



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

May 30, 2024

Justin Bilyeu  
Shale Tech International Services LLC  
1354 County Road 246  
Rifle, CO 81650

**Re: Duck Creek Mine - File No. M-2013-022**  
**Shale Tech International Services LLC**  
**Surety Increase (SI-1)**  
**Notice of Surety Increase based on site conditions of 8-8-23 inspection and inflationary increase.**

Dear Justin Bilyeu:

On May 30, 2024 the Division of Reclamation, Mining and Safety increased the current Financial Warranty for this permit to \$575,251.00, in accordance with Rule 4.2.1 of the Rules and Regulations. This is an increase of \$179,368.14.

Notice of Surety Increase based on site conditions of 8-8-23 inspection and inflationary increase. Draft calculation provided to Operator with updated unit costs in Q1 of 2024. No objections ready to issue.

Please see the August 8, 2023 inspection report for details regarding why this surety increase is required.

On May 30, 2024, the Division ordered amendment of the current Financial Warranty or submittal of a new Financial Warranty reflecting the increase, within 60 days.

Please make arrangements with Sara M. Stevenson-Benn at the Division's Denver office for submittal of the financial warranty. Any other questions regarding completion, execution and/or submittal of financial warranty forms should also be directed to Sara M. Stevenson-Benn by telephone at (303) 866-3567 (8148), or by email at Sara.stevenson-benn@state.co.us.

The Permittee for this site may be scheduled for a Formal Board Hearing for possible revocation of the permit if the amount of any increased Financial Warranty has not been provided by July 29, 2024.

Bond Held:	\$395,882.86
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Prior Liability:	\$395,882.86
Change in Liability:	\$179,368.14
Revised Liability:	\$575,251.00
Prior Permit Acreage:	5.00
Change in Permit Acreage:	0.00
Revised Permit Acreage:	5.00
Prior Affected Acreage:	5.00
Change in Affected Acreage:	0.00
Revised Affected Acreage:	5.00

If you have any questions, please contact me by telephone at (303) 866-3567 x 8183, or by email at Amy.yeldell@state.co.us.

Sincerely,



Amy C. Yeldell  
Environmental Protection Specialist

cc: Deena Stanley

M-GR-04

## COST SUMMARY WORK

Task description: 2023 Updated cost

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: ACY

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-ACY

User: ACY

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Transport and place 6,618 LCY of backfill in Area 1	LOADER	1	18.13	\$2,926
02a	Place and grade backfill in Area 1	EXCAVATE	1	7.57	\$1,933
03a	Place topsoil over Area 1	EXCAVATE	1	0.95	\$244
04a	Backfill Area 2	EXCAVATE	1	12.92	\$3,299
05a	Transport topsoil 500' to Area 2	LOADER	1	1.00	\$163
05b	Place topsoil on Area 2	EXCAVATE	1	0.81	\$209
06a	Backfill Area 3	DOZER	1	45.65	\$19,476
07a	Contour backfilled slope in Area 3	EXCAVATE	1	55.15	\$14,075
08a	Purchase 1,800 Cy of topsoil and deliver to site	TRUCK1	1	412.51	\$318,401
09a	Transport 1800 CY topsoil 300' from dump location to Area 3	LOADER	1	5.29	\$854
10a	Distribute topsoil in Area 3	EXCAVATE	1	3.87	\$989
11a	Revegetate 5 acres disturbance	REVEGE	1	24.00	\$78,234
12a	Initial Mobilization	MOBILIZE	1	10.00	\$13,458
12b	Secondary Mobilization	MOBILIZE	1	4.00	\$1,023
<b><u>SUBTOTALS:</u></b>				<b>601.85</b>	<b>\$455,284</b>

**INDIRECT COSTS****OVERHEAD AND PROFIT:**

Liability insurance:	2.02	Total =	<u>\$9,197</u>
Performance bond:	1.05	Total =	<u>\$4,780</u>
Job superintendent:	300.93	Total =	<u>\$19,584</u>
Profit:	10.00	Total =	<u>\$45,528</u>
		TOTAL O & P =	<u>\$79,090</u>
		CONTRACT AMOUNT (direct + O & P) =	<u>\$534,374</u>

