



## COLORADO

### Division of Reclamation, Mining and Safety

Department of Natural Resources  
1313 Sherman Street, Room 215  
Denver, Colorado 80203

August 27, 2018

Steve O'Brian  
Environment, Inc.  
7985 Vance Dr. #205A  
Arvada, CO 80003

**Re: 22 West Pit, File No. M-2017-032, 112c Reclamation Permit Application,  
Adequacy Review No. 3**

Mr. O'Brian:

The Division of Reclamation, Mining and Safety (Division) has completed its third adequacy review of the above referenced application. The decision date for the application is currently set for August 31, 2018.

After reviewing your adequacy response submitted on August 10, 2018, the Division has determined all adequacy items have been sufficiently addressed except for the following:

**Exhibit G – Water Information (Rule 6.4.7) and Exhibit L – Reclamation Costs (Rule 6.4.12):**

The Division of Water Resources (DWR) has informed the Division that the Applicant has dedicated enough water shares to cover long-term evaporative depletions from 9.85 acres of exposed groundwater.

In order to satisfy the Division's requirements regarding exposed groundwater, the Applicant has the following three options available:

- Option 1 – For the proposed pond expansion to 15 acres, submit a bond amount sufficient to backfill the 5.15 acres of exposed groundwater not covered by dedicated shares. The Division has calculated a bond estimate for this option in the amount of \$407,627.00 (see attached).
- Option 2 – For the existing pond of 12.68 acres, submit a bond amount sufficient to backfill the 2.83 acres not covered by dedicated shares. For this option, the Division could approve the application with a stipulation that no additional groundwater is to be exposed until the Applicant has demonstrated the appropriate amount of water shares have been dedicated with DWR, that a water-court approved augmentation plan has been obtained, or that the reclamation bond includes sufficient costs to backfill the additional exposure. The Division has calculated a bond estimate for this option in the amount of \$249,120.00 (see attached).

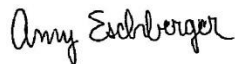


- Option 3 – Demonstrate the appropriate amount of water shares have been dedicated for the existing or proposed amount of exposed groundwater. For this option, the Division would not require the reclamation bond include costs for backfilling the pond. The Division has calculated a bond estimate for this option in the amount of \$16,548.00 (see attached).

Please be advised that on August 31, 2018, the application may be deemed inadequate and denied if the adequacy issue identified above has not been addressed to the Division's satisfaction.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129, or by email at [amy.eschberger@state.co.us](mailto:amy.eschberger@state.co.us).

Sincerely,



Amy Eschberger  
Environmental Protection Specialist

Encls: Bond estimate including costs to backfill 5.15 acres of exposed groundwater  
Bond estimate including costs to backfill 2.83 acres of exposed groundwater  
Bond estimate with no costs to backfill exposed groundwater

Ec: Chris Tomky, Deep Cut LLC at: [tomkyfarms@yahoo.com](mailto:tomkyfarms@yahoo.com)  
Tom Brubaker, Valco Inc at: [tom.brubaker@valco-inc.com](mailto:tom.brubaker@valco-inc.com)

Michael Cunningham, DRMS at: [michaela.cunningham@state.co.us](mailto:michaela.cunningham@state.co.us)



## COST SUMMARY WORK

Task description: Cost Summary

Site: 22 West Pit Permit Action: 112c App Bond - BF  
5.15 ac Pond

Permit/Job#: M2017032

### PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-000  
User: AME

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade plant site area	GRADER	1	6.70	\$1,174.00
002	Grade 2,000' pond shoreline to 3H:1V	EXCAVATE	1	14.74	\$2,693.00
003	Grade 100' pond shoreline to 5H:1V	EXCAVATE	1	0.49	\$90.00
004	Remove 100 cy scrap from site	TRUCK1	1	4.27	\$843.00
005	Remove 300 cy concrete rubble from site	TRUCK1	1	7.86	\$1,552.00
006	Rip 8.54 ac stockpile area	RIPPER	1	12.86	\$2,898.00
007	Backfill 5.15 ac existing pond	DOZER	2	659.58	\$275,036.00
008	Spread growth medium across 14.19 ac	LOADER	2	74.31	\$14,766.00
009	Revegetate 14.19 acres	REVEGE	1	28.00	\$24,245.00
010	Mobilization/Demobilization	MOBILIZE	1	6.53	\$9,932.00
<b><u>SUBTOTALS:</u></b>				<b>815.34</b>	<b>\$333,229</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$6,731.23
Performance bond:	1.05	Total =	\$3,498.90
Job superintendent:	150.00	Total =	\$10,957.50
Profit:	10.00	Total =	\$33,322.90

TOTAL O & P = \$54,510.53

CONTRACT AMOUNT (direct + O & P) = \$387,739.53

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	0.00	Total =	\$0.00
Reclamation management and/or administration:	5.00		\$19,386.98

