



**COLORADO**  
Division of Reclamation,  
Mining and Safety  
Department of Natural Resources

July 27, 2022

Jeff Harms  
McAtee Construction Company  
P.O. Box 1908  
Sterling, CO 80751

**Re: Riverside Pit - File No. M-1976-056  
McAtee Construction Company  
Amendment (AM-3)  
Amendment 3 Application**

Dear Jeff Harms:

On July 27, 2022 the Division of Reclamation, Mining and Safety concluded its review of the Amendment application submitted to the Division on January 21, 2022, addressing the following:

This amendment is proposing to add 8.42 acres to the permit and will become part of the Lake Marjorie area. No additional changes to the mining or reclamation plan are proposed.

The decision reached by the Division is: approve.

The terms of Amendment No. 3 approved by the Division are hereby incorporated into Permit No. M-1976-056. All other conditions and requirements of Permit No. M-1976-056 remain in full force and effect.

The revised liability amount exceeds the financial warranty currently held (see below), please submit additional bond or a rider to your existing bond that equals or exceeds the Revised Liability. The revision will not be final until the bond is approved by the Division.

Bond Held:	\$175,000.00
Prior Liability:	\$175,000.00
Change in Liability:	\$43,000.00
Revised Liability:	\$218,000.00
Prior Permit Acreage:	102.60
Change in Permit Acreage:	8.42
Revised Permit Acreage:	111.02
Prior Affected Acreage:	102.60



Change in Affected Acreage:	8.42
Revised Affected Acreage:	111.02

If you have any questions, please contact me by telephone at (303) 866-3567 x 8142, or by email at Brock.bowles@state.co.us.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brock Bowles".

Brock F. Bowles  
Environmental Protection Specialist

cc: Jeff Harms

M-GR-04

## COST SUMMARY WORK

Task description: Reclaim mining area

Site: Riverside Pit

Permit Action: 2022 AM3

Permit/Job#: M1976056

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 7/1/2022

County: Logan

Filename: M056-000

User: BFB

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Replace 6" of topsoil on 40 acres	SCRAPER1	1	63.45	\$33,092
002	Grading above waterline	GRADER	1	30.81	\$4,108
003	Regrade Working Face - East and West Lakes	DOZER	1	93.05	\$24,544
004	Rip 8.57 Acre Plant Area	RIPPER	1	15.99	\$4,619
005	Revegetate 40 Acres	REVEGE	1	80.00	\$88,576
006	Mob / Demob	MOBILIZE	1	4.32	\$5,609
007	Armor Lake Marjorie and East Lake	TRUCK1	1	4.94	\$2,647
<b><u>SUBTOTALS:</u></b>				<b>292.56</b>	<b>\$163,195</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$3,297

Performance bond: 1.05

Total = \$1,714

Job superintendent: 181.83

Total = \$13,661

Profit: 10.00

Total = \$16,320

TOTAL O & P = \$34,990

CONTRACT AMOUNT (direct + O & P) = \$198,185

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): \$500

Total = \$500

Engineering work and/or contract/bid preparation: 4.25

Total = \$8,423

Reclamation management and/or administration: 5.00

\$9,909

CONTINGENCY: 0.00

Total = \$0

TOTAL INDIRECT COST = \$53,823

**TOTAL BOND AMOUNT (direct + indirect) = \$217,018**

**SCRAPER TEAM WORK**Task description: **Replace 6" of topsoil on 40 acres**Site: **Riverside Pit**Permit Action: **2022 AM3**Permit/Job#: **M1976056****PROJECT IDENTIFICATION**Task #: **001**State: **Colorado**Abbreviation: **None**Date: **7/1/2022**County: **Logan**Filename: **M056-001**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT**COSTShift basis: **1 per day**

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 12M
-Water Truck:	NA

**Cost Breakdown:****Scraper Work Team****Support Equipment****Maintenance Equipment**

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	20	NA
Ownership cost/hour:	\$200.41	NA	NA	NA	\$57.51	NA
Operating cost/hour:	\$194.76	NA	NA	NA	\$9.45	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	\$0.00	NA
Ripper op. cost/hour:	NA	NA	NA	NA	\$0.00	NA
Operator cost/hour:	\$30.90	NA	NA	NA	\$28.56	NA
Unit Subtotals:	\$426.07	NA	NA	NA	\$95.51	NA
Number of Units:	1	0	0	0	1	0
Group Subtotals:	Work: \$426.07		Support:	\$0.00	Maint:	\$95.51

