

STATE OF
COLORADO

Lennberg - DNR, Patrick <patrick.lennberg@state.co.us>

Approval Letter, TR-1, Two Rivers, M2022-013

Jenna Lohmann <Jenna.Lohmann@respec.com>

Fri, Oct 18, 2024 at 1:55 PM

To: "Lennberg - DNR, Patrick" <patrick.lennberg@state.co.us>, Garrett Varra <gvarra@raptormaterialsllc.com>, Peter Christensen <Peter.Christensen@respec.com>

Good Afternoon, Patrick,

Attached is the Surety Reduction Request and associated current Cost Summary sheet that serves as the estimate for the cost to reclaim the site.

Please let us know if you need any additional information.

Thank you,

**Jenna Lohmann, PE**jenna.lohmann@respec.com

720-775-6427 x1415



303-589-3045

[Quoted text hidden]

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20241018_P124 TR01 Surety Reduction Request_signed.pdf
2034K



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

REQUEST FOR FULL OR PARTIAL RELEASE OF PERMIT AREA/SURETY REDUCTION

Please indicate if you are requesting:

FULL/FINAL RELEASE OF ENTIRE PERMITTED AREA (per Rule 4.17)

☐

ACREAGE REDUCTION (PARTIAL RELEASE per Rule 4.17)

☐

I wish to release _____ acres at this time.

You will need to submit with this request: a map showing the acreage to be released from the current permit and updated mining and reclamation plan maps that will accurately depict the new permit boundary if the release is approved.

SURETY (Bond) REDUCTION (per Rule 4.14)

☒

If you are requesting a surety (bond) reduction you will need to include with this request a new estimate of the actual cost to reclaim the site based on what it would cost an independent contractor to complete reclamation, including unit costs for reclamation activities as appropriate to the operation to comply with the provisions of Rule 3.1 and the Permit's approved Reclamation Plan.

File No.: M -2022-013 Site Name: Two Rivers Sand, Gravel, and Reservoir Project

County: Weld

Permittee: Raptor Materials LLC

Permittee Address: 8120 Gage Street

(Street Address)

Frederick

(City)

CO

(State)

80516

(Zip)



Operator (If Other than Permittee): _____

Permittee Representative: Garrett Varra

Certified Mail # _____

In accordance with Rule 4.17.1(2) the Operator shall include the names, addresses and phone numbers of all owners of record to the affected land. Please attach additional sheets for this information if required.

Name

Address

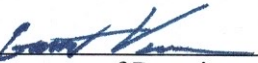
Phone Number

Raptor Materials LLC

8120 Gage St, Frederick, CO 80516

303-666-6657

In accordance with Rule 4.17.1(4), if requesting a partial acreage release the Operator or their agent MUST sign that they have complied with the following statement: "All applicable portions of the Reclamation Plan requirements have been satisfied in accordance with these Rules and all applicable requirements under the Act."



Signature of Permittee, Operator or their authorized agent

10/18/2024

Date

Important: In accordance with Rules 4.14.2(a) and 4.17.1(3) This release request must be submitted to the Division via certified mail and separate from any other correspondence to the Division.

COST SUMMARY WORK

Task description: Cost Summary

Site: Two Rivers Sand, Gravel and
Reservoir Project

Permit Action: TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 9/16/2024 County: Weld Filename: 000
User: JPL

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01A	Dewater pit - initial pumping	PUMPING	1	423.90	\$41,661
01B	Dewater pit - continual pumping	PUMPING	1	122.39	\$12,029
02A	Grade slope under liner	DOZER	2	13.03	\$8,900
02B	Haul liner material to pit area	TRUCK1	1	128.20	\$71,183
02C	Mix material for liner	DOZER	2	13.73	\$9,284
02D	Compact liner	COMPACT	2	15.96	\$8,169
03A	Haul subsoil to grade over liner	TRUCK1	1	558.56	\$288,416
03B	Grade subsoil over liner	DOZER	2	148.48	\$100,254
03C	Haul topsoil to pit area	TRUCK1	1	8.09	\$4,178
03D	Spread topsoil on pond bank	DOZER	2	1.91	\$1,288
03E	Seed banks of pond	REVEGE	1	9.00	\$10,854
04A	Process Area Decommissioning	DEMOLISH	1	175.00	\$14,440
05A	Rip processing area, wash pond area	RIPPER	2	19.47	\$13,462
05C	Haul topsoil to process and wash pond areas	TRUCK1	1	50.15	\$25,895
05D	Spread topsoil on process and wash pond areas	DOZER	2	7.87	\$5,312
05E	Seed processing area and wash pond area	REVEGE	1	22.00	\$53,842
06	Mobilization and Demob.	MOBILIZE	1	0.50	\$4,143
<u>SUBTOTALS:</u>				1718.24	\$673,310