CONTINGENCY: 0.00 Total = \$0.00

TOTAL INDIRECT COST = \$74,397.51

**TOTAL BOND AMOUNT (direct + indirect) = \$407,626.51**

## MOTOR GRADER WORK

Task description: Grade plant site area

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
5.15 ac Pond

### PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-001  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297  
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$77.19</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$63.34</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$4.07</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$1.77</u>	<u>50</u>
Operator Cost/Hour:	<u>\$28.69</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$175.05</u>	
Total Fleet Cost/Hour:	<u>\$175.05</u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 12.33 acres

Source of estimated acreage: Application

### HOURLY PRODUCTION

Average Grader Speed: 1.50 mph  
Selected Application: Finish grading (0-2.5 mph) - 1.5  
Selected Blade Angle: 30 degrees  
Effective Blade Length: 13.90 feet  
Width of blade overlap per pass: 2.00 feet  
Net grading or ripping width per pass: 11.90 feet  
Unadjusted Hourly Unit Production: 2.1636 acres/hour

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Adjusted Hourly Unit Production: 1.8391 acres/Hour  
Adjusted Hourly Fleet Production: 1.8391 acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 6.70 Hours  
Unit cost: \$95.18 per acre Total job cost: \$1,174

## HYDRAULIC EXCAVATOR WORK

Task description: Grade 2,000' pond shoreline to 3H:1V

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
5.15 ac Pond

### PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-002  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick Horsepower: 380  
Attachment 1: ROPS Cab Weight (MT): 49.37  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

	Utilization %
Ownership Cost/Hour: <u>\$66.64</u>	<u>NA</u>
Operating Cost/Hour: <u>\$78.14</u>	<u>100</u>
Operator Cost/Hour: <u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour: <u>\$182.57</u>	
Total Fleet Cost/Hour: <u>\$182.57</u>	

### MATERIAL QUANTITIES

Initial volume: 6,250 CCY Swell factor: 1.230  
Loose volume: 7,688 LCY

Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Rated Capacity: 3.14 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050  
Adjusted Capacity: 3.30 LCY

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Unadjusted Hourly Unit Production: 628.00 LCY/Hour  
Adjusted Hourly Unit Production: 521.24 LCY/Hour  
Adjusted Hourly Fleet Production: 521.24 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 14.75 Hours  
Unit cost: \$0.350 /LCY Total job cost: \$2,693

## HYDRAULIC EXCAVATOR WORK

Task description: Grade 100' pond shoreline to 5H:1V

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
5.15 ac Pond

### PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-003  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick Horsepower: 380  
Attachment 1: ROPS Cab Weight (MT): 49.37  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$66.64	NA
Operating Cost/Hour:	\$78.14	100
Operator Cost/Hour:	\$37.79	NA
Total Unit Cost/Hour:	\$182.57	
Total Fleet Cost/Hour:	\$182.57	

### MATERIAL QUANTITIES

Initial volume: 210 CCY Swell factor: 1.230  
Loose volume: 258 LCY

Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Rated Capacity: 3.14 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050  
Adjusted Capacity: 3.30 LCY

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Unadjusted Hourly Unit Production: 628.00 LCY/Hour  
Adjusted Hourly Unit Production: 521.24 LCY/Hour  
Adjusted Hourly Fleet Production: 521.24 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 0.50 Hours  
Unit cost: \$0.350 /LCY Total job cost: \$90

**TRUCK/LOADER TEAM WORK**Task description: **Remove 100 cy scrap from site**Site: **22 West Pit** Permit Action: 112c App Bond - BF  
5.15 ac PondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 004 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-004  
User: AMEAgency 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 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$22.72	\$25.88	NA	NA	NA	NA
Operating cost/hour:	\$44.95	\$32.57	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$30.37	\$40.90	NA	NA	NA	NA
Unit Subtotals:	\$98.03	\$99.35	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$197.38		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$197.38****MATERIAL QUANTITIES**Initial volume: 150 CCY Swell factor: 1.000  
Loose volume: 150 LCYSource of estimated volume: Application  
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 Pounds/LCY  
Description: User Provided  
Rated Payload: 50,300 Pounds

Payload Capacity: 50,300.00 LCY

**Truck Bed (volume) Basis:**

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

Final Truck Volume Based on Number of Loader Passes: 15.80 LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity: 3.900 LCY (heaped)  
 Bucket Fill Factor: 0.675 Blasted rock - poorly blasted (60 - 75%) 0.675  
 Adjusted Capacity: 2.633 LCY

**Job Condition Corrections:**

Site Altitude (ft.): 4130 feet

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

Net Correction: 0.830 0.830

**Loading Tool Cycle Time:** Number of Loading Tool Passes Required to Fill Truck: 6 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.020	minutes
Adjusted Loader Cycle Time:		<b>0.503</b>	minutes
Net Load Time per Truck:		<b>2.613</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes  
 Truck Load Time: 2.613 Minutes Adjusted for site altitude: 2.613 Minutes  
 Truck Maneuver and Dump Time: 0.90 Minutes Adjusted for site altitude: 0.900 Minutes

