



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

May 26, 2022

Russell A. Larsen
Grand Junction Pipe & Supply Co.
556 Struthers Ave.
Grand Junction, CO 81501-3826

**Re: 23 Road Pit - File No. M-1979-089
Grand Junction Pipe & Supply Co.
Technical Revision Application (TR-8)
Update Reclamation Plan**

Dear Russell A. Larsen:

On May 26, 2022 the Division of Reclamation, Mining and Safety concluded its review of the Technical Revision application submitted to the Division on May 11, 2022, addressing the following:

Update reclamation plan to reconfigure lakes and clarify remaining tasks related to bonding

The decision reached by the Division is: approve. Reclamation plan revised to align with current site conditions. Bond increased based on revised figures. Operator provided an estimate for review prior to issuance, no objections/adjustments made.

The terms of Technical Revision No. 8 approved by the Division are hereby incorporated into Permit No. M-1979-089. All other conditions and requirements of Permit No. M-1979-089 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:	\$242,500.00
Prior Liability:	\$242,500.00
Change in Liability:	\$38,373.00
Revised Liability:	\$280,873.00
Prior Permit Acreage:	82.00
Change in Permit Acreage:	0.00
Revised Permit Acreage:	82.00



Prior Affected Acreage:	89.00
Change in Affected Acreage:	0.00
Revised Affected Acreage:	89.00

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: Jon Mueller

COST SUMMARY WORK

Task description: Updated per TR- Figures provided

Site: 23 Road Pit

Permit Action: TR-8

Permit/Job#: M1979089

PROJECT IDENTIFICATION

Task #: ACY

State: Colorado

Abbreviation: None

Date: 5/16/2022

County: Mesa

Filename: M089-ACY

User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Remove Structures and Debris from site	DEMOLISH	1	8.00	\$1,246
02a	Pond 2 - Dewater prior to slope grading	PUMPING	1	35.61	\$5,469
02b	Pond 2 - Grade slopes to 3H:1V	DOZER	2	4.40	\$2,071
02c	Pond 2 - Transport topsoil	LOADER	1	14.69	\$2,308
02d	Pond 2 - Grade half of transported topsoil	DOZER	2	0.39	\$186
02e	Pond 2 - Reveg	REVEGE	1	2.00	\$4,904
03a	Pond 3 - Dewater prior to slope grading	PUMPING	1	38.86	\$5,967
03b	Pond 3 - Grade slopes to 3H:1V	DOZER	2	2.35	\$1,106
03c	Pond 3 - Transport topsoil	LOADER	1	13.68	\$2,150
03d	Pond 3 - Grade half of transported topsoil	DOZER	2	0.37	\$173
03e	Pond 3 - Reveg	REVEGE	1	2.00	\$4,616
04a	Pond 4 - Dewater prior to slope grading	PUMPING	1	80.68	\$12,388
04b	Pond 4 - Grade slopes to 3H:1V	DOZER	2	53.04	\$24,943
04c	Pond 4 - Transport topsoil	LOADER	1	59.40	\$9,331
04d	Pond 4 - Grade half of transported topsoil	DOZER	2	1.59	\$749
04e	Pond 4 - Reveg	REVEGE	1	2.00	\$20,194
05a	Decompact stockpile area	RIPPER	2	20.12	\$10,474
05b	Transport topsoil of stockpile area	LOADER	1	195.68	\$30,737
05c	Grade half of transported topsoil for stockpile area	DOZER	2	5.72	\$2,689
05d	Reveg stockpile area	REVEGE	1	40.00	\$59,157
06a	Plant trees	REVEGE	1	30.00	\$2,318
10a	Initial Mobilization	MOBILIZE	1	2.50	\$11,431
10b	Secondary Mobilization	MOBILIZE	1	2.50	\$1,438
<u>SUBTOTALS:</u>				615.58	\$216,045

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
Performance bond: 1.05
Job superintendent: 230.00
Profit: 10.00

Total = \$4,364

Total = \$2,268

Total = \$16,567

Total = \$21,604

TOTAL O & P = \$44,804

CONTRACT AMOUNT (direct + O & P) = \$260,849

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>\$13,042</u>
CONTINGENCY:	3.00	Total =	<u>\$6,481</u>
		TOTAL INDIRECT COST =	<u>\$64,828</u>
		TOTAL BOND AMOUNT (direct + indirect) =	<u>\$280,873</u>