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$13,601
Performance bond:	1.05	Total =	\$7,070
Job superintendent:	858.87	Total =	\$68,083
Profit:	10.00	Total =	\$67,331
		TOTAL O & P =	\$156,084
		CONTRACT AMOUNT (direct + O & P) =	\$829,394

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	\$500	Total =	\$500
Engineering work and/or contract/bid preparation:	6.00	Total =	\$49,764
Reclamation management and/or administration:	4.50		\$37,323
		CONTINGENCY:	0.00
		Total =	\$0

TOTAL INDIRECT COST = \$243,671

TOTAL BOND AMOUNT (direct + indirect) = \$916,981

PUMPING WORK

Task description: Dewater pit - initial pumping

Site: Two Rivers Sand, Gravel and Reservoir Project

Permit Action:

TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATION

Task #: 01A
Date: 9/16/2024
User: JPL

State: Colorado
County: Weld

Abbreviation: None
Filename: M013-01A

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Submersible pump - 460v, 8 in.	5
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	5
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	5
Labor Unit 1:	Pump operator	1
Horsepower:	<u>95</u>	
Shift Basis:	<u>1 per day</u>	
Weight:	<u>0.70</u>	
	(US Tons)	

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$49.45	NA
Operating Cost/Hour:	\$20.60	100
Operator Cost/Hour:	\$28.23	NA
Total Unit Cost/Hour:	\$98.28	
Total Fleet Cost/Hour:	\$98.28	

PUMPING QUANTITIES

Initial Pond Volume:	<u>434,529,979.00</u>		Conversion factor:	<u>1.0000</u>
Final Pond Volume:	<u>434,529,979.00</u>	gallons		
Total Pond Inflow Surface Area:	<u>300,000</u>	Sq. ft.	Unit inflow rate in gph/sq. ft.:	<u>0.0000</u>
Total Pond Inflow Volume per Hour:	<u>0.00</u>	gallons		

Source of estimated volume: Exh L, page 6

PUMPING TIME

Maximum Pump Capacity:	<u>170,000</u>	gph/pump
Estimated Suction Head:	<u>0</u>	feet
Estimated Discharge Head:	<u>15</u>	feet
Total Head:	<u>15</u>	feet
CPB Pump Capacity:	<u>168,000</u>	gph/pump
Site Altitude:	<u>4,680</u>	feet
Adjusted Pumping Capacity:	<u>840,000</u>	gph
Initial Unadjusted Pumping Time:	<u>517.30</u>	hours
Inflow during Initial Pumping:	<u>0</u>	gallons
Net Unadjusted Pumping Time:	<u>517.30</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>474.21</u>	hours

JOB TIME AND COST

Total job time: 474.21 Hours

Unit cost: \$0.000107 /Gallon

Total job cost: \$46,605

PUMPING WORK

Task description: Dewater pit - continual pumping

Site: Two Rivers Sand, Gravel and Reservoir Project

Permit Action:

TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATION

Task #: 01B
Date: 9/16/2024
User: JPL

State: Colorado
County: Weld

Abbreviation: None
Filename: M013-01B

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Submersible pump - 460v, 8 in.	5
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	5
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	5
Labor Unit 1:	Pump operator	1
Horsepower:	<u>95</u>	
Shift Basis:	<u>1 per day</u>	
Weight:	<u>0.70</u>	
	(US Tons)	

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$49.45</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$20.60</u>	<u>100</u>
Operator Cost/Hour:	<u>\$28.23</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$98.28</u>	
Total Fleet Cost/Hour:	<u>\$98.28</u>	

PUMPING QUANTITIES

Initial Pond Volume:	<u>112,151,304.00</u>		Conversion factor:	<u>1.0000</u>
Final Pond Volume:	<u>112,151,304.00</u>	gallons		
Total Pond Inflow Surface Area:	<u>300,000</u>	Sq. ft.	Unit inflow rate in gph/sq. ft.:	<u>0.0000</u>
Total Pond Inflow Volume per Hour:	<u>0.00</u>	gallons		

Source of estimated volume: Exh L, page 6

PUMPING TIME

Maximum Pump Capacity:	<u>170,000</u>	gph/pump
Estimated Suction Head:	<u>0</u>	feet
Estimated Discharge Head:	<u>15</u>	feet
Total Head:	<u>15</u>	feet
CPB Pump Capacity:	<u>168,000</u>	gph/pump
Site Altitude:	<u>4,680</u>	feet
Adjusted Pumping Capacity:	<u>840,000</u>	gph
Initial Unadjusted Pumping Time:	<u>133.51</u>	hours
Inflow during Initial Pumping:	<u>0</u>	gallons
Net Unadjusted Pumping Time:	<u>133.51</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>122.39</u>	hours

