19296	14
1A-34	No. 1A Stockpile Well	Perched	MW	8971	19293	17
1A-35	No. 1A Stockpile Well	Perched	MW	8893	19424	27
1A-36	No. 1A Stockpile Well	Perched	MW	8947	19291	18
1A-37	No. 1A Stockpile Well	Perched	MW	8923	19288	19
1A-38	No. 1A Stockpile Well	Perched	MW	8898	19285	17
1A-4	No. 1A Stockpile Well	Perched	MW	8591	19437	17
1A-5	No. 1A Stockpile Well	Perched	MW	8588	19461	17
1A-6	No. 1A Stockpile Well	Perched	MW	8131	19370	20
1A-7	No. 1A Stockpile Well	Perched	MW	8131	19400	20
1A-8	No. 1A Stockpile Well	Perched	EXW	8578	19294	17
1A-9	No. 1A Stockpile Well	Perched	EXW	8856	19283	21
1B-1	No. 1B Stockpile Well	Perched	MW	10935	19613	36
1B-2	No. 1B Stockpile Well	Perched	MW	10982	19605	36
1B-3	No. 1B Stockpile Well	Perched	MW	11198	19338	32
1B-4	No. 1B Stockpile Well	Perched	MW	11165	19299	31

Wells Abandoned After Closure

LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth_Tota
1B-8	No. 1B Stockpile Well	Perched	MW	10066	19531	14
1B-9	No. 1B Stockpile Well	Perched	MW	10802	19396	37
1C-1	No. 1C Well 1C-1	Perched	MW	3399	13411	15
1C-10	No. 1C Well 1C-10	Perched	MW	2564	13510	15
1C-2	No. 1C Well 1C-2	Perched	MW	3296	13756	37
1C-3	No. 1C Well 1C-3	Perched	MW	3211	14017	35
1C-4	No. 1C Well 1C-4	Perched	MW	3191	14006	31
1C-6	No. 1C Well 1C-6	Perched	MW	5219	17773	40
1C-7	No. 1C Well 1C-7	Perched	MW	5560	18217	42
1C-9	No. 1C Well 1C-9	Perched	MW	3332	15776	45
2-5A	No. 2 Leach Test Well 2-5A	Regional	MW	5461	10478	484
27-2004-02	Section 29 replacement well	Regional	MW	35505	-5170	105
27-2005-01	Monitor Well	Regional	MW	22643	7237	222
27-2005-02	Monitor Well	Regional	MW	24666	-2027	212
27-2005-03	Monitor Well	Regional	MW	37220	2607	258
27-2005-04	Monitor Well	Regional	MW	41570	-929	352
27-2005-05	Monitor Well	Regional	MW	45243	-5022	307
27-2005-06	Monitor Well	Regional	MW	39758	-5037	147
27-2010-01		Regional	MW	36085	-4463	84
27-2010-02		Regional	MW	36915	-2544	216
27-2010-03		Regional	MW	36195	-3536	96
27-2011-15	Monitor Well	Regional	MW	23250	7162	167
286-2005-01	Monitor Well	Regional	MW	20651	7954	215
286-2005-02	Monitor Well	Regional	MW	21338	8027	142
286-2005-03	Monitor Well	Regional	MW	16129	16171	345
286-2006-01	Extraction Well	Regional	EXW	20493	9790	186
286-2006-02	Monitor Well	Regional	MW	20536	9744	191
286-2006-03	Extraction Well	Regional	EXW	21120	8592	177
286-2006-04	Monitor Well	Regional	MW	21147	8628	157
286-2006-05	Extraction Well	Regional	EXW	20960	7259	267
286-2006-06	Monitor Well	Regional	MW	21015	7312	236
286-2007-01	Deep Monitor Well	Regional	MW	20527	9754	235
286-2007-02	Deep Monitor Well	Regional	MW	20839	9020	162
286-2007-03	Monitor Well	Regional	MW	21380	8496	250
286-2007-04	Monitor Well	Regional	MW	21365	8177	141
286-2007-05	Monitor Well	Regional	MW	21361	7855	146
286-2007-06	Monitor Well	Regional	MW	21435	7566	178
286-2007-07	Monitor Well	Regional	MW	21428	7260	225
286-2007-08	Monitoring/Extraction Well	Regional	EXW	21044	8812	169
286-2007-09	Monitor Well	Regional	MW	20811	6984	240
286-2007-10	Monitor Well	Regional	MW	20795	6671	221
286-2007-11	Monitor Well	Regional	MW	20652	6420	238
286-2007-12	Monitor Well	Regional	MW	20806	9174	167
286-2007-13	Monitor Well	Regional	MW	20842	8998	179
286-2007-14	Monitor Well	Regional	MW	21526	8842	106
286-2007-15	Extraction Well	Regional	EXW	21118	8487	194
286-2007-16	Monitor Well	Regional	MW	21149	8542	160
286-2007-17	Extraction Well	Regional	EXW	21113	8392	213
286-2007-18	Monitor Well	Regional	MW	21150	8435	175
286-2007-19	Extraction Well	Regional	EXW	21120	8278	208
286-2007-20	Monitor Well	Regional	MW	21151	8330	188
286-2007-21	Extraction Well	Regional	EXW	21120	8173	202
286-2007-22	Monitor Well	Regional	MW	21152	8224	180
286-2007-23	Extraction Well	Regional	EXW	21124	8074	207
286-2007-24	Monitor Well	Regional	MW	21155	8123	180
286-2007-25	Extraction Well	Regional	EXW	21120	7961	210
286-2007-26	Monitor Well	Regional	MW	21139	8007	187
286-2007-27	Extraction Well	Regional	EXW	21081	7862	228
286-2007-28	Monitor Well	Regional	MW	21125	7896	186
286-2007-29	Extraction Well	Regional	EXW	21049	7762	246
286-2007-30	Monitor Well	Regional	MW	21096	7804	205
286-2007-31	Extraction Well	Regional	EXW	21011	7662	258
286-2007-32	Monitor Well	Regional	MW	21054	7700	228
286-2007-33	Extraction Well	Regional	EXW	20991	7561	264
286-2007-34	Monitor Well	Regional	MW	21028	7605	234
286-2007-35	Extraction Well	Regional	EXW	20970	7461	269
286-2007-36	Monitor Well	Regional	MW	21009	7508	238
286-2007-37	Extraction Well	Regional	EXW	20960	7360	270
286-2007-38	Monitor Well	Regional	MW	21005	7411	238
286-2007-39	Extraction Well	Regional	EXW	20794	9123	192
286-2007-40	Monitoring/Extraction Well	Regional	EXW	21091	8693	175
286-2007-41	Extraction Well	Regional	EXW	20817	9037	214
286-2007-42	Monitor Well	Regional	MW	20833	9086	190
286-2007-43	Extraction Well	Regional	EXW	20841	8950	212
286-2007-44	Monitor Well	Regional	MW	20895	8941	185
286-2007-45	Extraction Well	Regional	EXW	20903	8882	192
286-2007-46	Monitor Well	Regional	MW	20721	9590	143
286-2007-47	Extraction Well	Regional	EXW	20860	9348	196
286-2007-48	Monitor Well	Regional	MW	20493	9888	164
286-2007-49	Extraction Well	Regional	EXW	20653	9660	207
286-2007-50	Extraction Well	Regional	EXW	20417	9947	223
286-2007-51	Extraction Well	Regional	EXW	20704	9486	201
286-2008-01	Monitor Well	Regional	MW	20681	7769	221
286-2008-02	Monitor Well	Regional	MW	21680	8171	128
286-2008-03	Extraction Well	Regional	EXW	22241	9439	118
286-2008-04	Extraction Well	Regional	EXW	20188	10329	191
286-2008-05	Extraction Well	Regional	EXW	20057	10317	198
286-2008-06	Monitor Well	Perched	MW	20302	7600	61
286-2008-07	Monitor Well	Perched	MW	19724	10697	45
286-2008-08	Extraction Well	Regional	EXW	19233	11164	252
286-2010-01		Perched	MW	20137	10997	50