**LEGAL - ENGINEERING - PROJECT MANAGEMENT:**

Financial warranty processing (legal/related costs):	<u>\$500</u>	Total =	<u>\$500</u>
Engineering work and/or contract/bid preparation:	<u>0.00</u>	Total =	<u>\$0</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$26,719</u>
CONTINGENCY: 3.00		Total =	<u>\$13,659</u>
		TOTAL INDIRECT COST =	<u>\$119,967</u>
		<b>TOTAL BOND AMOUNT (direct + indirect) =</b>	<b><u>\$575,251</u></b>

**WHEEL LOADER – LOAD AND CARRY WORK**Task description: Transport and place 6,618 LCY of backfill in Area 1Site: Duck Creek MinePermit Action: 2023Permit/Job#: M2013022**PROJECT IDENTIFICATION**Task #: 01AState: ColoradoAbbreviation: NoneDate: 12/18/2023County: Rio BlancoFilename: M022-01aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 980HAttachment 1: ROPS CabHorsepower: 315Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$61.69	NA
Operating Cost/Hour:	\$58.92	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$161.32	
Total Fleet Cost/Hour:	\$161.32	

**MATERIAL QUANTITIES**Initial volume: 6,620

CCY

Swell factor: 1.000Loose volume: 6,620

LCY

Source of estimated volume: Table C1Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Independently owned trucks 0.04	0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Fragile target 0.05	0.050	(Cat HB)
Net Cycle Time Adjustment:		0.060	minutes
Adjusted Basic Cycle Time:		0.610	minutes

**Rolling Resistance – Road Conditions**Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	200	0.00	5.00	5.00	0.1768	(Cat HB)
Return Route:	200	0.00	5.00	5.00	0.1599	(Cat HB)

Total Travel Time: 0.3367 minutes  
 Total Cycle Time: 0.9467 minutes

Load Bucket Capacity

Rated Capacity: 7.50 LCY (heaped)  
 Bucket Fill Factor: 0.925 Shale, Sandstone-Standing Bank ( 85%-100%) 0.925  
 Adjusted Capacity: 6.94 LCY

Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 439.70 LCY/Hour  
 Adjusted Hourly Unit Production: 364.95 LCY/Hour  
 Adjusted Hourly Fleet Production: 364.95 LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Loader(s) Total job time: 18.14 Hours  
 Unit cost: \$0.442 /LCY Total job cost: \$2,926

## HYDRAULIC EXCAVATOR WORK

Task description: Place and grade backfill in Area 1

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: 02A

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-02a

User: ACY

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick

Attachment 1: ROPS Cab

Horsepower: 380

Weight (MT): 49.37

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.73	NA
Operating Cost/Hour:	\$96.14	100
Operator Cost/Hour:	\$37.32	NA
Total Unit Cost/Hour:	\$255.19	
Total Fleet Cost/Hour:	\$255.19	

### MATERIAL QUANTITIES

Initial volume: 2,978

CCY

Swell factor: 1.000

Loose volume: 2,978

LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 3.14 LCY (heaped)

Bucket Fill Factor: 0.825 Blasted rock - avg. blasted (75 - 90%) 0.825

Adjusted Capacity: 2.59 LCY

#### Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	0.96	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.80	multiplier

Unadjusted Hourly Unit Production: 493.43 LCY/Hour

Adjusted Hourly Unit Production: 393.16 LCY/Hour

Adjusted Hourly Fleet Production: 393.16 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 7.57 Hours

Unit cost: \$0.649 /LCY Total job cost: \$1,933

## HYDRAULIC EXCAVATOR WORK

Task description: Place topsoil over Area 1

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: 03A

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-03a

User: ACY

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick

Attachment 1: ROPS Cab

Horsepower: 380

Weight (MT): 49.37

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$121.73</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$96.14</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.32</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$255.19</u>	
Total Fleet Cost/Hour:	<u>\$255.19</u>	

### MATERIAL QUANTITIES

Initial volume: 444

CCY

Swell factor: 1.000

Loose volume: 444

LCY

Source of estimated volume: Table C1

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 3.14 LCY (heaped)

Bucket Fill Factor: 0.975 Loose material - uniform aggregates to 1/8" (95-100%) 0.975

Adjusted Capacity: 3.06 LCY

#### Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	<u>0.96</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.80</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 583.14 LCY/Hour

Adjusted Hourly Unit Production: 464.65 LCY/Hour

Adjusted Hourly Fleet Production: 464.65 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 0.96 Hours