Total work team cost/hour: **\$521.58****MATERIAL QUANTITIES**Initial volume: **32,367**

CCY

Swell factor: **1.215**Loose volume: **39,326**

LCY

Source of estimated volume: **AM3 Application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b><u>1,600 lbs/LCY</u></b>	Struck Volume:	<b><u>24.00</u></b>	LCY
Material description:	<b><u>Top Soil</u></b>	Heaped Volume:	<b><u>34.00</u></b>	LCY
Rated Payload:	<b><u>81,600 pounds</u></b>	Average Volume:	<b><u>29.00</u></b>	LCY
Payload Capacity:	<b><u>51.00 LCY</u></b>	Adjusted Capacity:	<b><u>29.00</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.70 MinutesJob Condition Correction:

Site Altitude: 3900 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2227	0.43

Haul Time: 0.43 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2890	0.40

Return Time: 0.40 minutesTotal Scraper team cycle time: 2.33 minutesAdjusted for job conditions: 619.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 619.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 619.83 LCY/HourUnadjusted unit production/hour: 746.78 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 63.45 HoursUnit cost: \$0.841 /LCYTotal job cost: \$33,092

## MOTOR GRADER WORK

Task description: Grading above waterline

Site: Riverside Pit

Permit Action: 2022 AM3

Permit/Job#: M1976056

### PROJECT IDENTIFICATION

Task #: 002

State: Colorado

Abbreviation: None

Date: 7/1/2022

County: Logan

Filename: 2

User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Horsepower: 158

Ripper Attachment: \_\_\_\_\_

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$57.51	NA
Operating Cost/Hour:	\$47.24	100
Ripper Ownership Cost/Hour:	\$0.00	NA
Ripper Operating Cost/Hour:	\$0.00	
Operator Cost/Hour:	\$28.56	NA
Total Unit Cost/Hour:	\$133.31	
Total Fleet Cost/Hour:	<b>\$133.31</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 40.00 acres

Source of estimated acreage: AM3 Permit Application

### HOURLY PRODUCTION

Average Grader Speed:	<u>1.50</u>	mph
Selected Application:	<u>Finish grading (0-2.5 mph) - 1.5</u>	
Selected Blade Angle:	<u>30</u>	degrees
Effective Blade Length:	<u>10.40</u>	feet
Width of blade overlap per pass:	<u>2.00</u>	feet
Net grading or ripping width per pass:	<u>8.40</u>	feet
Unadjusted Hourly Unit Production:	<u>1.5273</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 3900 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.85</u>	(1sh/d, mod.)
Net Correction:	<u>0.8500</u>	multiplier

Adjusted Hourly Unit Production: 1.2982 acres/Hour

Adjusted Hourly Fleet Production: **1.2982** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **30.81** Hours

Unit cost: \$102.69 per acre Total job cost: **\$4,108**

**BULLDOZER WORK**Task description: Regrade Working Face - East and West LakesSite: Riverside PitPermit Action: 2022 AM3Permit/Job#: M1976056**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 7/1/2022County: LoganFilename: 3User: BFBAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$124.85</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$97.63</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>

Total unit Cost/Hour: \$263.78Total Fleet Cost/Hour: **\$263.78****MATERIAL QUANTITIES**Initial Volume: 57,505Swell factor: 1.099Loose volume: **63,192 LCY**Source of estimated volume: AM3 ApplicationSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feetUnadjusted hourly production: 1,400.0 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: -30 %Average site altitude: 3,900 feetMaterial weight: 3,400 lbs/LCYWeight description: Sand and gravel - Wet**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>0.900</u>	<u>(CAT HB))</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>
Job efficiency:	<u>0.830</u>	<u>(1 SHIFT/DAY)</u>

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.676	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4851

Adjusted unit production: 679.14 LCY/hr

Adjusted fleet production: **679.14** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.388/LCY