Wells Abandoned After Closure

LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth_Tota
286-2010-02		Perched	MW	19304	11602	60
363-2005-01	Monitor Well	Regional	MW	8123	19425	592
363-2005-02	Monitor Well	Regional	MW	6443	29562	619
363-2005-03	Monitor Well	Regional	MW	6821	30096	613
363-2005-04	Monitor Well	Regional	MW	6929	22283	588
363-2006-01	363-2006-01-Tyrone; MB-30 replacement	Regional	MW	5438	19337	533
363-2008-01		Perched	EXW	6227	29314	64
363-2008-02		Perched	EXW	6208	29414	65
363-2008-03		Perched	EXW	6186	29510	50
363-2008-04		Regional	MW	7159	24823	745
363-2011-01		Regional	MW	11730	18582	515
383-2005-02	Monitor Well	Regional	MW	12880	18331	468
383-2008-01	MB-36 replacement well	Regional	MW	11419	19546	440
396-2011-01		Perched	MW	4304	16377	85
435-2005-01	Monitor Well	Regional	MW	17375	6491	703
435-2005-02	Monitor Well	Regional	MW	14956	3603	902
435-2005-03	Monitor Well	Regional	MW	18289	4551	407
455-2001-01	Gettysburg monitor well	Regional	MW	8170	16950	650
455-2005-01	Monitor Well	Regional	MW	9058	17010	709
455-2005-02	Monitor Well	Regional	MW	6101	15392	487
455-2007-01	Gettysburg 5700 bench monitor well	Regional	MW	8667	16323	160
455-2008-01	Gettysburg 6060 bench monitor well	Regional	MW	8849	16680	558
455-2008-02	Gettysburg 5700 bench monitor well	Regional	MW	8775	16158	157
455-2008-03	Gettysburg 5700 bench monitor well	Regional	MW	8534	16450	158
455-2010-01		Regional	MW	13060	14608	974
455-2010-02		Regional	MW	10209	15603	735
6-2R	No. 3 Leach Well 6-2R	Regional	MW	21056	9843	347
670-2005-01	Monitor Well	Regional	MW	11023	15365	764
670-2005-02	Monitor Well	Perched	MW	13242	14872	396
896-2005-01	Monitor Well	Regional	MW	10543	23922	897
896-2010-01		Perched	MW	10870	21509	19
896-2010-02		Perched	MW	10578	22033	30
896-2010-03		Perched	MW	10405	22656	29
896-2010-04		Perched	MW	10467	23106	32
BK-1	Brick Kiln Gulch Well	Perched	MW	8837	24832	35
BK-10	Brick Kiln Gulch Well	Perched	MW	10756	21056	28
BK-11	Brick Kiln Gulch Well	Perched	MW	8802	24821	84
BK-2	Brick Kiln Gulch Well	Perched	MW	8808	24821	33
BK-3	Brick Kiln Gulch Well	Perched	MW	8954	24876	37
BK-4	Brick Kiln Gulch Well	Perched	MW	9198	23700	28
BK-5	Brick Kiln Gulch Well	Perched	MW	9145	23658	25
BK-6	Brick Kiln Gulch Well	Perched	MW	9882	22843	40
BK-8	Brick Kiln Gulch Well	Perched	MW	10384	22025	52
BK-9	Brick Kiln Gulch Well	Perched	MW	10806	21071	41
BMH-MW-1		Regional	MW	6424	-4591	215
C10-28	No. 3 Leach Well	Perched	MW	21235	8844	33
C10-40	No. 3 Leach well	Perched	MW	21540	8932	37
C10-41	No. 3 Leach well	Perched	MW	21714	9001	40
C10-42	No. 3 Leach Well C10-42	Regional	MW	21543	8913	90
C10-50	No. 3 Leach Well	Perched	MW	21639	8969	41
C10-51	No. 3 Leach Well	Perched	MW	21644	8960	41
C10-52	No. 3 Leach Well	Perched	MW	21641	8965	37
C10-53	No. 3 Leach Well	Perched	MW	21038	8686	45
C10-54	No. 3 Leach Well C10-54	Regional	MW	21065	8642	115
C10-62	No. 3 Leach Well	Perched	MW	21654	8970	36
C11-12	No. 3 Leach Well C11-12	Regional	MW	21530	8252	100
C4TU-1	No. 3 Trench Well C4TU-1	Perched	EXW	19561	11297	52
C4TU-2	No. 3 Trench Well C4TU-2	Perched	EXW	19618	11154	52
C7-33	No. 3 Leach Well	Perched	MW	20490	9668	37
C7-34	No. 3 Leach Well	Perched	EXW	20489	9634	37
C7-35	No. 3 Leach Well	Perched	MW	20489	9620	39
C7-36	No. 3 Leach Well	Perched	MW	20490	9658	32
C7-37	No. 3 Leach Well	Perched	MW	20488	9627	35
C7-38	No. 3 Leach Well	Perched	MW	20531	9646	40
C7-39	No. 3 Leach Well	Perched	MW	20490	9627	38
C8-22	No. 3 Leach Well	Perched	MW	20988	9457	29
C8-23	No. 3 Leach Well	Perched	MW	20984	9460	32
C8-24	No. 3 Leach Well	Perched	MW	20975	9469	33
C8-26	No. 3 Leach Well	Perched	MW	20999	9447	30
C8-27	No. 3 Leach Well	Perched	MW	20701	9294	23
C8-30	No. 3 Leach Well	Perched	MW	20723	9248	23
C8-46	No. 3 Leach Well	Perched	MW	20711	9264	27
C8-49	No. 3 Leach Well	Perched	MW	20736	9281	38
C8-50	No. 3 Leach Well	Perched	MW	20743	9261	35
E	Willow Creek Well	Regional	MW	28520	-8395	111
EM-2	East Main Slot	Perched	MW	8907	13951	105
G	McMillen Ranch Well A	Regional	MW	56577	-19262	103
GLD-3A	Gettysburg Leach Dump Monitor Well 3	Regional	MW	9760	15920	655
GLD-5A		Regional	MW	5643	13796	385
GLD-7A	Gettysburg Leach Dump Monitor	Regional	MW	9091	17038	652
K	HW Well (East)	Regional	MW	67531	-25433	102
K-1	HW Well (West)	Regional	MW	67531	-25433	104
L	Stage Stand Well	Regional	MW	89891	-25124	151
LRW-1	Little Rock Well LRW-1	Regional	MW	15474	-763	220
LRW-2	Little Rock Well LRW-2	Regional	MW	13966	-2868	360
LRW-3	Little Rock Well LRW-3	Regional	MW	14568	-1366	500
LRW-4	Little Rock Well LRW-4	Regional	MW	13196	-1548	122
LRW-5	Little Rock Well LRW-5	Regional	MW	11319	-1867	180
LRW-6	Little Rock Well LRW-6	Regional	MW	18611	-673	295
LRW-7	Little Rock Well LRW-7	Regional	MW	14741	719	398
MB-10	Mimbres Basin Well 10, No. 1B Leach Monitor	Perched	MW	12996	18328	65