Unit cost: \$0.549 /LCY Total job cost: \$244



## HYDRAULIC EXCAVATOR WORK

Task description: Backfill Area 2

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: 04A

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-04a

User: ACY

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick

Attachment 1: ROPS Cab

Horsepower: 380

Weight (MT): 49.37

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.73	NA
Operating Cost/Hour:	\$96.14	100
Operator Cost/Hour:	\$37.32	NA
Total Unit Cost/Hour:	\$255.19	
Total Fleet Cost/Hour:	\$255.19	

### MATERIAL QUANTITIES

Initial volume: 5,082

CCY

Swell factor: 1.000

Loose volume: 5,082

LCY

Source of estimated volume: Table C1

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 3.14 LCY (heaped)

Bucket Fill Factor: 0.825 Blasted rock - avg. blasted (75 - 90%) 0.825

Adjusted Capacity: 2.59 LCY

#### Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	0.96	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.80	multiplier

Unadjusted Hourly Unit Production: 493.43 LCY/Hour

Adjusted Hourly Unit Production: 393.16 LCY/Hour

Adjusted Hourly Fleet Production: 393.16 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 12.93 Hours

Unit cost: \$0.649 /LCY Total job cost: \$3,299

**WHEEL LOADER – LOAD AND CARRY WORK**Task description: Transport topsoil 500' to Area 2Site: Duck Creek MinePermit Action: 2023Permit/Job#: M2013022**PROJECT IDENTIFICATION**Task #: 05AState: ColoradoAbbreviation: NoneDate: 12/18/2023County: Rio BlancoFilename: M022-05aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 980HAttachment 1: ROPS CabHorsepower: 315Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$61.69	NA
Operating Cost/Hour:	\$58.92	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$161.32	
Total Fleet Cost/Hour:	\$161.32	

**MATERIAL QUANTITIES**Initial volume: 380

CCY

Swell factor: 1.000Loose volume: 380

LCY

Source of estimated volume: Table C1Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Fragile target 0.05	0.050	(Cat HB)
Net Cycle Time Adjustment:		0.030	minutes
Adjusted Basic Cycle Time:		0.580	minutes

**Rolling Resistance – Road Conditions**Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	200	0.00	5.00	5.00	0.1768	(Cat HB)
Return Route:	200	0.00	5.00	5.00	0.1599	(Cat HB)

Total Travel Time: 0.3367 minutes  
 Total Cycle Time: 0.9167 minutes

Load Bucket Capacity

Rated Capacity: 7.50 LCY (heaped)  
 Bucket Fill Factor: 0.925 Loose material - 1/8" to 3/8" (90 - 95%) 0.925  
 Adjusted Capacity: 6.94 LCY

Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 454.08 LCY/Hour  
 Adjusted Hourly Unit Production: 376.89 LCY/Hour  
 Adjusted Hourly Fleet Production: 376.89 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 1.01 Hours  
 Unit cost: \$0.428 /LCY Total job cost: \$163

## HYDRAULIC EXCAVATOR WORK

Task description: Place topsoil on Area 2

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: 05B

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-05b

User: ACY

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick

Attachment 1: ROPS Cab

Horsepower: 380

Weight (MT): 49.37

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.73	NA
Operating Cost/Hour:	\$96.14	100
Operator Cost/Hour:	\$37.32	NA
Total Unit Cost/Hour:	\$255.19	
Total Fleet Cost/Hour:	\$255.19	

### MATERIAL QUANTITIES

Initial volume: 380

CCY

Swell factor: 1.000

Loose volume: 380

LCY

Source of estimated volume: Table C1

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 3.14 LCY (heaped)

Bucket Fill Factor: 0.975 Loose material - uniform aggregates to 1/8" (95-100%) 0.975

Adjusted Capacity: 3.06 LCY

#### Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	<u>0.96</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.80</u>	multiplier

Unadjusted Hourly Unit Production: 583.14 LCY/Hour

Adjusted Hourly Unit Production: 464.65 LCY/Hour

Adjusted Hourly Fleet Production: 464.65 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 0.82 Hours