JOB TIME AND COST

Total job time: 122.39 Hours

Unit cost: \$0.000107 /Gallon

Total job cost: \$12,029

BULLDOZER WORKTask description: **Grade slope under liner**Site: **Two Rivers Sand, Gravel and
Reservoir Project**Permit Action: **TR-1**Permit/Job#: **M2022013****PROJECT IDENTIFICATION**Task #: **02A**
Date: **9/17/2024**
User: **JPL**State: **Colorado**
County: **Weld**Abbreviation: **None**
Filename: **M013-02A**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**
Horsepower: **310**
Blade Type: **Semi-Universal**
Attachment: **3-shank ripper**
Shift Basis: **1 per day**
Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$3.98	50
Operator Cost/Hour:	\$40.04	NA
Total unit Cost/Hour:	\$341.57	
Total Fleet Cost/Hour:	\$683.14	

MATERIAL QUANTITIESInitial Volume: **14,502**
Swell factor: **1.215**
Loose volume: **17,620 LCY**Source of estimated volume: **Calc from 6,176 lf, 63.4' length, 1' deep. pg 10 Ex L**
Source of estimated swell
factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **50 feet**
Unadjusted hourly
production: **1,400.0 LCY/hr**Materials consistency description: **Partly consolidated stockpile 1.1**Average push
gradient: **20 %**
Average site altitude: **4,680 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	0.545	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4830

Adjusted unit
production: 676.20 LCY/hr
Adjusted fleet
production: **1352.4 LCY/hr**

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.505/LCY

Total job time: **13.03 Hours**
Total job cost: **\$8,900**

TRUCK/LOADER TEAM WORKTask description: Haul liner material to pit areaSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 02B
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-02BAgency 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 966H high lift
Support Equipment -Load Area:		NA
-Dump Area:		NA
Road Maintenance -Motor Grader:		CAT 120M
-Water Truck:		Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	75	NA	NA	25	25
Ownership cost/hour:	\$27.14	\$57.78	NA	NA	\$52.82	\$11.65
Operating cost/hour:	\$62.81	\$34.69	NA	NA	\$10.94	\$5.61
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$24.82	\$56.64	NA	NA	\$56.70	\$0.00
Unit Subtotals:	\$114.77	\$149.10	NA	NA	\$120.46	\$17.26
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work: \$378.64		Support: \$0.00		Maint: \$137.72	

Total work team cost/hour: \$516.36**MATERIAL QUANTITIES**Initial volume: 61,706 CCY Swell factor: 1.000
Loose volume: 61,706 LCYSource of estimated volume: Ex L Page 10-11
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: \$0.00
Total Cost: \$0.00**HOURLY PRODUCTION****Truck Capacity:**Truck Payload (weight) Basis:Material weight: 1,600 Pounds/LCY
Description: Top Soil

Rated Payload:	<u>50,300</u>	Pounds
Payload Capacity:	<u>31.44</u>	LCY

Truck Bed (volume) Basis:

Struck Volume:	<u>12.00</u>	LCY
Heaped Volume:	<u>18.00</u>	LCY
Average Volume:	<u>15.00</u>	LCY
Adjusted Volume:	<u>18.00</u>	LCY

Final Truck Volume Based on Number of Loader Passes: 15.75 LCY**Loading Tool Capacity**

		Bucket Size Class: <u>NA</u>
Rated Capacity:	<u>5.000</u>	LCY (heaped)
Bucket Fill Factor:	<u>1.050</u>	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<u>5.250</u>	LCY

Job Condition Corrections:Site Altitude (ft.): 4680 feet

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

Loading Tool Cycle Time:Number of Loading Tool Passes Required to Fill
Truck: 3 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: 0.100Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.000	minutes
Adjusted Loader Cycle Time:		0.500	minutes
Net Load Time per Truck:		1.100	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.100</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes
Truck Maneuver and Dump Time:	<u>0.90</u>	Minutes	Adjusted for site altitude:	<u>0.900</u>	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	800.00	0.00	3.00	3.00	2824	0.445

Haul Time: **0.445** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	0.00	3.00	3.00	2874	0.314

Return Time: **0.314** minutesTotal Truck Cycle Time: **3.259** minutes

Loading Tool unit

Production 590.63 LCY/Hour Adjusted for job efficiency: 490.22 LCY/Hour
Truck Unit Production 289.97 LCY/Hour Adjusted for job efficiency: 240.67 LCY/Hour

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

Adjusted hourly truck team production: 481.34 LCY/Hour
Adjusted single truck/loader team production: 481.34 LCY/Hour
Adjusted multiple truck/loader team production: **481.34** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **128.20** Hours