Wells Abandoned After Closure

LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth_Tota
MB-12	Mimbres Basin Well 12, No. 1B Leach	Regional	MW	11143	20050	449
MB-13	Mimbres Basin Well 13	Perched	MW	2620	13491	183
MB-15	Mimbres Basin Well 15	Regional	MW	5245	18481	193
MB-15A	Mimbres Basin Well 15A	Regional	MW	5245	18480	240
MB-16	Mimbres Basin Well 16, No. 1C Well	Perched	MW	5566	18238	87
MB-18S	Mimbres Basin Well 18S	Perched	MW	5444	18064	65
MB-20	Mimbres Basin Well 20	Perched	MW	5417	18033	65
MB-27	Mimbres Basin Well 27	Regional	MW	8891	19434	620
MB-28	Mimbres Basin Well 28	Regional	MW	8031	24856	665
MB-29	Mimbres Basin Well 29	Regional	MW	6885	22314	588
MB-31	Mimbres Basin Well 31	Regional	MW	6684	20929	550
MB-32	Mimbres Basin Well 32	Regional	MW	5422	18750	300
MB-33	Mimbres Basin Well 33	Regional	MW	10019	22862	660
MB-34	Mimbres Basin Well 34	Perched	MW	11086	23704	360
MB-35	Mimbres Basin Well 35	Regional	MW	12164	19913	400
MB-37	Mimbres Basin Well 37, South Side Regional Well	Regional	MW	5393	18421	229
MB-39	Mimbres Basin Well 39, South Side Regional Well	Regional	MW	2941	13197	271
MB-4	Mimbres Main Well 4	Regional	EXW	-2537	48361	1020
MB-40	Mimbres Basin Well 40	Perched	MW	11588	24390	382
MB-41	Mimbres Basin Well 41	Regional	MW	8764	19901	628
MB-42	Mimbres Basin Well 42	Regional	MW	6939	29621	630
MB-43	Mimbres Basin Well 43	Regional	MW	4619	33539	583
MB-44	Mimbres Basin Well 44	Regional	MW	3200	17989	481
MB-5	Mimbres Basin Well 5, Mimbres Watershed Monitor Well No. 1	Regional	MW	-2506	48320	980
MB-6	Mimbres Basin Well 6, Mimbres Watershed Monitor Well No. 2	Regional	MW	-2479	48281	1000
MB-8	Mimbres Basin Well, Section 35 Well	Regional	MW	-1254	43233	407
MPP-1		Regional	EXW	13941	11448	210
MPP-4		Regional	EXW	13770	11576	210
MPP-5		Regional	EXW	13751	11479	205
MPP-6		Regional	EXW	13848	11444	210
MPWM-1	mpwm-1 (Copper Mtn. Pit)	Regional	MW	7680	4476	824
MS-2	Gensen Well	Regional	MW	47909	-14104	136
MV-4		Perched	MW	19721	11200	57
MV-5		Perched	MW	17969	13948	60
MVR-1		Regional	MW	24712	6162	135
MVR-3		Regional	MW	25398	5873	110
O-2	No. 3 Leach Observation Well 2	Regional	MW	18232	9058	498
O-3R	No. 3 Leach Observation Well 3R	Regional	MW	21138	9732	350
O-4	No. 3 Leach Observation Well 4	Regional	MW	20759	8187	350
O-5	No. 3 Leach Observation Well 5	Regional	MW	19880	10772	310
OG-1	Oak Grove Well	Perched	MW	7385	24537	34
OG-10	Oak Grove Well	Perched	MW	6993	21179	41
OG-11	Oak Grove Well	Perched	MW	6972	20936	47
OG-12	Oak Grove Well	Perched	MW	6864	20920	42
OG-13	Oak Grove Well	Perched	EXW	7664	24667	42
OG-14	Oak Grove Well	Perched	EXW	7510	24662	41
OG-15	Oak Grove Well	Perched	EXW	7373	24632	36
OG-16	Oak Grove Well	Perched	MW	4809	33586	64
OG-17	Oak Grove Well	Perched	MW	5000	33773	87
OG-18	Oak Grove Well	Perched	MW	5099	33870	95
OG-19	Oak Grove Well	Perched	MW	2804	35933	87
OG-2	Oak Grove Well	Perched	MW	7584	24561	65
OG-20	Oak Grove Well	Perched	MW	2921	36024	94
OG-21	Oak Grove Well	Perched	MW	3741	34880	89
OG-22	Oak Grove Well	Perched	MW	4915	33689	88
OG-23	Oak Grove Well	Perched	MW	7028	27961	52
OG-24	Oak Grove Well	Perched	MW	6944	27906	65
OG-25	Oak Grove Well	Perched	MW	8096	26569	38
OG-26	Oak Grove Well	Perched	MW	7427	24544	36
OG-27	Oak Grove Well	Perched	MW	7572	24553	33
OG-28	Oak Grove Well	Perched	MW	7623	24563	34
OG-29	Oak Grove Well	Perched	MW	7684	24567	33
OG-2S	Oak Grove Well	Perched	MW	7587	24552	36
OG-3	Oak Grove Well	Perched	MW	7498	24503	37
OG-30	Oak Grove Well	Perched	MW	7637	23735	37
OG-31	Oak Grove Well	Perched	MW	7824	23739	44
OG-32	Oak Grove Well	Perched	MW	7375	22501	39
OG-33	Oak Grove Well	Perched	MW	7535	22433	38
OG-34	Oak Grove Well	Perched	MW	7612	24122	33
OG-35	Oak Grove Well	Perched	MW	7028	21890	37
OG-36	Oak Grove Well	Perched	EXW	8032	26518	55
OG-37	Oak Grove Well	Perched	EXW	7979	26603	50
OG-38	Oak Grove Well	Perched	EXW	7905	26553	51
OG-39	Oak Grove Well	Perched	MW	6198	29461	68
OG-4	Oak Grove Well	Perched	MW	7510	24650	40
OG-40	Oak Grove Well	Perched	MW	6603	29754	115
OG-41	Oak Grove Well	Perched	MW	5812	31626	101
OG-42	Oak Grove Well	Perched	MW	5684	31537	104
OG-43	Oak Grove Well	Perched	MW	4909	33816	104
OG-44	Oak Grove Well	Perched	MW	5286	33636	102
OG-45	Oak Grove Well	Perched	EXW	5146	33495	103
OG-46	Oak Grove Well	Perched	EXW	5860	31543	110
OG-47	Oak Grove Well	Perched	EXW	6035	31322	108
OG-48	Oak Grove Well	Perched	EXW	5843	31174	114
OG-49	Oak Grove Well	Perched	MW	7587	24574	80
OG-5	Oak Grove Well	Perched	EXW	7495	24552	41
OG-50	Oak Grove Well	Perched	MW	7907	26444	94
OG-51	Oak Grove Well	Perched	MW	6638	29666	135
OG-52	Oak Grove Well	Perched	MW	4966	33740	194
OG-53	Oak Grove Well	Perched	MW	4897	33832	193
OG-54	Oak Grove Well	Perched	MW	5619	31367	88