DEMOLITION WORK

Task description: Remove Structures and Debris from site

Site: 23 Road Pit

Permit Action: TR-8

Permit/Job#: M1979089

PROJECT IDENTIFICATION

Task #: 01A

State: Colorado

Abbreviation: None

Date: 5/16/2022

County: Mesa

Filename: M089-01a

User: ACY

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 90.70 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Remove Scale	70' x 12'	Loading and 2 mile haul, no salvage - Machine loading	31.00	CY	\$18.25	\$565.75
Demo Office	9' x 18' x 8'	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	1,296.00	CF	\$0.20	\$260.50
Remove Misc. Equipment/Scrap	30 CY	Loading and 2 mile haul, no salvage - Machine loading	30.00	CY	\$18.25	\$547.50

Job Hours: 8.00

Subtotal
(unadjusted): \$1,373.75

Total Cost
(adjusted for location): \$1,245.99

PUMPING WORK

Task description: Pond 2 - Dewater prior to slope grading

Site: 23 Road Pit

Permit Action: TR-8

Permit/Job#: M1979089

PROJECT IDENTIFICATION

Task #: 02A

State: Colorado

Abbreviation: None

Date: 5/16/2022

County: Mesa

Filename: M089-02a

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Submersible pump - 460v, 8 in.	3
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	3
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	12
Labor Unit 1:	Pump operator (same as 1st)	3

Horsepower: 95

Shift Basis: 1 per day

Weight: 0.70

(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$54.30	NA
Operating Cost/Hour:	\$14.55	100
Operator Cost/Hour:	\$84.69	NA
Total Unit Cost/Hour:	\$153.54	

Total Fleet Cost/Hour: \$153.54

PUMPING QUANTITIES

Initial Pond Volume:	47.60		Conversion factor:	325850.5800
Final Pond Volume:	15,510,487.61	gallons		
Total Pond Inflow Surface Area:	690,960	Sq. ft.	Unit inflow rate in gph/sq. ft.:	0.1758
Total Pond Inflow Volume per Hour:	121,470.77	gallons		

Source of estimated volume: TR-8

PUMPING TIME

Maximum Pump Capacity:	170,000	gph/pump
Estimated Suction Head:	15	feet
Estimated Discharge Head:	15	feet
Total Head:	30	feet
CPB Pump Capacity:	165,600	gph/pump
Site Altitude:	4,532	feet
Adjusted Pumping Capacity:	496,800	gph
Initial Unadjusted Pumping Time:	31.22	hours
Inflow during Initial Pumping:	3,792,413	gallons
Net Unadjusted Pumping Time:	38.85	Hours
Altitude Adjustment Factor:	1.0000	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	35.62	hours

JOB TIME AND COST

Total job time: 35.62 Hours

Unit cost: \$0.000283 /Gallon

Total job cost: \$5,469

BULLDOZER WORKTask description: **Pond 2 - Grade slopes to 3H:1V**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **02B**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-02b**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:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$235.13**Total Fleet Cost/Hour: **\$470.25****MATERIAL QUANTITIES**Initial Volume: **2,425**Swell factor: **1.110**Loose volume: **2,692 LCY**Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **60 feet**Unadjusted hourly production: **1,246.9 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **15 %**Average site altitude: **4,532 feet**Material weight: **2,800 lbs/LCY**Weight description: **Clay - Natural bed****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(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:	0.666	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2451

Adjusted unit production: 305.62 LCY/hr

Adjusted fleet production: **611.24** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.769/LCY

Total job time: **4.40** Hours

Total job cost: **\$2,071**

WHEEL LOADER – LOAD AND CARRY WORKTask description: **Pond 2 - Transport topsoil**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **02C**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-02c**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 972H**Attachment 1: **ROPS Cab**Horsepower: **287**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$60.09	NA
Operating Cost/Hour:	\$61.01	100
Operator Cost/Hour:	\$35.97	NA
Total Unit Cost/Hour:	\$157.07	
Total Fleet Cost/Hour:	\$157.07	

MATERIAL QUANTITIESInitial volume: **1,390**

CCY

Swell factor: **1.215**Loose volume: **1,689**

LCY

Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): **0.525** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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 Basic Cycle Time:		0.475	minutes

Rolling Resistance – Road ConditionsHaul: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Return: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0****Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	1000	0.00	8.00	8.00	1.1616	(Cat HB)
Return Route:	1000	0.00	8.00	8.00	1.0324	(Cat HB)

Total Travel Time: 2.1940 minutes
 Total Cycle Time: 2.6690 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 6.16 LCY

Job Condition Correction Factors

Site Altitude: 4532 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: 138.48 LCY/Hour
 Adjusted Hourly Unit Production: 114.94 LCY/Hour
 Adjusted Hourly Fleet Production: 114.94 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 14.69 Hours
 Unit cost: \$1.367 /LCY Total job cost: \$2,308