Unit cost: \$0.549 /LCY Total job cost: \$209

**BULLDOZER WORK**Task description: **Backfill Area 3**Site: **Duck Creek Mine**Permit Action: **2023**Permit/Job#: **M2013022****PROJECT IDENTIFICATION**Task #: **06A**State: **Colorado**Abbreviation: **None**Date: **12/18/2023**County: **Rio Blanco**Filename: **M022-06a**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **NA**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<b><u>Utilization %</u></b>
Ownership Cost/Hour:	\$241.38	NA
Operating Cost/Hour:	\$143.92	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$426.60**Total Fleet Cost/Hour: **\$426.60****MATERIAL QUANTITIES**Initial Volume: **23,000**Swell factor: **1.000**Loose volume: **23,000 LCY**Source of estimated volume: **Previous estimates**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**Unadjusted hourly production: **852.6 LCY/hr**Materials consistency description: **Loose stockpile 1.2**Average push gradient: **5 %**Average site altitude: **7,350 feet**Material weight: **2,100 lbs/LCY**Weight description: **Shale****Job Condition Correction Factor**

		<b><u>Source</u></b>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5909

Adjusted unit production: 503.80 LCY/hr

Adjusted fleet production: **503.8** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.847/LCY

Total job time: **45.65** Hours

Total job cost: **\$19,476**

## HYDRAULIC EXCAVATOR WORK

Task description: Contour backfilled slope in Area 3

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: 07A

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-07a

User: ACY

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick

Attachment 1: ROPS Cab

Horsepower: 380

Weight (MT): 49.37

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.73	NA
Operating Cost/Hour:	\$96.14	100
Operator Cost/Hour:	\$37.32	NA
Total Unit Cost/Hour:	\$255.19	
Total Fleet Cost/Hour:	\$255.19	

### MATERIAL QUANTITIES

Initial volume: 23,000

CCY

Swell factor: 1.000

Loose volume: 23,000

LCY

Source of estimated volume: Table C1

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 3.14 LCY (heaped)

Bucket Fill Factor: 0.875 Loose material - 1" and over (85 - 90%) 0.875

Adjusted Capacity: 2.75 LCY

#### Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	0.96	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.80	multiplier

Unadjusted Hourly Unit Production: 523.33 LCY/Hour

Adjusted Hourly Unit Production: 416.99 LCY/Hour

Adjusted Hourly Fleet Production: 416.99 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 55.16 Hours

Unit cost: \$0.612 /LCY Total job cost: \$14,075

**TRUCK/LOADER TEAM WORK**Task description: Purchase 1,800 Cy of topsoil and deliver to siteSite: Duck Creek MinePermit Action: 2023Permit/Job#: M2013022**PROJECT IDENTIFICATION**Task #: 08AState: ColoradoAbbreviation: NoneDate: 12/18/2023County: Rio BlancoFilename: M022-08aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-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	NA	NA	NA
Ownership cost/hour:	\$26.39	\$61.69	NA	NA	NA	NA
Operating cost/hour:	\$64.76	\$58.92	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$32.54	\$40.71	NA	NA	NA	NA
Unit Subtotals:	\$123.69	\$161.32	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$408.70		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$408.70**MATERIAL QUANTITIES**Initial volume: 1,800

CCY

Swell factor: 1.215Loose volume: 2,187

LCY

Source of estimated volume: 2023 Updated Costs from OperatorSource of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$68.50Total Cost: \$149,809.50**HOURLY PRODUCTION****Truck Capacity:**Truck Payload (weight) Basis:Material weight: 1,600

Pounds/LCY

Description: Top SoilRated Payload: 50,300

Pounds

Payload Capacity: 31.44

LCY



**Truck Bed (volume) Basis:**

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **14.63** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - uniform aggregates to 1/8" (95-100%) 0.975
Adjusted Capacity:	<b>7.313</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 7350 feet

	<b>Truck</b>	<b>Loader</b>	<b>Source</b>
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): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Independently owned trucks 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:		0.000	minutes
Adjusted Loader Cycle Time:		<b>0.550</b>	minutes
Net Load Time per Truck:		<b>0.650</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.650	Minutes	Adjusted for site altitude:	0.650	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	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	343200.00	2.00	3.00	5.00	2218	154.849

Haul Time: **154.849** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	343200.00	-2.00	3.00	1.00	2913	117.851

Return Time: **117.851** minutesTotal Truck Cycle Time: **274.750** minutes

## Loading Tool unit

Production 763.04 LCY/Hour      Adjusted for job efficiency: 633.33 LCY/Hour  
Truck Unit Production 3.19 LCY/Hour      Adjusted for job efficiency: 2.65 LCY/Hour

Optimal No. of Trucks: 239 Truck(s)      Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 5.30 LCY/Hour  
Adjusted single truck/loader team production: 5.30 LCY/Hour  
Adjusted multiple truck/loader team production: **5.30** LCY/Hour