Wells Abandoned After Closure

LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth_Tota
OG-55	Oak Grove Well	Perched	MW	6803	29775	83
OG-56	Oak Grove Well	Perched	MW	6218	29364	80
OG-57	Oak Grove Well	Perched	MW	6610	29735	94
OG-58	Oak Grove Well	Perched	EXW	6494	29561	96
OG-60	Oak Grove Well	Perched	MW	7905	26435	97
OG-61	Oak Grove Well	Perched	MW	5943	31431	67
OG-62	Oak Grove Well	Perched	EXW	7929	26512	50
OG-7	Oak Grove Well	Perched	MW	6770	21060	38
OG-8	Oak Grove Well	Perched	MW	6843	21101	46
OG-9	Oak Grove Well	Perched	MW	6926	21141	38
P-100	No. 3 Leach Well P-100	Regional	MW	22411	8913	60
P-101	No. 3 Leach Well P-101	Regional	MW	22310	8911	55
P-106	No. 3 Leach Well P-106	Regional	MW	20626	10242	85
P-10AR	No. 3 Leach Well P-10AR	Regional	MW	19977	10695	288
P-114	No. 3 Leach Well P-114	Regional	MW	20765	10089	75
P-115	No. 3 Leach Well P-115	Regional	MW	20768	9937	75
P-116	No. 3 Leach Well P-116	Regional	MW	20815	9780	75
P-117	No. 3 Leach Well P-117	Regional	MW	20334	10287	100
P-149	No. 3 Leach Well P-149	Regional	MW	20533	10261	160
P-14A	No. 3 Leach Well P-14	Regional	MW	20466	10437	125
P-155	No. 3 Leach Well P-155	Perched	MW	19979	10335	30
P-162	No. 3 Leach Well P-162	Regional	EXW	20529	10265	110
P-164	No. 3 Leach Well P-164	Regional	EXW	20545	10219	115
P-168	No. 3 Leach Well P-168	Regional	MW	20417	10007	137
P-173	No. 3 Leach Well P-173	Regional	MW	20418	9877	135
P-176	No. 3 Leach Well P-176	Regional	MW	20492	9599	150
P-2	No. 3 Leach Well P-2	Regional	MW	16833	7228	500
P-219	No. 3 Leach Well P-219	Regional	MW	20479	9395	171
P-21A	No. 3 Leach Well P-21A	Regional	MW	20443	10591	100
P-22A	No. 3 Leach Well P-22A	Regional	MW	20294	10862	103
P-23A	No. 3 Leach Well P-23A	Regional	MW	20886	10077	105
P-24	No. 3 Leach Well P-24	Regional	MW	21130	10123	71
P2-5		Perched	MW	24703	6204	50
P-29	No. 3 Leach Well P-29	Regional	EXW	21031	9869	72
P-3	No. 3 Leach Well P-3	Regional	MW	19063	5528	350
P-30	No. 3 Leach Well P-30	Regional	EXW	20560	10319	111
P-31	No. 3 Leach Well P-31	Regional	MW	21295	9758	71
P-32	No. 3 Leach Well P-32	Regional	MW	21209	9645	67
P3-3	Monitor Well P3-3	Regional	MW	45413	-10036	60
P-33	No. 3 Leach Well P-33	Regional	EXW	21084	9750	68
P-34	No. 3 Leach Well P-34	Regional	MW	20562	10304	142
P-37	No. 3 Leach Well P-37	Regional	MW	21350	9480	61
P-38	No. 3 Leach Well P-38	Regional	EXW	21022	9880	100
P-39	No. 3 Leach Well P-39	Regional	EXW	20558	10349	87
P-40	No. 3 Leach Well P-40	Regional	EXW	20555	10286	107
P-41	No. 3 Leach Well P-41	Regional	EXW	20569	10149	115
P-42	No. 3 Leach Well P-42	Regional	EXW	20554	10200	114
P-43	No. 3 Leach Well P-43	Regional	MW	21511	9306	65
P-44	No. 3 Leach Well P-44	Regional	MW	21035	9873	140
P-45	No. 3 Leach Well P-45	Regional	MW	21872	9937	68
P-46	No. 3 Leach Well P-46	Regional	MW	22032	9040	70
P-47	No. 3 Leach Well P-47	Regional	MW	22097	9149	65
P-48	No. 3 Leach Well P-48	Regional	MW	21604	9289	67
P-49	No. 3 Leach Well P-49	Regional	MW	22075	9111	65
P-4A	No. 3 Leach Well P-4A	Regional	MW	18525	6886	288
P-5	No. 3 Leach Well P-5	Regional	MW	20716	8205	350
P-50	No. 3 Leach Well P-50	Regional	MW	22121	9185	65
P-51	No. 3 Leach Well P-51	Regional	MW	21337	9490	76
P-52	No. 3 Leach Well P-52	Regional	MW	21470	9240	66
P-53	No. 3 Leach Well P-53	Regional	EXW	20537	10235	110
P-54	No. 3 Leach Well P-54	Regional	EXW	22143	9236	70
P-55	No. 3 Leach Well P-55	Regional	EXW	22085	9131	101
P-56	No. 3 Leach Well P-56	Regional	EXW	22172	9273	61
P-57	No. 3 Leach Well P-57	Regional	EXW	22133	9207	101
P-58	No. 3 Leach Well P-58	Regional	MW	22357	9451	65
P-59	No. 3 Leach Well P-59	Regional	MW	22248	9375	60
P-60	No. 3 Leach Well P-60	Regional	MW	22829	8550	60
P-61	No. 3 Leach Well P-61	Regional	MW	22797	8522	60
P-62	No. 3 Leach Well P-62	Regional	MW	22410	8340	64
P-63	No. 3 Leach Well P-63	Regional	MW	22459	8361	63
P-64	No. 3 Leach Well P-64	Regional	MW	22496	8391	58
P-65	No. 3 Leach Well P-65	Regional	MW	22541	8413	60
P-66	No. 3 Leach Well P-66	Regional	MW	22588	8440	59
P-67	No. 3 Leach Well P-67	Regional	MW	22639	8460	58
P-68	No. 3 Leach Well P-68	Regional	MW	22686	8477	59
P-70	No. 3 Leach Well P-70	Regional	EXW	22159	9259	100
P-72R	No. 3 Leach Well P-72R	Regional	MW	22053	9121	115
P-73	No. 3 Leach Well P-73	Regional	MW	22732	8505	60
P-74	No. 3 Leach Well P-74	Regional	MW	21993	9012	65
P-75	No. 3 Leach Well P-75	Regional	MW	23035	8637	60
P-76	No. 3 Leach Well P-76	Regional	EXW	20494	10410	108
P-77	No. 3 Leach Well P-77	Regional	MW	21339	9834	53
P-79	No. 3 Leach Well P-79	Regional	MW	21553	9558	65
P-80	No. 3 Leach Well P-80	Regional	MW	21572	9497	65
P-81	No. 3 Leach Well P-81	Regional	MW	21571	9432	65
P-82	No. 3 Leach Well P-82	Regional	MW	21550	9413	60
P-84	No. 3 Leach Well P-84	Regional	MW	22160	9268	121
P-85	No. 3 Leach Well P-85R	Regional	MW	22121	9202	120
P-92	No. 3 Leach Well P-92	Regional	MW	20455	10211	83
P-99	No. 3 Leach Well P-99	Regional	MW	22407	9026	58
PT-1	TD1X Interceptor System PT.1	Regional	EXW	29003	-1141	75