Total job time: **93.05** Hours

Total job cost: **\$24,544**



## BULLDOZER RIPPING WORK

Task description: Rip 8.57 Acre Plant Area

Site: Riverside Pit Permit Action: 2022 AM3 Permit/Job#: M1976056

### PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None  
Date: 7/1/2022 County: Logan Filename: 4  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310  
Ripper Attachment: 1-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$16.38	NA
Ripper Operating Cost/Hour:	\$8.60	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$288.76	
Total Fleet Cost/Hour:	<b>\$288.76</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 8.57 acres Rip Depth (ft): 0.50 Volume: 6,913 BCY or CCY

Source of estimated quantity: AM-02 Permit Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 3.71 feet/pass  
Average Ripping Width: 5.56 feet/pass  
Average Ripping Length: 500.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.646 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.646 Acres/hr  
Site Altitude: 3,900 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.54 Acres/hr  
Adjusted Hourly Fleet Production: **0.54** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **15.99** Hours

Unit cost: \$538.938 Per acre Total job cost: **\$4,619**

REVEGETATION WORKTask description: Revegetate 40 AcresSite: Riverside PitPermit Action: 2022 AM3Permit/Job#: M1976056PROJECT IDENTIFICATIONTask #: 005State: ColoradoAbbreviation: NoneDate: 7/1/2022County: LoganFilename: 5User: BFBAgency or organization name: DRMSFERTILIZING**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
0-20-20, 4-8-12, 10-10-10	10.00	pound	\$0.23	\$2.30
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$2.30</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$39.64
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$39.64</b>

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$117.18
<b>Total Tilling Cost/Acre</b>	<b>\$117.18</b>

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Nebraska 28	1.00	8.93	\$13.50
Sideoats Grama - Butte	2.00	6.57	\$18.00
Little Bluestem - Pastura	3.50	20.89	\$47.19
Sand Bluestem - Garden Co.	3.00	7.78	\$73.58
Western Wheatgrass - Arriba	3.00	7.58	\$19.50
<b>Totals Seed Mix</b>	<b>12.50</b>	<b>51.74</b>	<b>\$171.77</b>

**Application**

Description	Cost /Acre
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Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$421.36	\$842.72
<b>Total Mulch Materials Cost/Acre</b>				<b>\$842.72</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$73.00
Power mulcher (MEANS 32 91 13.16 0350)	\$141.57
Weed spray, hand, aquatic area, nox. [DMG]	\$183.16
<b>Total Mulch Application Cost/Acre</b>	<b>\$397.73</b>

**NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
<b>Totals Nursery Stock Cost / Acre</b>					<b>\$0.00</b>

**JOB TIME AND COST**

No. of Acres: 40  
 Estimated Failure Rate: 25%  
 \*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: \$1,803.34  
 Cost /Acre\*: \$1,644.22

Initial Job Cost: **\$72,133.60**  
 Reseeding Job Cost: **\$16,442.20**  
 Total Job Cost: **\$88,576**  
 Job Hours: **80.00**

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mob / Demob**Site: **Riverside Pit**Permit Action: **2022 AM3**Permit/Job#: **M1976056****PROJECT IDENTIFICATION**Task #: **006**State: **Colorado**Abbreviation: **None**Date: **7/1/2022**County: **Logan**Filename: **6**User: **BFB**Agency or organization name: **DRMS****EQUIPMENT TRANSPORT RIG COST**Shift basis: **1 per day**Cost Data Source: **CRG Data**Truck Tractor Description: **GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)**Truck Trailer Description: **GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT  
TRAILER (25T, 50T, AND 100T)****Cost Breakdown:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
Ownership Cost/Hour:	\$15.25	\$23.06	\$37.58
Operating Cost/Hour:	\$25.26	\$30.83	\$51.41
Operator Cost/Hour:	\$27.71	\$27.71	\$27.71
Helper Cost/Hour:	\$0.00	\$20.22	\$20.22
Total Unit Cost/Hour:	\$68.22	\$101.82	\$136.92

**NON ROADABLE EQUIPMENT:**

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat 631G	52.50	\$200.41	\$136.92	1	\$337.33	\$136.92	\$250.00
CAT 12M	16.01	\$57.51	\$68.22	1	\$125.73	\$68.22	\$250.00
Cat D8T - 8SU	53.08	\$137.95	\$136.92	1	\$274.87	\$136.92	\$250.00
CAT 962H	20.95	\$40.53	\$68.22	1	\$108.75	\$68.22	\$250.00