**JOB TIME AND COST**Fleet size: 1 Team(s)      Total job time: **412.51** HoursUnit cost: \$77.088 /LCY      Total job cost: **\$318,401**

**WHEEL LOADER – LOAD AND CARRY WORK**Task description: Transport 1800 CY topsoil 300' from dump location to Area 3Site: Duck Creek MinePermit Action: 2023Permit/Job#: M2013022**PROJECT IDENTIFICATION**Task #: 09AState: ColoradoAbbreviation: NoneDate: 12/18/2023County: Rio BlancoFilename: M022-09aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 980HAttachment 1: ROPS CabHorsepower: 315Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$61.69	NA
Operating Cost/Hour:	\$58.92	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$161.32	
Total Fleet Cost/Hour:	\$161.32	

**MATERIAL QUANTITIES**Initial volume: 1,800

CCY

Swell factor: 1.000Loose volume: 1,800

LCY

Source of estimated volume: Table C1Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		-0.040	minutes
Adjusted Basic Cycle Time:		0.510	minutes

**Rolling Resistance – Road Conditions**Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	-3.00	5.00	2.00	0.2190	(Cat HB)
Return Route:	300	3.00	5.00	8.00	0.2870	(Cat HB)

Total Travel Time: 0.5060 minutes  
 Total Cycle Time: 1.0160 minutes

Load Bucket Capacity

Rated Capacity: 7.50 LCY (heaped)  
 Bucket Fill Factor: 0.925 Loose material - 1/8" to 3/8" (90 - 95%) 0.925  
 Adjusted Capacity: 6.94 LCY

Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 409.69 LCY/Hour  
 Adjusted Hourly Unit Production: 340.04 LCY/Hour  
 Adjusted Hourly Fleet Production: 340.04 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 5.29 Hours  
 Unit cost: \$0.474 /LCY Total job cost: \$854

## HYDRAULIC EXCAVATOR WORK

Task description: Distribute topsoil in Area 3

Site: Duck Creek Mine

Permit Action: 2023

Permit/Job#: M2013022

### PROJECT IDENTIFICATION

Task #: 10A

State: Colorado

Abbreviation: None

Date: 12/18/2023

County: Rio Blanco

Filename: M022-10a

User: ACY

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick

Attachment 1: ROPS Cab

Horsepower: 380

Weight (MT): 49.37

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$121.73</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$96.14</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.32</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$255.19</u>	
Total Fleet Cost/Hour:	<u>\$255.19</u>	

### MATERIAL QUANTITIES

Initial volume: 1,800

CCY

Swell factor: 1.000

Loose volume: 1,800

LCY

Source of estimated volume: Table C1

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 3.14 LCY (heaped)

Bucket Fill Factor: 0.975 Loose material - uniform aggregates to 1/8" (95-100%) 0.975

Adjusted Capacity: 3.06 LCY

#### Job Condition Correction Factors

Site Altitude: 7350 feet

		Source
Altitude Adj:	<u>0.96</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.80</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 583.14 LCY/Hour

Adjusted Hourly Unit Production: 464.65 LCY/Hour

Adjusted Hourly Fleet Production: 464.65 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 3.87 Hours

Unit cost: \$0.549 /LCY Total job cost: \$989

**REVEGETATION WORK**Task description: Revegetate 5 acres disturbanceSite: Duck Creek MinePermit Action: 2023Permit/Job#: M2013022**PROJECT IDENTIFICATION**Task #: 11AState: ColoradoAbbreviation: NoneDate: 12/18/2023County: Rio BlancoFilename: M022-11aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$0.00</b>

**Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

**TILLING**

Description	Cost /Acre
Hand raking (MEANS 32 91 13.23 0250)	\$1,655.28
<b>Total Tilling Cost/Acre</b>	<b>\$1,655.28</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	4.00	12.95	\$35.50
Bluebunch Wheatgrass - Secar	4.00	12.86	\$43.50
Bitterbrush, Antelope	2.00	0.62	\$39.00
Thickspike Wheatgrass - Critana	4.00	14.14	\$27.50
Sweetvetch, Utah or Northern	2.00	0.91	\$150.00
Western Wheatgrass - Rosanna	4.00	10.10	\$23.00
Prairie Junegrass	2.00	106.31	\$52.00
Sagebrush, Wyoming Big	4.00	236.55	\$93.00
Saltbush, Four Wing	2.00	2.75	\$25.00