BULLDOZER WORKTask description: **Pond 2 - Grade half of transported topsoil**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **02D**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-02d**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:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$235.13**Total Fleet Cost/Hour: **\$470.25****MATERIAL QUANTITIES**Initial Volume: **846**Swell factor: **1.000**Loose volume: **846 LCY**Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **60 feet**Unadjusted hourly production: **1,246.9 LCY/hr**Materials consistency description: **Loose stockpile 1.2**Average push gradient: **0 %**Average site altitude: **4,532 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor**

		<u>Source</u>
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:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,071.46 LCY/hr

Adjusted fleet production: **2142.92** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.219/LCY

Total job time: **0.39** Hours

Total job cost: **\$186**

REVEGETATION WORKTask description: **Pond 2 - Reveg**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **02E**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-02e**User: **ACY**Agency or organization name: **DRMS****FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	250.00	pound	\$1.33	\$332.50
			Total Fertilizer Materials Cost/Acre	\$332.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
Total Fertilizer Application Cost/Acre	\$38.77

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$114.56
Total Tilling Cost/Acre	\$114.56

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	1.00	39.03	\$28.48
Nebraska Sedge	1.00	20.94	\$166.50
Slender Wheatgrass - San Luis	3.00	10.95	\$12.75
Red Top	1.00	114.55	\$7.88
Reedgrass, Canadian (or Blue Joint)	0.50	51.42	\$101.63
Reedgrass, Northern - Native	0.50	51.42	\$68.33
Saltgrass, Inland	1.00	13.86	\$42.80
Timothy - Climax	1.00	28.70	\$1.60
Basin Wildrye - Trailhead	1.50	6.10	\$23.12
Totals Seed Mix	10.50	336.97	\$453.07

Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$2.98	\$5.96
Herbicide - Curtail @ 4.0 pt/ac	2.00	ACRE	\$7.78	\$15.56
Total Mulch Materials Cost/Acre				\$635.56

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
Weed spray, truck, aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$240.58

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres:	1.7	Cost /Acre:	\$2,047.04
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,675.77
*Selected Replanting Work Items:	TILLING,SEEDING,MULCHING		
Initial Job Cost:	\$3,479.97		
Reseeding Job Cost:	\$1,424.40		
Total Job Cost:	\$4,904		
Job Hours:	2.00		

PUMPING WORK

Task description: Pond 3 - Dewater prior to slope grading

Site: 23 Road Pit

Permit Action: TR-8

Permit/Job#: M1979089

PROJECT IDENTIFICATION

Task #: 03A

State: Colorado

Abbreviation: None

Date: 5/16/2022

County: Mesa

Filename: M089-03a

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Submersible pump - 460v, 8 in.	3
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	3
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	12
Labor Unit 1:	Pump operator (same as 1st)	3

Horsepower: 95

Shift Basis: 1 per day

Weight: 0.70

(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$54.30	NA
Operating Cost/Hour:	\$14.55	100
Operator Cost/Hour:	\$84.69	NA
Total Unit Cost/Hour:	\$153.54	

Total Fleet Cost/Hour: \$153.54

PUMPING QUANTITIES

Initial Pond Volume:	<u>56.00</u>		Conversion factor:	<u>325850.5800</u>
Final Pond Volume:	<u>18,247,632.48</u>	gallons		
Total Pond Inflow Surface Area:	<u>435,600</u>	Sq. ft.	Unit inflow rate in gph/sq. ft.:	<u>0.1758</u>
Total Pond Inflow Volume per Hour:	<u>76,578.48</u>	gallons		

Source of estimated volume: TR-8

PUMPING TIME

Maximum Pump Capacity:	<u>170,000</u>	gph/pump
Estimated Suction Head:	<u>15</u>	feet
Estimated Discharge Head:	<u>15</u>	feet
Total Head:	<u>30</u>	feet
CPB Pump Capacity:	<u>165,600</u>	gph/pump
Site Altitude:	<u>4,532</u>	feet
Adjusted Pumping Capacity:	<u>496,800</u>	gph
Initial Unadjusted Pumping Time:	<u>36.73</u>	hours
Inflow during Initial Pumping:	<u>2,812,754</u>	gallons
Net Unadjusted Pumping Time:	<u>42.39</u>	Hours
Altitude Adjustment Factor:	<u>1.0000</u>	(3% rule)
Pump Efficiency Factor:	<u>0.9167</u>	(55 min./hr.)
Total Adjusted Pumping Time:	<u>38.86</u>	hours

JOB TIME AND COST

Total job time: 38.86 Hours

Unit cost: \$0.000283 /Gallon

Total job cost: \$5,967

WHEEL LOADER – LOAD AND CARRY WORKTask description: **Pond 3 - Transport topsoil**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **03C**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-03c**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 972H**Attachment 1: **ROPS Cab**Horsepower: **287**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$60.09	NA
Operating Cost/Hour:	\$61.01	100
Operator Cost/Hour:	\$35.97	NA
Total Unit Cost/Hour:	\$157.07	
Total Fleet Cost/Hour:	\$157.07	