Wells Abandoned After Closure

LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth_Tota
PT-2	Monitor Well PT-2	Regional	MW	45295	-11736	97
PT-3	TD1X Interceptor System PT.3	Regional	MW	28977	-1180	80
PT-3R	TD1X Interceptor System PT.3-R	Regional	EXW	28990	-1189	75
PT-4	TD1X Interceptor System PT.4	Regional	EXW	29039	-1075	80
PT-5	TD1X Interceptor System PT.5	Regional	EXW	28925	-1270	75
PT-6	TD1X Interceptor System PT.6	Regional	EXW	28872	-1356	75
PZ-1	Mangas Valley Well PZ-1	Regional	MW	28933	-1096	84
PZ-10	Mangas Valley Well PZ-10	Regional	MW	29163	-1298	68
PZ-2	Mangas Valley Well PZ-2	Regional	MW	29071	-1005	37
PZ-3	Mangas Valley Well PZ-3	Regional	MW	28929	-1263	56
PZ-4	Mangas Valley Well PZ-4	Regional	MW	28858	-1345	50
PZ-5	Mangas Valley Well PZ-5	Regional	MW	29028	-1063	65
PZ-6	Mangas Valley Well PZ-6	Regional	MW	28743	-1510	21
PZ-9	Mangas Valley Well PZ-9	Regional	MW	28961	-1206	61
SXMW01	SKEW monitor well 01	Regional	MW	16524	8056	744
SXMW02	SKEW monitor well 02	Regional	MW	15903	7211	806
SXMW03	SKEW monitor well 03	Regional	MW	15651	8094	825
TWS-19	USNR DC well	Regional	MW	17970	1278	107
TWS-24	Deadman Canyon Well TWS24	Perched	MW	11516	3101	20
TWS-25	Deadman Canyon Well TWS25	Perched	MW	11537	3107	15
TWS-26	Deadman Canyon Well TWS26	Perched	MW	9598	3574	17
TWS-27	Deadman Canyon Well TWS27	Perched	MW	10124	3060	12
TWS-28	Deadman Canyon Well TWS28	Perched	MW	11850	2924	12
TWS-29	Deadman Canyon Well TWS29	Perched	MW	11580	2652	13
TWS-30	Deadman Canyon Well TWS30	Perched	MW	10676	2574	15
TWS-32	Deadman Canyon Well TWS32	Perched	MW	7624	3122	14
TWS-33	Deadman Canyon Well TWS33	Perched	MW	6773	2690	14
TWS-34	Deadman Canyon Well TWS34	Perched	MW	7502	2957	10
TWS-35	Deadman Canyon Well TWS35	Perched	MW	3267	1035	11
TWS-36	Deadman Canyon Well TWS36	Perched	MW	8269	3003	11
TWS-37	Deadman Canyon Well TWS37	Perched	MW	9208	3099	17
TWS-38	Deadman Canyon Well TWS38	Perched	MW	9366	3208	14
TWS-39	Deadman Canyon Well TWS39	Perched	MW	10064	2779	26
TWS-40	Deadman Canyon Well TWS40	Perched	MW	10587	1878	22
TWS-42	Deadman Canyon Well TWS42	Regional	MW	20026	544	154
TWS-8	Deadman Canyon Well	Regional	MW	6159	2779	131
TWS-9	USNR Leach Well	Regional	MW	10105	2314	175
3	Nigger Canyon	Regional	MW	22934	11568	100
16	D. Graves Well	Regional	MW	17735	2265	100
48		Regional	MW	18759	13444	100
18U-1	18 north trench	Perched	MW	11268	19243	100
18U-2	18 south trench	Perched	MW	10857	19369	100
1C-15		Perched	MW	2804	11104	100
1C-16		Perched	MW	3141	9376	100
396-2006-01		Perched	MW	5261	17695	100
396-2006-02		Regional	MW	5428	18036	100
396-2006-03		Perched	MW	5442	18054	100
396-2006-05		Perched	MW	6773	18966	100
396-2006-06		Perched	MW	6280	18516	100
EM-W1	East Main Dewtr. Well W1	Regional	MW	10145	13544	100
F	Wind Canyon Well	Regional	MW	51465	2526	100
MB-21	Mimbres Basin Well 21	Regional	EXW	1058	38301	100
MB-22	Mimbres Basin Well 22	Regional	EXW	-136	40867	100
MB-23	Mimbres Basin Well 23	Regional	EXW	-1151	45337	100
MB-7	Mimbres Basin Well, Section 35 Well	Regional	EXW	-1253	43283	100
MS-5	Fleming Jr. Well	Regional	MW	46572	-12433	100
MV-1		Perched	MW	18158	13848	100
MV-2		Perched	MW	18699	13400	100
MV-6		Perched	MW	19656	5787	100
OG-59	Oak Grove Well	Perched	EXW	7969	26478	100
OGTU-1	trench	Perched	MW	7019	20792	100
OGTU-2	trench	Perched	MW	6950	20785	100
OGTU-3	trench	Perched	MW	6887	20764	100
P-232		Regional	MW	19602	12401	100
P-233		Regional	MW	19568	13214	100
R38-76	RCH 38-76	Regional	MW	19549	5339	100
SMPDW2	Mn. Pit Dewtr. Well No. 2	Regional	MW	9400	13400	100