Unit cost: \$1.073 /LCY Total job cost: **\$66,195**

BULLDOZER WORKTask description: **Mix material for liner**Site: **Two Rivers Sand, Gravel and
Reservoir Project**Permit Action: **TR-1**Permit/Job#: **M2022013****PROJECT IDENTIFICATION**Task #: **02C**
Date: **9/17/2024**
User: **JPL**State: **Colorado**
County: **Weld**Abbreviation: **None**
Filename: **M013-02C**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**
Horsepower: **310**
Blade Type: **Semi-Universal**
Attachment: **3-shank ripper**
Shift Basis: **1 per day**
Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$0.40	5
Operator Cost/Hour:	\$40.04	NA
Total unit Cost/Hour:	\$337.99	
Total Fleet Cost/Hour:	\$675.99	

MATERIAL QUANTITIESInitial Volume: **30,853**
Swell factor: **1.215**
Loose volume: **37,486 LCY**Source of estimated volume: **Assumed half the volume of liner material Ex L pg 11**Source of estimated swell
factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **50 feet**
Unadjusted hourly
production: **1,400.0 LCY/hr**Materials consistency description: **Partly consolidated stockpile 1.1**Average push
gradient: **0 %**
Average site altitude: **4,680 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.9748

Adjusted unit
production: 1,364.72 LCY/hr
Adjusted fleet
production: **2729.44** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.248/LCY

Total job time: **13.73** Hours
Total job cost: **\$9,284**

COMPACTION WORK

Task description: Compact liner

Site: Two Rivers Sand, Gravel and Reservoir Project

Permit Action:

TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATION

Task #: 02D State: Colorado Abbreviation: None
Date: 9/17/2024 County: Weld Filename: M013-02D
User: JPL

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 815F Horsepower: 240
Compactor Type: Soil - tamping foot Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$107.16</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$117.19</u>	<u>100</u>
Operator Cost/Hour:	<u>\$31.50</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$255.85</u>	
Total Fleet Cost/Hour:	<u>\$511.71</u>	

MATERIAL QUANTITIES

Loose volume: 61,706 LCY Shrinkage factor: 0.910
Compacted volume: 56,152 CCY
Source of estimated volume: Same as hauled quantity. ExL pg11
Source of estimated shrinkage factor: Cat Handbook

HOURLY PRODUCTION

Unadjusted hourly production = $(W \times S \times L \times C) / P$

Compacted width per pass (W): 6.50 feet
Average Compactor Speed (S): 8.00 mph
Compacted thickness of each lift (L): 10.00 inches
Conversion Constant (C): 16.3 (5,280ft./12in./27cu.ft.)
Required number of machine passes (P): 4 passes
Unadjusted Hourly Unit Production: 2,119.00 CCY/hour

Job Condition Correction Factors

Site Altitude: 4,680 feet

Altitude Adj:	<u>1.00</u>	Source
Job Efficiency:	<u>0.83</u>	(CAT HB)
Net Correction:	<u>0.8300</u>	(1 shift/day)
		multiplier

Adjusted Hourly Unit Production: 1,758.77 CCY/Hour
Adjusted Hourly Fleet Production: 3,517.54 CCY/Hour

JOB TIME AND COST

Fleet size: 2 Compactor(s) Total job time: 15.96 Hours
Unit cost: \$0.145 per CCY Total job cost: \$8,169

TRUCK/LOADER TEAM WORKTask description: Haul subsoil to grade over linerSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 03A
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-03AAgency 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 966H high lift
Support Equipment -Load Area:		NA
-Dump Area:		NA
Road Maintenance -Motor Grader:		CAT 120M
-Water Truck:		Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	75	NA	NA	25	25
Ownership cost/hour:	\$27.14	\$57.78	NA	NA	\$52.82	\$11.65
Operating cost/hour:	\$62.81	\$34.69	NA	NA	\$10.94	\$5.61
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$24.82	\$56.64	NA	NA	\$56.70	\$0.00
Unit Subtotals:	\$114.77	\$149.10	NA	NA	\$120.46	\$17.26
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work: \$378.64		Support: \$0.00		Maint: \$137.72	

Total work team cost/hour: \$516.36**MATERIAL QUANTITIES**Initial volume: 273,815 CCY Swell factor: 1.000
Loose volume: 273,815 LCYSource of estimated volume: Ex L Pg 9, total for both slopes 273815
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: \$0.00
Total Cost: \$0.00**HOURLY PRODUCTION****Truck Capacity:**Truck Payload (weight) Basis:Material weight: 1,600 Pounds/LCY
Description: Top Soil

Rated Payload:	<u>50,300</u>	Pounds
Payload Capacity:	<u>31.44</u>	LCY

Truck Bed (volume) Basis:

Struck Volume:	<u>12.00</u>	LCY
Heaped Volume:	<u>18.00</u>	LCY
Average Volume:	<u>15.00</u>	LCY
Adjusted Volume:	<u>18.00</u>	LCY

Final Truck Volume Based on Number of Loader Passes: 15.75 LCY**Loading Tool Capacity**

		Bucket Size Class: <u>NA</u>
Rated Capacity:	<u>5.000</u>	LCY (heaped)
Bucket Fill Factor:	<u>1.050</u>	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<u>5.250</u>	LCY

Job Condition Corrections:Site Altitude (ft.): 4680 feet

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

Loading Tool Cycle Time:Number of Loading Tool Passes Required to Fill
Truck: 3 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: 0.100Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.000	minutes
Adjusted Loader Cycle Time:		0.500	minutes
Net Load Time per Truck:		1.100	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.100</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes
Truck Maneuver and Dump Time:	<u>0.90</u>	Minutes	Adjusted for site altitude:	<u>0.900</u>	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	600.00	0.00	3.00	3.00	2824	0.374

Haul Time: **0.374** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	0.00	3.00	3.00	2874	0.244

Return Time: **0.244** minutesTotal Truck Cycle Time: **3.118** minutes

Loading Tool unit

Production 590.63 LCY/Hour Adjusted for job efficiency: 490.22 LCY/Hour
Truck Unit Production 303.08 LCY/Hour Adjusted for job efficiency: 251.56 LCY/Hour

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

Adjusted hourly truck team production: 503.11 LCY/Hour
Adjusted single truck/loader team production: 490.22 LCY/Hour
Adjusted multiple truck/loader team production: **490.22** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **558.56** Hours

Unit cost: \$1.053 /LCY Total job cost: **\$288,416**

BULLDOZER WORKTask description: **Grade subsoil over liner**Site: **Two Rivers Sand, Gravel and
Reservoir Project**Permit Action:
TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATIONTask #: 03B
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-03B

Agency or organization name: DRMS

HOURLY EQUIPMENT COSTBasic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA
Total unit Cost/Hour:	\$337.60	
Total Fleet Cost/Hour:	\$675.19	

MATERIAL QUANTITIESInitial Volume: 273,815
Swell factor: 1.215
Loose volume: **332,685 LCY**Source of estimated volume: Ex L pg 9
Source of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feet
Unadjusted hourly
production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push
gradient: 5 %
Average site altitude: 4,680 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

Job Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8002

Adjusted unit
production: 1,120.28 LCY/hr
Adjusted fleet
production: **2240.56 LCY/hr**

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.301/LCY

Total job time: **148.48 Hours**
Total job cost: **\$100,254**

TRUCK/LOADER TEAM WORKTask description: Haul topsoil to pit areaSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 03C
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-03CAgency 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 966H high lift
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 120M
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	75	NA	NA	25	25
Ownership cost/hour:	\$27.14	\$57.78	NA	NA	\$52.82	\$11.65
Operating cost/hour:	\$62.81	\$34.69	NA	NA	\$10.94	\$5.61
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$24.82	\$56.64	NA	NA	\$56.70	\$0.00
Unit Subtotals:	\$114.77	\$149.10	NA	NA	\$120.46	\$17.26
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work: \$378.64		Support: \$0.00		Maint: \$137.72	

Total work team cost/hour: \$516.36**MATERIAL QUANTITIES**Initial volume: 3,895 CCY Swell factor: 1.000
Loose volume: 3,895 LCYSource of estimated volume: 3895 ExL pg 12
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: \$0.00
Total Cost: \$0.00**HOURLY PRODUCTION****Truck Capacity:**Truck Payload (weight) Basis:Material weight: 1,600 Pounds/LCY
Description: Top Soil

Rated Payload:	<u>50,300</u>	Pounds
Payload Capacity:	<u>31.44</u>	LCY

Truck Bed (volume) Basis:

Struck Volume:	<u>12.00</u>	LCY
Heaped Volume:	<u>18.00</u>	LCY
Average Volume:	<u>15.00</u>	LCY
Adjusted Volume:	<u>18.00</u>	LCY

Final Truck Volume Based on Number of Loader Passes: 15.75 LCY**Loading Tool Capacity**

		Bucket Size Class: <u>NA</u>
Rated Capacity:	<u>5.000</u>	LCY (heaped)
Bucket Fill Factor:	<u>1.050</u>	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<u>5.250</u>	LCY

Job Condition Corrections:Site Altitude (ft.): 4680 feet

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

Loading Tool Cycle Time:Number of Loading Tool Passes Required to Fill
Truck: 3 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:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.000	minutes
Adjusted Loader Cycle Time:		0.500	minutes
Net Load Time per Truck:		1.100	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.100</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes
Truck Maneuver and Dump Time:	<u>0.90</u>	Minutes	Adjusted for site altitude:	<u>0.900</u>	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	800.00	0.00	3.00	3.00	2824	0.445