MATERIAL QUANTITIESInitial volume: **1,295**

CCY

Swell factor: **1.215**Loose volume: **1,573**

LCY

Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): **0.525** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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 Basic Cycle Time:		0.475	minutes

Rolling Resistance – Road ConditionsHaul: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Return: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0****Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	1000	0.00	8.00	8.00	1.1616	(Cat HB)
Return Route:	1000	0.00	8.00	8.00	1.0324	(Cat HB)

Total Travel Time: 2.1940 minutes
 Total Cycle Time: 2.6690 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 6.16 LCY

Job Condition Correction Factors

Site Altitude: 4532 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: 138.48 LCY/Hour
 Adjusted Hourly Unit Production: 114.94 LCY/Hour
 Adjusted Hourly Fleet Production: 114.94 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 13.69 Hours
 Unit cost: \$1.367 /LCY Total job cost: \$2,150

BULLDOZER WORKTask description: **Pond 3 - Grade half of transported topsoil**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **03D**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-03d**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:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$235.13**Total Fleet Cost/Hour: **\$470.25****MATERIAL QUANTITIES**Initial Volume: **787**Swell factor: **1.000**Loose volume: **787 LCY**Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **60 feet**Unadjusted hourly production: **1,246.9 LCY/hr**Materials consistency description: **Loose stockpile 1.2**Average push gradient: **0 %**Average site altitude: **4,532 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor**

		<u>Source</u>
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:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,071.46 LCY/hr

Adjusted fleet production: **2142.92** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.219/LCY

Total job time: **0.37** Hours

Total job cost: **\$173**

REVEGETATION WORKTask description: **Pond 3 - Reveg**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **03E**State: **Colorado**Abbreviation: **None**Date: **5/25/2022**County: **Mesa**Filename: **M089-03e**User: **ACY**Agency or organization name: **DRMS****FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	250.00	pound	\$1.33	\$332.50
			Total Fertilizer Materials Cost/Acre	\$332.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
Total Fertilizer Application Cost/Acre	\$38.77

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$114.56
Total Tilling Cost/Acre	\$114.56

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	1.00	39.03	\$28.48
Nebraska Sedge	1.00	20.94	\$166.50
Slender Wheatgrass - San Luis	3.00	10.95	\$12.75
Red Top	1.00	114.55	\$7.88
Reedgrass, Canadian (or Blue Joint)	0.50	51.42	\$101.63
Reedgrass, Northern - Native	0.50	51.42	\$68.33
Saltgrass, Inland	1.00	13.86	\$42.80
Timothy - Climax	1.00	28.70	\$1.60
Basin Wildrye - Trailhead	1.50	6.10	\$23.12
Totals Seed Mix	10.50	336.97	\$453.07

Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$2.98	\$5.96
Herbicide - Curtail @ 4.0 pt/ac	2.00	ACRE	\$7.78	\$15.56
Total Mulch Materials Cost/Acre				\$635.56

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
Weed spray, truck, aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$240.58

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres:	1.6	Cost /Acre:	\$2,047.04
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,675.77
*Selected Replanting Work Items:	TILLING,SEEDING,MULCHING		
Initial Job Cost:	\$3,275.26		
Reseeding Job Cost:	\$1,340.62		
Total Job Cost:	\$4,616		
Job Hours:	2.00		

PUMPING WORK

Task description: Pond 4 - Dewater prior to slope grading

Site: 23 Road Pit

Permit Action: TR-8

Permit/Job#: M1979089

PROJECT IDENTIFICATION

Task #: 04A

State: Colorado

Abbreviation: None

Date: 5/16/2022

County: Mesa

Filename: M089-04a

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Submersible pump - 460v, 8 in.	3
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	3
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	12
Labor Unit 1:	Pump operator (same as 1st)	3

Horsepower: 95

Shift Basis: 1 per day

Weight: 0.70

(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$54.30	NA
Operating Cost/Hour:	\$14.55	100
Operator Cost/Hour:	\$84.69	NA
Total Unit Cost/Hour:	\$153.54	

Total Fleet Cost/Hour: \$153.54

PUMPING QUANTITIES

Initial Pond Volume:	<u>126.40</u>		Conversion factor:	<u>325850.5800</u>
Final Pond Volume:	<u>41,187,513.31</u>	gallons		
Total Pond Inflow Surface Area:	<u>174,240</u>	Sq. ft.	Unit inflow rate in gph/sq. ft.:	<u>0.1758</u>
Total Pond Inflow Volume per Hour:	<u>30,631.39</u>	gallons		