NOTE: Values in red are estimated

Total Depth

84,824 feet (TD)
3,000 feet (assumed TD)
87,824 Total

Wells Abandoned At Closure

CAD Pt #	LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth Total	Casing Depth	Casing Diameter	Casing Type	2" Casing Diameter Length	4" Casing Diameter Length	6" Casing Diameter Length
							(feet)	(feet)	(ID-inches)		(ft)	(ft)	(ft)
154	166-2008-03		Regional	MW	4973.7	10355.3	173.0	173.0	4	PVC		173	
155	166-2008-04		Regional	MW	4953.5	10358.6	56.5	56.5	4	PVC		56.5	
294	28A	28A Crusher Well	Regional	MW	17280.7	12400.3	463.0	463.0	4	PVC		463	
531	MVR-4		Regional	MW	16731.4	14159.1	200.0	200.0	4	PVC		200	
152	166-2008-01		Regional	MW	3553.4	8263.7	170.4	170.4	4	PVC		170.4	
153	166-2008-02		Regional	MW	3544.3	8251.3	474.2	474.2	4	PVC		474.2	
361	C1-10	No. 3 Leach Well	Perched	MW	17772.5	11387.6	51.5	51.5	2	PVC	51.5		
365	C1-13	No. 3 Leach Well	Perched	MW	17809.0	11394.0	43.0	43.0	4	PVC		43	
366	C1-14	No. 3 Leach Well	Perched	MW	17824.9	11397.0	16.4	16.4	4	PVC		16.4	
367	C1-15	No. 3 Leach Well	Perched	EXW	17840.4	11400.0	43.0	43.0	4	PVC		43	
369	C1-18	No. 3 Leach Well	Perched	EXW	17867.8	11451.9	46.2	46.2	4	PVC		46.2	
370	C1-19	No. 3 Leach Well	Perched	EXW	17815.7	11450.9	46.8	46.8	4	PVC		46.8	
371	C1-22	No. 3 Leach Well	Perched	EXW	17891.6	11451.8	44.7	44.7	4	PVC		44.7	
372	C1-23	No. 3 Leach Well	Perched	EXW	17842.7	11454.5	44.9	44.9	4	PVC		44.9	
373	C1-25	No. 3 Leach Well	Perched	EXW	17969.1	11522.4	32.0	32.0	4	PVC		32	
374	C1-28	No. 3 Leach Well	Perched	EXW	17971.3	11536.7	32.1	32.1	4	PVC		32.1	
375	C1-30	No. 3 Leach Well	Perched	EXW	17822.9	11397.6	45.8	45.8	4	PVC		45.8	
376	C1-31	No. 3 Leach Well	Perched	MW	17814.6	11387.2	46.6	46.6	4	PVC		46.6	
377	C1-33	No. 3 Leach Well	Perched	EXW	17880.9	11452.4	47.3	47.3	4	PVC		47.3	
378	C1-4	No. 3 Leach Well	Perched	MW	17840.5	11394.5	45.0	45.0	2	PVC	45		
379	C1-5	No. 3 Leach Well	Perched	MW	17813.8	11390.8	45.0	45.0	2	PVC	45		
724	P-6A	No. 3 Leach Well P-6A	Regional	MW	17741.6	11466.9	445.5	445.5	4	PVC		445.5	
725	P-6B	No. 3 Leach Well P-6B	Regional	MW	17829.4	11576.8	550.0	550.0	4	PVC		550	
726	P-6RRRR	No. 3 Leach Well P6RRRR	Regional	MW	17828.0	11439.0	405.0	405.0	4	PVC		405	
380	C2-11	No. 3 Leach Well	Perched	MW	18243.9	11431.8	32.0	32.0	2	PVC	32		
381	C2-12	No. 3 Leach Well	Perched	MW	18242.1	11432.1	33.0	33.0	4	PVC		33	
382	C2-4	No. 3 Leach Well	Perched	MW	18236.7	11400.7	32.3	32.3	2	PVC	32.3		
741	P-8A	No. 3 Leach Well P-8A	Regional	MW	18271.1	11360.4	425.0	424.8	4	PVC		425	
383.0	C3-1	No. 3 Leach Well	Perched	MW	18513.4	11349.2	23.0	23.0	2	PVC	23		
384.0	C3-11	No. 3 Leach Well	Perched	MW	18543.8	11381.2	20.0	20.0	2	PVC	20		
385.0	C3-13	No 3. Leach Well	Perched	MW	18542.8	11382.1	22.8	22.8	4	PVC		22.8	
386	C4-24	No. 3 Leach Well	Perched	EXW	19336.7	11116.2	44.2	44.2	6	PVC			44.2
387	C4-25	No. 3 Leach Well	Perched	EXW	19345.5	11108.6	43.8	43.8	6	PVC			43.8
388	C4-26	No. 3 Leach Well	Perched	MW	19339.3	11112.5	37.8	37.8	4	PVC		37.8	
389	C4-28	No. 3 Leach Well	Perched	EXW	19321.9	11137.1	42.0	42.0	4	PVC		42	
390	C4-29	No. 3 Leach Well	Perched	MW	19357.6	11115.3	42.0	42.0	4	PVC		42	
391	C4-30	No. 3 Leach Well C4-30	Perched	EXW	19435.4	11253.7	70.5	70.5	4	PVC		70.5	
392	C4-31	No. 3 Leach Well C4-31	Perched	EXW	19386.6	11273.8	69.5	69.5	4	PVC		69.5	
393	C4-4	No. 3 Leach Well	Perched	MW	19306.1	11098.4	36.0	36.0	4	PVC		36	
394	C4-6	No 3. Leach Well	Perched	MW	19312.3	11090.0	34.0	34.0	4	PVC		34	
613	P-13A	No. 3 Leach Well 13A	Regional	EXW	19269.1	11222.3	180.0	180.0	4	PVC		180	
397	C5-10	No. 3 Leach Well	Perched	EXW	19714.8	10681.3	37.3	37.3	4	PVC		37.3	
398	C5-14	No. 3 Leach Well	Perched	MW	19715.5	10685.2	37.0	37.0	2	PVC	37		
399	C5-15	No. 3 Leach Well	Perched	MW	19715.6	10684.9	42.0	42.0	6	PVC			42
400	C5-3	No. 3 Leach Well	Perched	MW	19710.7	10689.6	39.5	39.5	4	PVC		39.5	
401	C5-6	No. 3 Leach Well	Perched	MW	19704.5	10697.7	11.0	11.0	4	PVC		11	
402	C5-9	No. 3 Leach Well	Perched	EXW	19712.0	10685.3	36.9	36.9	4	PVC		36.9	
536	O-5R	No. 3 Leach Observation Well 5R	Regional	MW	19879.5	10771.9	208.7	208.7	4	PVC		208.7	
605	P-10A	No. 3 Leach Well 10A	Regional	MW	19977.0	10695.2	295.0	295.0	9	Steel			
728	P-71A		Regional	MW	19924.0	10732.0	119.0	119.0	4	PVC		119	
403	C6-1	No. 3 Leach Well	Perched	MW	20043.4	10384.2	40.0	40.0	4	PVC		40	
404	C6-10	No. 3 Leach Well	Perched	MW	20126.2	10421.0	45.0	45.0	4	PVC		45	
405	C6-11	No. 3 Leach Well	Perched	EXW	19967.5	10360.0	44.0	44.0	4	PVC		44	
406	C6-14	No. 3 Leach Well	Perched	MW	20138.1	10402.5	50.0	50.0	4	PVC		50	
407	C6-15	No. 3 Leach Well	Perched	EXW	19973.7	10352.1	40.3	40.3	4	PVC		40.31	
408	C6-16	No. 3 Leach Well	Perched	EXW	19976.4	10347.3	40.5	40.5	4	PVC		40.5	
409	C6-17	No. 3 Leach Well	Perched	MW	19979.2	10309.3	40.1	40.1	4	PVC		40.1	
410	C6-18	No. 3 Leach Well	Perched	MW	19959.0	10370.0	42.0	42.0	4	PVC		42	
411	C6-19	No. 3 Leach Well	Perched	MW	19978.9	10354.6	38.7	38.7	4	PVC		38.7	
412	C6-2	No. 3 Leach Well	Perched	MW	19964.3	10365.2	35.5	35.5	4	PVC		35.5	
413	C6-20	No. 3 Leach Well	Perched	EXW	19977.1	10359.1	43.1	43.1	4	PVC		43.1	
414	C6-33R	No. 3 Leach Well	Perched	MW	19997.2	10374.0	40.0	40.0	4	PVC		40	
415	C6-34	No. 3 Leach Well	Perched	EXW	19988.7	10385.9	41.0	41.0	6	PVC			41
416	C6-35	No. 3 Leach Well	Perched	EXW	20004.8	10354.7	40.1	40.1	6	PVC			40.1
417	C6-36	No. 3 Leach Well	Perched	EXW	20008.9	10347.0	38.7	38.7	6	PVC			38.7
418	C6-4	No. 3 Leach Well	Perched	MW	19979.2	10309.3	30.5	30.5	4	PVC		30.5	
419	C6-43	No. 3 Leach Well	Perched	MW	19993.0	10378.4	38.9	38.9	4	PVC		38.9	
420	C6-44	No. 3 Leach Well	Perched	MW	20005.9	10350.8	35.8	35.8	2	PVC	35.8		
421	C6-45	No. 3 Leach Well	Perched	EXW	20000.6	10360.8	40.5	40.5	6	PVC			40.5
422	C6-46	No. 3 Leach Well	Perched	EXW	20000.4	10367.4	43.9	43.9	6	PVC			43.9
423	C6-47	No. 3 Leach Well	Perched	MW	20002.5	10357.8	38.7	38.7	2	PVC	38.7		
424	C6-48	No. 3 Leach Well	Perched	MW	19998.5	10369.9	39.5	39.5	2	PVC	39.5		
425	C6-5	No. 3 Leach Well	Perched	MW	20108.6	10379.2	42.5	42.5	4	PVC		42.5	
426	C6-53	No. 3 Leach well	Perched	EXW	19997.2	10374.0	44.5	44.5	4	PVC		44.5	
427	C6-59	No. 3 Leach Well	Perched	MW	19988.8	10299.2	33.0	33.0	4	PVC		33	
428	C6-6	No. 3 Leach Well	Perched	MW	19983.3	10332.6	38.0	38.0	4	PVC		38	
429	C6-60	No. 3 Leach Well	Perched	MW	19977.0	10299.2	36.5	36.5	4	PVC		36.5	
430	C6-61	No. 3 Leach Well	Perched	MW	19981.5	10360.1	42.0	42.0	4	PVC		42	
431	C6-62	No. 3 Leach Well	Perched	MW	19981.2	10363.1	42.0	42.0	4	PVC		42	
432	C6-63	No. 3 Leach Well	Perched	EXW	19978.5	10365.8	43.0	43.0	4	PVC		43	
433	C6-64	No. 3 Leach Well	Perched	MW	19978.2	10369.9	43.0	43.0	4	PVC		43	
434	C6-65	No. 3 Leach Well	Perched	EXW	19968.5	10295.4	38.0	38.0	4	PVC		38	
435	C6-9	No. 3 Leach Well	Perched	MW	20157.5	10385.3	47.0	47.0	4	PVC		47	
612	P-12A	No. 3 Leach Well 12A	Regional	EXW	20082.6	10343.8	125.0	125.0	6	PVC			125
617	P-16	No. 3 Leach Well P-16	Regional	MW	20021.3	10265.5	163.0	160.0	4	PVC		163	
631	P-17A	No. 3 Leach Well P-17A	Regional	MW	19966.9	10403.3	130.0	129.2	4	PVC		130	
645	P-19A	No. 3 Leach Well P-19A	Regional	MW	20234.5	10283.5	100.0	98.4	4	PVC		100	
618	P-161	No. 3 Leach Well P-161	Regional	MW	19998.3	10296.8	110.0	110.0	6	PVC			110
620	P-163	No. 3 Leach Well P-163	Regional	MW	20056.6	10263.4	116.0	115.0	6	PVC			116
622	P-165	No. 3 Leach Well P-165	Regional	MW	20162.1	10369.9	102.0	102.0	6	PVC			102
624	P-167	No. 3 Leach Well P-167	Regional	MW	20030.5	10269.6	111.0	106.0	6	PVC			111
632	P-182	No. 3 Leach Well P-182	Regional	EXW	20075.5	10255.8	150.0	146.0	6	PVC			150
633	P-183	No. 3 Leach Well P-183	Regional	MW	20075.4	10259.3	113.0	111.0	6	PVC			113
634	P-184	No. 3 Leach Well P-184	Regional	MW	20027.5	10277.2	115.0	113.0	6	PVC			115
636	P-187	No. 3 Leach Well P-187	Regional	MW	20065.5	10242.2	179.7	179.7	4	PVC		179.7	
637	P-188	No. 3 Leach Well P-188	Regional	EXW	20099.4	10227.9	179.8	179.4	4	PVC		179.8	
638	P-189	No. 3 Leach Well P-189	Regional	EXW	20146.7	10206.3	149.6	149.2	4	PVC		149.6	
640	P-193	No. 3 Leach Well P-193	Regional	MW	20165.7	10319.1	159.9	159.5	4	PVC		159.9	
644	P-198	No. 3 Leach Well P-198	Regional	EXW	20095.2	10268.1	155.0	150.0	4	PVC		155	
663	P-226	No. 3 Leach Well P-226	Regional	MW	20104.4	10223.3	240.0	240.0	4	PVC		240	
436	C7-15	No. 3 Leach Well	Perched	EXW	20318.4	9623.1	34.5	34.5	4	PVC		34.5	
627	P-174	No. 3 Leach Well P-174	Regional	EXW	20350.5	9554.2	150.0	150.0	6	PVC			150
629	P-177	No. 3 Leach Well P-177	Regional	EXW	20352.9	9564.8	150.7	148.7	6	PVC			150.7
641	P-194	No. 3 Leach Well P-194	Regional	EXW	20359.1	9575.4	155.0	15					