Haul Time: **0.445** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	0.00	3.00	3.00	2874	0.314

Return Time: **0.314** minutesTotal Truck Cycle Time: **3.259** minutes

Loading Tool unit

Production 590.63 LCY/Hour Adjusted for job efficiency: 490.22 LCY/Hour
Truck Unit Production 289.97 LCY/Hour Adjusted for job efficiency: 240.67 LCY/Hour

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

Adjusted hourly truck team production: 481.34 LCY/Hour
Adjusted single truck/loader team production: 481.34 LCY/Hour
Adjusted multiple truck/loader team production: **481.34** LCY/Hour

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: **8.09** HoursUnit cost: \$1.073 /LCY Total job cost: **\$4,178**

BULLDOZER WORKTask description: Spread topsoil on pond bankSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 03D
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-03DAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$173.32</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$109.71</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$14.53</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$40.04</u>	<u>NA</u>
Total unit Cost/Hour:	<u>\$337.60</u>	
Total Fleet Cost/Hour:	<u>\$675.19</u>	

MATERIAL QUANTITIESInitial Volume: 3,895
Swell factor: 1.215
Loose volume: 4,732 LCYSource of estimated volume: Ex L pg 12
Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push gradient: 0 %
Average site altitude: 4,680 feetMaterial weight: 1,600 lbs/LCYWeight description: Top SoilJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8862

Adjusted unit
production: 1,240.68 LCY/hr
Adjusted fleet
production: **2481.36 LCY/hr**

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.272/LCY

Total job time: **1.91 Hours**
Total job cost: **\$1,288**

REVEGETATION WORKTask description: Seed banks of pondSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 03E
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-03EAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	200.00	pound	\$0.51	\$102.32
			Total Fertilizer Materials Cost/Acre	\$102.32

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$43.12
Total Fertilizer Application Cost/Acre	\$43.12

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	\$102.41
Weed control spraying (MEANS 31 31 16.13 3100)	\$338.80
Total Tilling Cost/Acre	\$441.21

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.91
Blue Grama - Lovington	0.20	3.26	\$5.55
Indian Ricegrass - Paloma	1.90	6.15	\$39.01
Switchgrass - Pathfinder	0.90	8.04	\$12.11
Sand Dropseed	0.10	11.94	\$1.30
Kentucky Bluegrass - Ginger	0.10	4.94	\$0.41
Little Bluestem - Pastura	0.30	1.79	\$4.76
Sideoats Grama - Vaughn	1.80	5.91	\$44.26
Strawberry Clover (coated)	0.10	0.68	\$0.98

Smooth Brome - Manchar	0.30	1.00	\$1.57
Sheep Fescue - Covar	0.40	6.24	\$2.47
Tall Wheatgrass - Jose	1.10	1.99	\$6.32
Totals Seed Mix	7.30	55.84	\$121.66

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$236.64
Total Seed Application Cost/Acre	\$236.64

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - Curtail @ 4.0 pt/ac	1.00	ACRE	\$36.14	\$36.14
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$492.78	\$985.56
Total Mulch Materials Cost/Acre				\$1,021.70

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$85.37
Weed spray, truck, non-aquatic area, nox. [DMG]	\$83.26
Total Mulch Application Cost/Acre	\$168.64

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:	4.8	Cost /Acre:	\$2,135.29
Estimated Failure Rate:	25%	Cost /Acre*:	\$358.30
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	\$10,249.39		
Reseeding Job Cost:	\$429.96		
Total Job Cost:	\$10,679		
Job Hours:	9.00		

DEMOLITION WORK

Task description: Process Area Decommissioning

Site: Two Rivers Sand, Gravel and
Reservoir Project

Permit Action: TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATION

Task #: 04A
Date: 9/17/2024
User: JPL

State: Colorado
County: Weld

Abbreviation: None
Filename: M013-04A

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 89.20 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Concrete pads	15x30,15x60,15x25	Demo. and on-site disposal in existing pit, 12 in. thick - Max. 10,000 ft. haul	1,725.00	SF	\$2.31	\$3,990.10
Concrete supports - truck scales	Convert 10 CY (Exh L)	Demo. and on-site disposal in existing pit, 1.5 ft. x 2 ft. - Max. 10,000 ft. haul	90.00	LF	\$6.94	\$624.53
Concrete supports - temp buildings	Convert 8 CY (Exh L)	Demo. and on-site disposal in existing pit, 1.5 ft. x 2 ft. - Max. 10,000 ft. haul	72.00	LF	\$6.94	\$499.62
Fuel tanks	6,000 gallons	Comprehensive storage tank removal, non-leaking - 6,000 to 8,000 gal. tank	2.00	EA	\$5,536.95	\$11,073.90