Source of estimated volume: TR-8

PUMPING TIME

Maximum Pump Capacity:	<u>170,000</u>	gph/pump
Estimated Suction Head:	<u>15</u>	feet
Estimated Discharge Head:	<u>15</u>	feet
Total Head:	<u>30</u>	feet
CPB Pump Capacity:	<u>165,600</u>	gph/pump
Site Altitude:	<u>4,532</u>	feet
Adjusted Pumping Capacity:	<u>496,800</u>	gph
Initial Unadjusted Pumping Time:	<u>82.91</u>	hours
Inflow during Initial Pumping:	<u>2,539,515</u>	gallons
Net Unadjusted Pumping Time:	<u>88.02</u>	Hours
Altitude Adjustment Factor:	<u>1.0000</u>	(3% rule)
Pump Efficiency Factor:	<u>0.9167</u>	(55 min./hr.)
Total Adjusted Pumping Time:	<u>80.69</u>	hours

JOB TIME AND COST

Total job time: 80.69 Hours

Unit cost: \$0.000283 /Gallon

Total job cost: \$12,388

BULLDOZER WORKTask description: **Pond 4 - Grade slopes to 3H:1V**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **04B**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-04b**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:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$235.13**Total Fleet Cost/Hour: **\$470.25****MATERIAL QUANTITIES**Initial Volume: **39,900**Swell factor: **1.220**Loose volume: **48,678 LCY**Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **60 feet**Unadjusted hourly production: **1,246.9 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **0 %**Average site altitude: **4,532 feet**Material weight: **2,800 lbs/LCY**Weight description: **Clay - Natural bed****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(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:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3680

Adjusted unit production: 458.86 LCY/hr

Adjusted fleet production: **917.72 LCY/hr**

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.512/LCY

Total job time: **53.04 Hours**

Total job cost: **\$24,943**

WHEEL LOADER – LOAD AND CARRY WORKTask description: **Pond 4 - Transport topsoil**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **04C**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-04c**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 972H**Attachment 1: **ROPS Cab**Horsepower: **287**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$60.09	NA
Operating Cost/Hour:	\$61.01	100
Operator Cost/Hour:	\$35.97	NA
Total Unit Cost/Hour:	\$157.07	
Total Fleet Cost/Hour:	\$157.07	

MATERIAL QUANTITIESInitial volume: **5,620**

CCY

Swell factor: **1.215**Loose volume: **6,828**

LCY

Source of estimated volume: **Division of Reclamation, Mining & Safety**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): **0.525** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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 Basic Cycle Time:		0.475	minutes

Rolling Resistance – Road ConditionsHaul: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Return: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0****Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	1000	0.00	8.00	8.00	1.1616	(Cat HB)
Return Route:	1000	0.00	8.00	8.00	1.0324	(Cat HB)

Total Travel Time: 2.1940 minutes
 Total Cycle Time: 2.6690 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 6.16 LCY

Job Condition Correction Factors

Site Altitude: 4532 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: 138.48 LCY/Hour
 Adjusted Hourly Unit Production: 114.94 LCY/Hour
 Adjusted Hourly Fleet Production: 114.94 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 59.41 Hours
 Unit cost: \$1.367 /LCY Total job cost: \$9,331

BULLDOZER WORKTask description: **Pond 4 - Grade half of transported topsoil**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **04D**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-04d**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:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$235.13**Total Fleet Cost/Hour: **\$470.25****MATERIAL QUANTITIES**Initial Volume: **3,414**Swell factor: **1.000**Loose volume: **3,414 LCY**Source of estimated volume: **TR-8**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **60 feet**Unadjusted hourly production: **1,246.9 LCY/hr**Materials consistency description: **Loose stockpile 1.2**Average push gradient: **0 %**Average site altitude: **4,532 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor**

		<u>Source</u>
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:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,071.46 LCY/hr

Adjusted fleet production: **2142.92** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.219/LCY

Total job time: **1.59** Hours

Total job cost: **\$749**

REVEGETATION WORKTask description: **Pond 4 - Reveg**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **04E**State: **Colorado**Abbreviation: **None**Date: **5/25/2022**County: **Mesa**Filename: **M089-04e**User: **ACY**Agency or organization name: **DRMS****FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	250.00	pound	\$1.33	\$332.50
			Total Fertilizer Materials Cost/Acre	\$332.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
Total Fertilizer Application Cost/Acre	\$38.77

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$114.56
Total Tilling Cost/Acre	\$114.56