Wells Abandoned At Closure

CAD Pt #	LocID	LocDescrip	Aquifer	LocType	Northing	Easting	Depth Total (feet)	Casing Depth (feet)	Casing Diameter (ID-inches)	Casing Type	2" Casing Diameter Length (ft)	4" Casing Diameter Length (ft)	6" Casing Diameter Length (ft)
464	C8-8	No. 3 Leach Well	Perched	MW	20286.0	9085.0	46.0	46.0	4	PVC		46	
465	C8-9	No. 3 Leach Well	Perched	EXW	20279.0	9067.0	53.0	52.5	4	PVC		53	
607	P-11	No. 3 Leach Well 11	Regional	MW	20495.2	9142.5	145.3	145.3	4	PVC		145.3	
630	P-178	No. 3 Leach Well P-178	Regional	EXW	20334.0	9083.7	205.0	205.0	4	PVC		205	
635	P-185	No. 3 Leach Well P-185	Regional	EXW	20309.1	8883.1	200.0	199.5	4	PVC		200	
639	P-192	No. 3 Leach Well P-192	Regional	EXW	20315.5	8982.5	199.9	199.5	4	PVC		199.9	
642	P-195	No. 3 Leach Well P-195	Regional	EXW	20331.8	9069.5	185.0	183.0	6	PVC			185
648	P-205	No. 3 Leach Well P-205	Regional	EXW	20334.5	9109.4	175.0	170.0	6	PVC			175
649	P-206	No. 3 Leach Well P-206	Regional	EXW	20336.7	9132.7	170.0	170.0	6	PVC			170
650	P-208	No. 3 Leach Well P-208	Regional	MW	20489.4	9045.0	140.0	135.0	6	PVC			140
652	P-210	No. 3 Leach Well P-210	Regional	EXW	20361.0	9108.8	169.0	164.0	6	PVC			169
660	P-220	No. 3 Leach Well P-220	Regional	EXW	20313.4	8978.3	220.0	217.0	6	PVC			220
661	P-221	No. 3 Leach Well P-221	Regional	EXW	20315.4	8953.7	216.0	213.0	6	PVC			216
672	P-235		Regional	EXW	20270.5	8850.9	207.0	207.0	6	PVC			207
466	C9-3	No. 3 Leach Well	Perched	MW	20252.6	8659.2	52.5	52.5	4	PVC		52.5	
467	C9-5	No. 3 Leach Well C9-5	Regional	MW	20304.4	8669.3	185.0	185.0	4	PVC		185	
671	P-234		Regional	EXW	20264.5	8689.6	210.0	210.0	4	PVC		210	
344	C10-17	No. 3 Leach Well	Perched	EXW	20173.1	8225.8	53.3	53.5	4	PVC		53.3	
345	C10-18	No. 3 Leach Well	Perched	EXW	20171.0	8231.8	55.5	55.5	4	PVC		55.5	
355	C10-55	No. 3 Leach Well	Perched	EXW	20718.2	8471.5	44.4	44.4	6	PVC			44.4
356	C10-57	No. 3 Leach Well	Perched	MW	20716.0	8474.6	40.0	40.0	4	PVC		40	
357	C10-58	No. 3 Leach Well	Perched	EXW	20711.0	8482.3	45.8	45.8	6	PVC			45.8
358	C10-59	No. 3 Leach Well	Perched	MW	20709.6	8486.1	39.5	39.5	4	PVC		39.5	
360	C10-8	No. 3 Leach Well C10-8	Regional	MW	20274.7	8191.2	193.0	193.0	4	PVC		193	
655	P-215	No. 3 Leach Well P-215	Regional	EXW	20181.5	8136.5	207.2	202.2	6	PVC			207.2
656	P-216	No. 3 Leach Well P-216	Regional	EXW	20198.5	8273.4	200.0	195.0	6	PVC			200
657	P-217	No. 3 Leach Well P-217	Regional	EXW	20222.9	8407.3	199.8	194.8	6	PVC			199.8
673	P-236		Regional	EXW	20179.6	7987.3	230.0	224.0	6	PVC			230
362	C11-1	No. 3 Leach Well C11-1	Regional	MW	20223.1	7568.7	210.0	210.0	4	PVC		210	
364	C11-16	No. 3 Leach Well	Perched	EXW	20202.0	7555.1	36.0	36.0	4	PVC		36	
368	C11-6	No. 3 Leach Well	Perched	MW	20200.4	7554.1	37.8	37.8	4	PVC		37.83	
647	P-203	No. 3 Leach Well P-203	Regional	EXW	20161.1	7289.6	245.0	245.0	4	PVC		245	
662	P-225	No. 3 Leach Well P-225	Regional	MW	20154.5	7289.6	221.0	221.0	4	PVC		221	
664	P-227		Regional	MW	20180.7	7300.5	295.5	290.5	4	PVC		295.5	
665	P-228		Regional	MW	20172.6	7376.8	255.0	249.0	4	PVC		255	
666	P-229		Regional	MW	20157.1	7221.1	243.0	237.5	4	PVC		243	
668	P-230		Regional	MW	20441.0	7312.4	235.0	221.0	4	PVC		235	
674	P-237		Regional	EXW	20171.9	7833.6	230.0	224.0	6	PVC			230
675	P-238		Regional	EXW	20182.0	7690.3	235.0	229.0	6	PVC			235
676	P-239		Regional	EXW	20174.3	7442.9	244.0	238.0	6	PVC			244
679	P-240		Regional	EXW	20163.9	7552.8	242.0	236.0	6	PVC			242
680	P-241		Regional	EXW	20154.3	7092.5	260.0	259.0	4	PVC		260	
623	P-166	No. 3 Leach Well P-166	Regional	MW	20377.7	10120.0	113.0	110.0	4	PVC		113	