Job Hours: <u>175.00</u>	Subtotal (unadjusted): <u>\$16,188.15</u>	Total Cost (adjusted for location): <u>\$14,439.83</u>
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BULLDOZER RIPPING WORK

Task description: Rip processing area, wash pond area

Site: Two Rivers Sand, Gravel and Reservoir Project

Permit Action:

TR-1

Permit/Job#: M2022013

PROJECT IDENTIFICATION

Task #: 05A

State: Colorado

Abbreviation: None

Date: 9/17/2024

County: Weld

Filename: M013-05A

User: JPL

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:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper Ownership Cost/Hour:	\$14.53	NA
Ripper Operating Cost/Hour:	\$7.95	100
Operator Cost/Hour:	\$40.04	NA
Total Unit Cost/Hour:	\$345.55	
Total Fleet Cost/Hour:	\$691.09	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 24.20 acres Rip Depth (ft): 1.00 Volume: 39,043 BCY or CCY

Source of estimated quantity: Ex L pg 12-13

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: 4,680 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: 19.48 Hours

Unit cost: \$556.276 Per acre

Total job cost: **\$13,462**

TRUCK/LOADER TEAM WORKTask description: Haul topsoil to process and wash pond areasSite: Two Rivers Sand, Gravel and Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 05C
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-05CAgency 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 966H high lift
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 120M
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	75	NA	NA	25	25
Ownership cost/hour:	\$27.14	\$57.78	NA	NA	\$52.82	\$11.65
Operating cost/hour:	\$62.81	\$34.69	NA	NA	\$10.94	\$5.61
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$24.82	\$56.64	NA	NA	\$56.70	\$0.00
Unit Subtotals:	\$114.77	\$149.10	NA	NA	\$120.46	\$17.26
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work: \$378.64		Support: \$0.00		Maint: \$137.72	

Total work team cost/hour: \$516.36**MATERIAL QUANTITIES**Initial volume: 19,521 CCY Swell factor: 1.000
Loose volume: 19,521 LCYSource of estimated volume: Area of 24.2 acres and depth of 6" ExL pg12
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: \$0.00
Total Cost: \$0.00**HOURLY PRODUCTION****Truck Capacity:**Truck Payload (weight) Basis:Material weight: 1,600 Pounds/LCY
Description: Top Soil

Rated Payload:	<u>50,300</u>	Pounds
Payload Capacity:	<u>31.44</u>	LCY

Truck Bed (volume) Basis:

Struck Volume:	<u>12.00</u>	LCY
Heaped Volume:	<u>18.00</u>	LCY
Average Volume:	<u>15.00</u>	LCY
Adjusted Volume:	<u>18.00</u>	LCY

Final Truck Volume Based on Number of Loader Passes: 15.75 LCY**Loading Tool Capacity**

		Bucket Size Class: <u>NA</u>
Rated Capacity:	<u>5.000</u>	LCY (heaped)
Bucket Fill Factor:	<u>1.050</u>	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<u>5.250</u>	LCY

Job Condition Corrections:Site Altitude (ft.): 4680 feet

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

Loading Tool Cycle Time:Number of Loading Tool Passes Required to Fill
Truck: 3 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: 0.100Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.000	minutes
Adjusted Loader Cycle Time:		0.500	minutes
Net Load Time per Truck:		1.100	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.100</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes
Truck Maneuver and Dump Time:	<u>0.90</u>	Minutes	Adjusted for site altitude:	<u>0.900</u>	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	1900.00	0.00	3.00	3.00	2824	0.834

Haul Time: **0.834** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1900.00	0.00	3.00	3.00	2874	0.696

Return Time: **0.696** minutesTotal Truck Cycle Time: **4.030** minutes

Loading Tool unit

Production 590.63 LCY/Hour Adjusted for job efficiency: 490.22 LCY/Hour
Truck Unit Production 234.49 LCY/Hour Adjusted for job efficiency: 194.63 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 389.26 LCY/Hour
Adjusted single truck/loader team production: 389.26 LCY/Hour
Adjusted multiple truck/loader team production: **389.26** LCY/Hour

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: **50.15** HoursUnit cost: \$1.327 /LCY Total job cost: **\$25,895**

BULLDOZER WORKTask description: Spread topsoil on process and wash pond areasSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 05D
Date: 9/17/2024
User: JPLState: Colorado
County: WeldAbbreviation: None
Filename: M013-05DAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$173.32</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$109.71</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$14.53</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$40.04</u>	<u>NA</u>
Total unit Cost/Hour:	<u>\$337.60</u>	
Total Fleet Cost/Hour:	<u>\$675.19</u>	