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	1.00	39.03	\$28.48
Nebraska Sedge	1.00	20.94	\$166.50
Slender Wheatgrass - San Luis	3.00	10.95	\$12.75
Red Top	1.00	114.55	\$7.88
Reedgrass, Canadian (or Blue Joint)	0.50	51.42	\$101.63
Reedgrass, Northern - Native	0.50	51.42	\$68.33
Saltgrass, Inland	1.00	13.86	\$42.80
Timothy - Climax	1.00	28.70	\$1.60
Basin Wildrye - Trailhead	1.50	6.10	\$23.12
Totals Seed Mix	10.50	336.97	\$453.07

Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$2.98	\$5.96
Herbicide - Curtail @ 4.0 pt/ac	2.00	ACRE	\$7.78	\$15.56
Total Mulch Materials Cost/Acre				\$635.56

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
Weed spray, truck, aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$240.58

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres:	7	Cost /Acre:	\$2,047.04
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,675.77
*Selected Replanting Work Items:	TILLING,SEEDING,MULCHING		
Initial Job Cost:	\$14,329.28		
Reseeding Job Cost:	\$5,865.20		
Total Job Cost:	\$20,194		
Job Hours:	2.00		

BULLDOZER RIPPING WORK

Task description: Decompact stockpile area

Site: 23 Road Pit Permit Action: TR-8 Permit/Job#: M1979089

PROJECT IDENTIFICATION

Task #: 05A State: Colorado Abbreviation: None
Date: 5/16/2022 County: Mesa Filename: M089-05a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$15.19	NA
Ripper Operating Cost/Hour:	\$9.94	100
Operator Cost/Hour:	\$40.04	NA
Total Unit Cost/Hour:	\$260.26	
Total Fleet Cost/Hour:	\$520.51	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 25.00 acres Rip Depth (ft): 2.00 Volume: 80,667 BCY or CCY

Source of estimated quantity: TR-8

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 feet/pass
Average Ripping Width: 7.08 feet/pass
Average Ripping Length: 150.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.748 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.748 Acres/hr
Site Altitude: 4,532 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **1.24** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **20.12** Hours

Unit cost: \$418.974 Per acre Total job cost: **\$10,474**

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport topsoil of stockpile areaSite: 23 Road PitPermit Action: TR-8Permit/Job#: M1979089**PROJECT IDENTIFICATION**Task #: 05BState: ColoradoAbbreviation: NoneDate: 5/16/2022County: MesaFilename: M089-05bUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 972HAttachment 1: ROPS CabHorsepower: 287Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$60.09	NA
Operating Cost/Hour:	\$61.01	100
Operator Cost/Hour:	\$35.97	NA
Total Unit Cost/Hour:	\$157.07	
Total Fleet Cost/Hour:	\$157.07	

MATERIAL QUANTITIESInitial volume: 20,170

CCY

Swell factor: 1.215Loose volume: 24,507

LCY

Source of estimated volume: TR-8Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.525 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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 Basic Cycle Time:		0.475	minutes

Rolling Resistance – Road ConditionsHaul: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0Return: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	900	0.00	8.00	8.00	1.0454	(Cat HB)
Return Route:	900	0.00	8.00	8.00	0.9292	(Cat HB)

Total Travel Time: 1.9746 minutes
 Total Cycle Time: 2.4496 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 6.16 LCY

Job Condition Correction Factors

Site Altitude: 4532 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: 150.88 LCY/Hour
 Adjusted Hourly Unit Production: 125.23 LCY/Hour
 Adjusted Hourly Fleet Production: 125.23 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 195.69 Hours
 Unit cost: \$1.254 /LCY Total job cost: \$30,737

BULLDOZER WORKTask description: Grade half of transported topsoil for stockpile areaSite: 23 Road PitPermit Action: TR-8Permit/Job#: M1979089**PROJECT IDENTIFICATION**Task #: 05CState: ColoradoAbbreviation: NoneDate: 5/16/2022County: MesaFilename: M089-05cUser: ACYAgency 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:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: \$235.13Total Fleet Cost/Hour: **\$470.25****MATERIAL QUANTITIES**Initial Volume: 12,254Swell factor: 1.000Loose volume: **12,254 LCY**Source of estimated volume: TR-8Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 60 feetUnadjusted hourly production: 1,246.9 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 4,532 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
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:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,071.46 LCY/hr

Adjusted fleet production: **2142.92** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.219/LCY

Total job time: **5.72** Hours

Total job cost: **\$2,689**

REVEGETATION WORKTask description: Reveg stockpile areaSite: 23 Road PitPermit Action: TR-8Permit/Job#: M1979089**PROJECT IDENTIFICATION**Task #: 05DState: ColoradoAbbreviation: NoneDate: 5/16/2022County: MesaFilename: M089-05dUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	250.00	pound	\$1.33	\$332.50
			Total Fertilizer Materials Cost/Acre	\$332.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
Total Fertilizer Application Cost/Acre	\$38.77