NOTE: Values in red are estimated

Totals (feet): 431 11726 5684

APPENDIX C.5

SEEDING AREAS

Seeding_Dates.txt

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Years and approximate acreage for each area that was seeded.

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2004

Burro Mountain Tailing Impoundment - 58 acres December 2004 (communication from Chuck Johnson 2012)

2005

Burro Mountain - 1.3 acres December 2005 (communication from Mandy Lila 2013)
Tailing 3x - 365 acres December 2005 (MWH takeoffs Appendix C.1)

2006

Tailing 3 - 643 acres December 2006 (MWH takeoffs Appendix C.1)

2007

Mill Site - 56 acres (used 45 acres 11 acres re=done in 2010) April 2007
(communication from Mandy Lila 2013)

2009

#1 Stockpile - 500 acres December 2009 (communication from Mandy Lila 2013)
1, 1A, 1x Tailing Impoundment 1547 acres September 2009 (MWH takeoffs Appendix C.1)
Tailing 2 - 606 acres September 2009 (MWH takeoffs Appendix C.1)

2010 (communication from Mandy Lila 2013)

7AFW Stockpile - 34 acres Decmeber 2010
7AW Upper - 38.2 acres Decmeber 2010
7AW wing - 7.7 acres Decmeber 2010

Mill Site re-do 11 acres August 2010 (communication from Chuck Johnson 2012)

2011 (communication from Mandy Lila 2013)

1C Stockpile: Ridge/Valley 15-19 - 45 acres December 2011
7AW wing - 4 acres December 2011
7AE Upper - 18.3 acres December 2011

2012 (communication from Mandy Lila 2013)

7AE Upper - 27.2 acres December 2012
1C Stockpile - 111.7 acres December 2012

Seeding_Dates.txt

No Man's Land - 4 acres Decmber 2012

2015 (Telesto calculation in 2012)

Copper Mountain Reclamation Area - 51.4 acres January 2015

Remaining lauder line & tailings pipeline / associated
features NW of tailing thickeners - 100 acres January 2015

APPENDIX C.6
POWERLINES, UTILITIES, AND PIPELINES

Power lines, Utilities, and Pipelines

Item	Take-off	Reference
Power line Demolition (3 PLS to 1x1 Pond installed 2012)	10,300	New Powerline installed in 2012; Chuck Johnson 11/28/2012 (20120828_Fig 2 Typical 1X1 Transmission Line Pole Detail AZ.pdf)
Power pole Demolition (3 PLS to 1x1 Pond installed 2012)	36	New Powerline installed in 2012; Chuck Johnson 11/28/2012 (20120828_Fig 2 Typical 1X1 Transmission Line Pole Detail AZ.pdf)
Powerlines to substations or spurs for buildings to be demolished (closed with Building Demolition)	66,200 feet	2013 Blue Stake Map -Mandy Lila (5/23/13)
Power poles to substations or spurs for buildings to be demolished (closed with Building Demolition)	135	2013 Blue Stake Map -Mandy Lila (5/23/13)
Telephone lines around demo buildings (closed with Building Demolition)	1,400 feet	2013 Blue Stake Map -Mandy Lila (5/23/13)
Light poles around demo buildings (closed with Building Demolition)	13	2013 Blue Stake Map -Mandy Lila (5/23/13)
Fire Hydrants, mainly by SXEW (closed with Building Demolition)	14	2013 Blue Stake Map -Mandy Lila (5/23/13)
San Salvador Pit powerline demo (closed with Building Demolition)	5,222 feet	2013 Blue Stake Map -Mandy Lila (5/29/13) and Planned (2013 LOM for CCP.dwg)
San Salvador Pit powerline power poles (closed with Building Demolition)	17 (5,222 feet / 300 feet / pole)	Planned
PLS pipelines located outside stockpile regrade footprint and around exterior of the Mine Stockpile Unit (Year 6 of closure):	11,342 feet	2013 Blue Stake Map -Todd Stein (5/29/13)
PLS pipelines located within the interior portion of the Mine Stockpile Unit and outside the stockpile regrade footprint (Year 6 of closure):	18,893 feet	2013 Blue Stake Map- Todd Stein (5/29/13)
PLS pipelines located within the SX/EW Plant area and outside the stockpile regrade footprint (Year 6 of closure):	1,052 feet	2013 Blue Stake Map- Todd Stein (5/29/13)
Sewer pipelines located within the SX/EW Plant area and outside the stockpile regrade footprint (Year 6 of closure):	1,414 feet	2013 Blue Stake Map -Todd Stein (5/29/13)
Water treatment pipelines (alternative 1; demolished year 100)	74,500 feet	Planned, Todd Stein (5/29/13)

**EARTHWORK COST ESTIMATE
APPENDIX D
COST ESTIMATE
(ELECTRONIC COPY ONLY –
INCLUDED IN ENCLOSED CD)**