MATERIAL QUANTITIESInitial Volume: 19,521
Swell factor: 1.000
Loose volume: 19,521 LCYSource of estimated volume: Area of 24.2 acres. Depth of 6" Ex L pg 12
Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feet
Unadjusted hourly
production: 1,400.0 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push
gradient: 0 %
Average site altitude: 4,680 feetMaterial weight: 1,600 lbs/LCYWeight description: Top SoilJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8862

Adjusted unit
production: 1,240.68 LCY/hr
Adjusted fleet
production: **2481.36 LCY/hr**

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.272/LCY

Total job time: **7.87 Hours**
Total job cost: **\$5,312**

REVEGETATION WORKTask description: Seed processing area and wash pond areaSite: Two Rivers Sand, Gravel and
Reservoir ProjectPermit Action: TR-1Permit/Job#: M2022013**PROJECT IDENTIFICATION**Task #: 05EState: ColoradoAbbreviation: NoneDate: 9/17/2024County: WeldFilename: M013-05EUser: JPLAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	200.00	pound	\$0.51	\$102.32
			Total Fertilizer Materials Cost/Acre	\$102.32

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$43.12
Total Fertilizer Application Cost/Acre	\$43.12

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	\$102.41
Weed control spraying (MEANS 31 31 16.13 3100)	\$338.80
Total Tilling Cost/Acre	\$441.21

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.91
Blue Grama - Lovington	0.20	3.26	\$5.55
Indian Ricegrass - Paloma	1.90	6.15	\$39.01
Switchgrass - Pathfinder	0.90	8.04	\$12.11
Sand Dropseed	0.10	11.94	\$1.30
Kentucky Bluegrass - Ginger	0.10	4.94	\$0.41
Little Bluestem - Pastura	0.30	1.79	\$4.76
Sideoats Grama - Vaughn	1.80	5.91	\$44.26
Strawberry Clover (coated)	0.10	0.68	\$0.98

Smooth Brome - Manchar	0.30	1.00	\$1.57
Sheep Fescue - Covar	0.40	6.24	\$2.47
Tall Wheatgrass - Jose	1.10	1.99	\$6.32
Totals Seed Mix	7.30	55.84	\$121.66

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$236.64
Total Seed Application Cost/Acre	\$236.64

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - Curtail @ 4.0 pt/ac	1.00	ACRE	\$36.14	\$36.14
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$492.78	\$985.56
Total Mulch Materials Cost/Acre				\$1,021.70

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$85.37
Weed spray, truck, non-aquatic area, nox. [DMG]	\$83.26
Total Mulch Application Cost/Acre	\$168.64

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:	24.2	Cost /Acre:	\$2,135.29
Estimated Failure Rate:	25%	Cost /Acre*:	\$358.30
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	\$51,674.02		
Reseeding Job Cost:	\$2,167.72		
Total Job Cost:	\$53,842		
Job Hours:	22.00		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization and Demob.**Site: **Two Rivers Sand, Gravel and
Reservoir Project**Permit Action: **TR-1**Permit/Job#: **M2022013****PROJECT IDENTIFICATION**Task #: **06**
Date: **9/17/2024**
User: **JPL**State: **Colorado**
County: **Weld**Abbreviation: **None**
Filename: **M013-06**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:	\$10.44	\$22.18	\$23.94
Operating Cost/Hour:	\$26.48	\$54.55	\$55.65
Operator Cost/Hour:	\$22.52	\$22.52	\$22.52
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$59.44	\$122.78	\$125.64

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 D8T - 8SU	52.21	\$187.01	\$125.64	2	\$625.30	\$251.28	\$250.00
CAT 966H high lift	25.80	\$57.78	\$59.44	1	\$117.22	\$59.44	\$250.00
CAT 815F	22.88	\$107.16	\$59.44	2	\$333.20	\$118.88	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$41.02	\$59.44	1	\$100.46	\$59.44	\$250.00
Grove RT890E, 142', 81.60 MT	54.55	\$222.11	\$125.64	1	\$347.75	\$125.64	\$250.00
CAT 120M	15.53	\$52.82	\$59.44	1	\$112.26	\$59.44	\$250.00

Subtotals: **\$1,636.19** **\$674.12** **\$1,750.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 12-18 cy, 6x4	\$114.77	2	\$229.54	\$229.54
Water Tanker, 2,500 Gal.	\$34.10	1	\$34.10	\$34.10

Subtotals: **\$263.64** **\$263.64**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GREELEY</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>\$4,077.58</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$65.91</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>0.00</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.00</u>	<u>NA</u>
Subtotals:	<u>0.25</u>	<u>0.25</u>

JOB TIME AND COST

Total job time:	<u>0.50</u>	Hours
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Total job cost:	<u>\$4,143</u>
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