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$114.56
Total Tilling Cost/Acre	\$114.56

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Paloma	3.12	10.10	\$34.71
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Canby Bluegrass - Canbar	0.45	9.57	\$4.61
Galleta	0.50	1.83	\$11.18
Western Wheatgrass - Arriba	0.50	1.26	\$3.25
Needle and Thread	0.50	1.32	\$20.93
Totals Seed Mix	8.07	33.71	\$107.30

Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$2.98	\$5.96
Herbicide - Curtail @ 4.0 pt/ac	2.00	ACRE	\$7.78	\$15.56
Total Mulch Materials Cost/Acre				\$635.56

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$240.58

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 25 Cost /Acre: \$1,701.27
 Estimated Failure Rate: 50% Cost /Acre*: \$1,330.00
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$42,531.75
 Reseeding Job Cost: \$16,625.00
 Total Job Cost: \$59,157
 Job Hours: 40.00

REVEGETATION WORKTask description: Plant treesSite: 23 Road PitPermit Action: TR-8Permit/Job#: M1979089**PROJECT IDENTIFICATION**Task #: 06AState: ColoradoAbbreviation: NoneDate: 5/16/2022County: MesaFilename: M089-06aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

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

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

Description	Cost /Acre
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
			\$
Totals Seed Mix	0.00	0.00	\$0.00

Application

Description	Cost /Acre
	\$

Total Seed Application Cost/Acre	\$0.00
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MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
Total Mulch Materials Cost/Acre				\$0.00

Application

Description	Cost /Acre
	\$
Total Mulch Application Cost/Acre	\$0.00

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Cottonwood, Plains	30	Container, 5 gallon (MEANS)	\$51.52	\$2.40	\$1,545.60
Totals Nursery Stock Cost / Acre					\$1,545.60

JOB TIME AND COST

No. of Acres:	1	Cost /Acre:	\$1,545.60
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,545.60
*Selected Replanting Work Items:	NURSERY		

Initial Job Cost:	\$1,545.60
Reseeding Job Cost:	\$772.80
Total Job Cost:	\$2,318
Job Hours:	30.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Initial Mobilization**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**

Task #: **10A** State: **Colorado** Abbreviation: **None**
 Date: **5/16/2022** County: **Mesa** Filename: **M089-10a**
 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:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$21.28	\$37.94	\$47.67
Operating Cost/Hour:	\$26.55	\$50.48	\$56.21
Operator Cost/Hour:	\$20.54	\$20.54	\$20.54
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$68.37	\$132.49	\$147.95

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
Submersible pump - 460v, 8 in.	0.70	\$14.98	\$68.37	3	\$250.05	\$205.11	\$250.00
Cat 627G w/push-pull	43.48	\$188.81	\$132.49	4	\$1,285.20	\$529.96	\$1,000.00
Cat D8T - 8SU	47.71	\$97.46	\$132.49	2	\$459.90	\$264.98	\$500.00
CAT PS-150C (2004)	5.39	\$45.37	\$68.37	1	\$113.74	\$68.37	\$250.00
CAT 972H	28.00	\$60.09	\$132.49	1	\$192.58	\$132.49	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$7.98	\$68.37	1	\$76.35	\$68.37	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$14.98	\$68.37	1	\$83.35	\$68.37	\$250.00

Subtotals: **\$2,461.17** **\$1,337.65** **\$2,750.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	\$57.93	1	\$57.93	\$57.93
Flatbed Truck, 4x2, 30K GVW	\$58.13	1	\$58.13	\$58.13

Light Duty Pickup, 4x4, 1 T. Crew	\$121.54	1	\$121.54	\$121.54
Subtotals:			\$237.60	\$237.60

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: GRAND JUNCTION

Total one-way travel distance: 5.00 miles

Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost * \$11,372.05

 '* two round trips with haul rig:

Total Roadable Mob/Demob Cost ** \$59.40

 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.13	0.13
Return Time (Hours):	0.13	0.13
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.25	0.25

JOB TIME AND COST

Total job time: 2.50 Hours

Total job cost: \$11,431

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Secondary Mobilization**Site: **23 Road Pit**Permit Action: **TR-8**Permit/Job#: **M1979089****PROJECT IDENTIFICATION**Task #: **10B**State: **Colorado**Abbreviation: **None**Date: **5/16/2022**County: **Mesa**Filename: **M089-10b**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:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$21.28	\$37.94	\$47.67
Operating Cost/Hour:	\$26.55	\$50.48	\$56.21
Operator Cost/Hour:	\$20.54	\$20.54	\$20.54
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$68.37	\$132.49	\$147.95