<b>Totals Seed Mix</b>	28.00	397.18	<b>\$488.50</b>
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**Application**

<b>Description</b>	<b>Cost /Acre</b>
Broadcast seeding [DMG]	\$267.22
<b>Total Seed Application Cost/Acre</b>	<b>\$267.22</b>

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

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
Deleted - Silt fence, adverse cond. (MEANS 31 25 14.16 1100)	2,400.00	LINEAR FOOT	\$0.00	\$0.00
Herbicide - 2,4D @ 1.0 pt/ac	6.00	ACRE	\$4.01	\$24.04
Jute mesh #2, stapled (MEANS 31 25 14.16 0300)	5.00	ACRE	\$1,306.80	\$6,534.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$6,558.04</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Jute mesh #2 (MEANS 31 25 14.16 0300)	\$3,533.20
Silt fence, Labor + Maint for 6 months (MEANS 32 25 14.16 1100)	\$15.18
<b>Total Mulch Application Cost/Acre</b>	<b>\$3,548.38</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 5 Cost /Acre: \$12,517.42  
 Estimated Failure Rate: 25% Cost /Acre\*: \$12,517.42  
 \*Selected Replanting Work Items: TILLING,SEEDING,MULCHING  
 Initial Job Cost: \$62,587.10  
 Reseeding Job Cost: \$15,646.78  
 Total Job Cost: \$78,234  
 Job Hours: 24.00

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Initial Mobilization**Site: **Duck Creek Mine**Permit Action: **2023**Permit/Job#: **M2013022****PROJECT IDENTIFICATION**Task #: **12A**State: **Colorado**Abbreviation: **None**Date: **12/18/2023**County: **Rio Blanco**Filename: **M022-12a**User: **ACY**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:	\$20.26	\$36.04	\$47.05
Operating Cost/Hour:	\$39.51	\$76.08	\$82.85
Operator Cost/Hour:	\$22.52	\$22.52	\$22.52
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$82.29	\$158.17	\$175.95

**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 345D L 12'-10" Stick	54.31	\$121.73	\$175.95	1	\$297.68	\$175.95	\$250.00
CAT 980H	33.12	\$61.69	\$158.17	1	\$219.86	\$158.17	\$500.00
Cat D8T - 8SU	47.71	\$241.38	\$158.17	1	\$399.55	\$158.17	\$250.00
Generic 12-18 cy, 6x4	9.85	\$26.39	\$82.29	2	\$217.36	\$164.58	\$500.00

Subtotals: **\$1,134.45** **\$656.87** **\$1,500.00****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	\$127.92	2	\$255.84	\$255.84

Subtotals: **\$255.84** **\$255.84**



**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>90.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$12,434.18</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$1,023.36</u>
** one round trip, no haul rig:	

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>2.00</u>	<u>2.00</u>
Return Time (Hours):	<u>2.00</u>	<u>2.00</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>5.00</u>	<u>4.00</u>

**JOB TIME AND COST**

Total job time:	<u>10.00</u>	Hours
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Total job cost:	<u>\$13,458</u>
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**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: Secondary MobilizationSite: Duck Creek MinePermit Action: 2023Permit/Job#: M2013022**PROJECT IDENTIFICATION**Task #: 12BState: ColoradoAbbreviation: NoneDate: 12/18/2023County: Rio BlancoFilename: M022-12bUser: ACYAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per dayCost Data Source: CRG DataTruck 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:	\$20.26	\$36.04	\$47.05
Operating Cost/Hour:	\$39.51	\$76.08	\$82.85
Operator Cost/Hour:	\$22.52	\$22.52	\$22.52
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$82.29	\$158.17	\$175.95

**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
Subtotals:					<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

**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	\$127.92	2	\$255.84	\$255.84
Subtotals:			<b>\$255.84</b>	<b>\$255.84</b>

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: GRAND JUNCTION  
 Total one-way travel distance: 90.00 miles  
 Average Travel Speed: 45.00 mph

Total Non-Roadable Mob/Demob Cost \* \$0.00  
 \*\* two round trips with haul rig:  
 Total Roadable Mob/Demob Cost \*\* \$1,023.36  
 \*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>2.00</u>	<u>2.00</u>
Return Time (Hours):	<u>2.00</u>	<u>2.00</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>5.00</u>	<u>4.00</u>

**JOB TIME AND COST**

Total job time: 4.00 Hours

Total job cost: \$1,023