Subtotals: **\$846.68** **\$410.28** **\$1,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$24.30	1	\$24.30	\$24.30
Drill/Broadcast Seeder with Tractor	\$13.99	1	\$13.99	\$13.99
Generic 8-10 cy, 6x4	\$91.11	1	\$91.11	\$91.11

Subtotals: **\$129.40** **\$129.40**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	STERLING, CO	
Total one-way travel distance:	2.00	miles
Average Travel Speed:	25.00	mph

Total Non-Roadable Mob/Demob Cost *	\$5,587.83
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	\$20.70
** one round trip, no haul rig:	

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.08	0.08
Return Time (Hours):	0.08	0.08
Loading Time (Hours):	1.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	2.16	0.16

**JOB TIME AND COST**

Total job time:	4.32	Hours
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Total job cost:	\$5,609
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TRUCK/LOADER TEAM WORKTask description: Armor Lake Marjorie and East LakeSite: Riverside PitPermit Action: 2022 AM3Permit/Job#: M1976056PROJECT IDENTIFICATIONTask #: 007State: ColoradoAbbreviation: NoneDate: 7/1/2022County: LoganFilename: 7User: BFBAgency or organization name: DRMSHOURLY EQUIPMENT COSTShift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 8-10 cy, 6x4
-Loader:	CAT 962H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 12M
-Water Truck:	NA

Cost Breakdown:

## Truck/Loader Team

## Support Equipment

## Maintenance Equipment

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	20	NA
Ownership cost/hour:	\$15.43	\$40.53	NA	\$124.85	\$57.51	NA
Operating cost/hour:	\$43.77	\$35.70	NA	\$97.63	\$9.45	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	NA
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	NA
Operator cost/hour:	\$0.00	\$40.71	NA	\$41.30	\$28.56	NA
Unit Subtotals:	\$59.20	\$116.94	NA	\$263.78	\$95.51	NA
Number of Units:	1	1	0	1	1	0
Group Subtotals:	Work: \$176.14		Support: \$263.78		Maint: \$95.51	

Total work team cost/hour: \$535.43MATERIAL QUANTITIESInitial volume: 710

CCY

Swell factor: 1.000Loose volume: 710

LCY

Source of estimated volume: AM3 Bank Protection Plan 7/19/2022Source of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00HOURLY PRODUCTIONTruck Capacity:

Truck Payload (weight) Basis:

Material weight: 3,300

Pounds/LCY

Description: Decomposed rock - 75% Rock, 25% EarthRated Payload: 27,280

Pounds

Payload Capacity: 8.27

LCY

Truck Bed (volume) Basis:

Struck Volume:	8.00	LCY
Heaped Volume:	10.00	LCY
Average Volume:	9.00	LCY
Adjusted Volume:	8.27	LCY

Final Truck Volume Based on Number of Loader Passes: 7.74 LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.900	Other - cemented materials (85 - 95%) 0.900
Adjusted Capacity:	<b>3.870</b>	LCY

Job Condition Corrections:

Site Altitude (ft.): 3900 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	<b>0.830</b>	<b>0.830</b>	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 2 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA  
 Selected Value within this Basic Rating: NA

Track Loaders – Material Description: \_\_\_\_\_

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 6" and over diameter 0.03	0.030	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.050	minutes
Adjusted Loader Cycle Time:		<b>0.450</b>	minutes
Net Load Time per Truck:		<b>0.550</b>	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.550	Minutes	Adjusted for site altitude:	0.550	Minutes
Truck Maneuver and Dump Time:	0.80	Minutes	Adjusted for site altitude:	0.800	Minutes

Truck Travel (Haul & Return) Time:  
maintained 3.0

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2824	0.458

Haul Time: **0.458** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2874	0.376

Return Time: **0.376** minutesTotal Truck Cycle Time: **2.684** minutes

## Loading Tool unit

Production 442.29 LCY/Hour      Adjusted for job efficiency: 367.10 LCY/Hour

Truck Unit Production 173.03 LCY/Hour      Adjusted for job efficiency: 143.61 LCY/Hour

Optimal No. of Trucks: 3 Truck(s)      Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 143.61 LCY/Hour  
Adjusted single truck/loader team production: 143.61 LCY/Hour  
Adjusted multiple truck/loader team production: **143.61** LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: **4.94** Hours

Unit cost: \$3.728 /LCY      Total job cost: **\$2,647**