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
Drill/Broadcast Seeder with Tractor	25.00	\$7.98	\$68.37	1	\$76.35	\$68.37	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$14.98	\$68.37	1	\$83.35	\$68.37	\$250.00
Subtotals:					\$159.70	\$136.74	\$500.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Flatbed Truck, 4x2, 30K GVW	\$58.13	1	\$58.13	\$58.13
Light Duty Pickup, 4x4, 1 T. Crew	\$121.54	1	\$121.54	\$121.54
Subtotals:			\$179.67	\$179.67

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>5.00</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$1,393.51</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$44.92</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.13</u>	<u>0.13</u>
Return Time (Hours):	<u>0.13</u>	<u>0.13</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>1.25</u>	<u>0.25</u>

JOB TIME AND COST

Total job time:	<u>2.50</u>	Hours
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Total job cost:	<u>\$1,438</u>
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Bonding inputs for TR-8 w/ adequacy 1 responses

Task	Form Used	Description
01a	Demo	Remove Scale 70'x12' haul off site-no disposal trade for scrap Demo Scale house 9'x18'x8' and push into Pond 1 Remove misc. equipment (not mining related) from areas to be regraded or reveg. Est 20-30 cy haul off site-no disposal trade for scrap
02a	Pump	Dewater Pond 2 – 4.6 ac approx. dewatered 6 ft. (47.6 ac.ft) Pump into Pond 3, 100 ft. away, use 3 pumps Recharge from bottom (690,960 sq.ft.) Med porosity
02b	Dozer	Grade approx. 355 LF of 1:1 slopes to 3H:1V at 14' H backfill slopes = 2,425 CCY
02c	Loader	Transport topsoil for Pond 2 veg buffer use 972H 1.7 ac @ 6" deep is 1,390 CCY of topsoil
02d	Dozer	Grade half of transported topsoil around Pond 2 = 846 LCY
02e	Reveg	Reveg topsoiled areas around pond 2 = 1.7 ac Riparian mix
03a	Pump	Dewater Pond 3 – 5.6 ac approx. dewatered 10 ft. (56 ac.ft) Pump into Pond 4 or 2, 100 ft. away, use 3 pumps Recharge from bottom (435,600 sq.ft.) Med porosity
03b	Dozer	Grade approx. 485 LF of 2:1 to 3H: 1V at 12' H Backfilled slopes = 1,295 CCY
03c	Loader	Transport topsoil for Pond 3 veg buffer use 972H 1.6 ac @ 6" deep is 1,295 CCY of topsoil
03d	Dozer	Grade half of transported topsoil around Pond 3 = 787 LCY
03e	Reveg	Reveg topsoiled areas around pond 3 = 1.6 ac Riparian mix



04a	Pump	Dewater Pond 4 – 15.8 ac approx. dewatered 8 ft. (126.4 ac.ft) Pump into Pond 3, 100 ft. away, use 3 pumps Recharge from bottom (174,420 sq.ft.) Med porosity
04b	Dozer	Grade approx. 3,830 LF of 2:1 slopes to 3H:1V at 24' H cut/fill slopes = 39,900 BCY
04c	Loader	Transport topsoil for Pond 4 veg buffer 7 ac @ 6" deep is 5,620 CCY of topsoil
04d	Dozer	Grade half of transported topsoil around Pond 4 = 3,141 LCY
04e	Reveg	Reveg topsoiled areas around pond 4 = 7 ac Riparian mix
05a	Ripper	Decompact stockpile areas 25 acres
05b	Loader	Transport topsoil to stockpile areas 25 ac @ 6" deep is 20,170 CCY
05c	Dozer	Grade half of transported topsoil around stockpile area = 12,254 LCY
05d	Reveg	Reveg stockpile area 25 ac with dryland mix
06a	Reveg	Plant container stock of Cottonwoods 30 from TR-7 @ 30 min each
07b	Misc. Truck	Water trees weekly, 2 hr per week for 1 yr per AM-3 Adequacy response
10a	Mob	Initial Mobilization
10b	Mob	Secondary Mobilization
Indirect		Add contingency and Job superintendent costs Total indirect cost is approx. 30% of direct cost

Please feel free to contact me with any further questions. Amy Yeldell at the Division of Reclamation, Mining and Safety, Rm 215, 1001 E 62nd Ave, Denver CO 80216. Direct contact can be made by phone at 303-866-3567 Ext 8183 or via email at amy.yeldell@state.co.us

Sincerely,

A handwritten signature in blue ink that reads "Amy Yeldell". The signature is written in a cursive, flowing style.

Amy Yeldell
Environmental Protection Specialist

Ec:
Travis Marshall, Senior EPS, Grand Junction DRMS