**Truck Travel (Haul & Return) Time:**  
penetration 1.2

Road Condition: Very hard, smooth, asphalt or concrete, no tire



## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	1.00	1.20	2.20	2868	9.354

Haul Time: **9.354** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	-1.00	1.20	0.20	2938	9.020

Return Time: **9.020** minutesTotal Truck Cycle Time: **22.387** minutes

## Loading Tool unit

Production 304.48 LCY/Hour      Adjusted for job efficiency: 252.72 LCY/Hour  
Truck Unit Production 42.33 LCY/Hour      Adjusted for job efficiency: 35.14 LCY/Hour

Optimal No. of Trucks: 7 Truck(s)      Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 35.14 LCY/Hour  
Adjusted single truck/loader team production: 35.14 LCY/Hour  
Adjusted multiple truck/loader team production: **35.14** LCY/Hour

**JOB TIME AND COST**Fleet size: 1 Team(s)      Total job time: **4.27** HoursUnit cost: \$5.617 /LCY      Total job cost: **\$843**

**TRUCK/LOADER TEAM WORK**Task description: **Remove 300 cy concrete rubble from site**Site: **22 West Pit** Permit Action: 112c App Bond - BF  
5.15 ac PondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 005 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-005  
User: AMEAgency 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 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$22.72	\$25.88	NA	NA	NA	NA
Operating cost/hour:	\$44.95	\$32.57	NA	NA	NA	NA
%Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$30.37	\$40.90	NA	NA	NA	NA
Unit Subtotals:	\$98.03	\$99.35	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$197.38		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$197.38****MATERIAL QUANTITIES**Initial volume: 300 CCY Swell factor: 1.000  
Loose volume: 300 LCYSource of estimated volume: Application  
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 Pounds/LCY  
Description: User Provided  
Rated Payload: 50,300 Pounds

Payload Capacity: 50,300.00 LCY

**Truck Bed (volume) Basis:**

Struck Volume: 12.00 LCY

Heaped Volume: 18.00 LCY

Average Volume: 15.00 LCY

Adjusted Volume: 18.00 LCY

Final Truck Volume Based on Number of Loader Passes: 16.38 LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	<u>3.900</u>	LCY (heaped)
Bucket Fill Factor:	<u>1.050</u>	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<u>4.095</u>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 4130 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: 4 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		<u>0.020</u>	minutes
Adjusted Loader Cycle Time:		<u>0.503</u>	minutes
Net Load Time per Truck:		<u>1.608</u>	minutes

**Truck Cycle Time:**

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes

Truck Load Time: 1.608 Minutes Adjusted for site altitude: 1.608 Minutes

Truck Maneuver and Dump Time: 0.90 Minutes Adjusted for site altitude: 0.900 Minutes

**Truck Travel (Haul & Return) Time:**  
**penetration 1.2**

Road Condition: Very hard, smooth, asphalt or concrete, no tire

## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	1.00	1.20	2.20	2868	9.354

Haul Time: **9.354** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	-1.00	1.20	0.20	2938	9.020

Return Time: **9.020** minutesTotal Truck Cycle Time: **21.382** minutes

## Loading Tool unit

Production	<u>466.33</u>	LCY/Hour	Adjusted for job efficiency:	<u>387.06</u>	LCY/Hour
Truck Unit Production	<u>45.96</u>	LCY/Hour	Adjusted for job efficiency:	<u>38.15</u>	LCY/Hour

Optimal No. of Trucks:	<u>10</u>	Truck(s)	Selected Number of Trucks:	<u>1</u>	Truck(s)
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Adjusted hourly truck team production:	<u>38.15</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>38.15</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<b><u>38.15</u></b>	LCY/Hour

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<b><u>7.86</u></b>	Hours
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Unit cost:	<u>\$5.174</u>	/LCY	Total job cost:	<b><u>\$1,552</u></b>
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## BULLDOZER RIPPING WORK

Task description: Rip 8.54 ac stockpile area

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
5.15 ac Pond

### PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-006  
User: AME

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:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper Ownership Cost/Hour:	\$8.93	NA
Ripper Operating Cost/Hour:	\$7.78	100
Operator Cost/Hour:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	<b>\$225.20</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 8.54 acres Rip Depth (ft): 2.00 Volume: 27,556 BCY or CCY

Source of estimated quantity: Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 2.56 mph  
Average Ripping Width: 7.08 degrees  
Average Ripping Length: 300.00 feet  
Average Dozer Speed: 88.00 feet  
Average Maneuver Time: 0.25 feet  
Production per unit area: 0.800 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.800 Acres/hr  
Site Altitude: 4,130 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.66 Acres/hr  
Adjusted Hourly Fleet Production: **0.66** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **12.87** Hours

Unit cost: \$339.348 Per acre Total job cost: **\$2,898**



**BULLDOZER WORK**Task description: **Backfill 5.15 ac existing pond**Site: **22 West Pit**Permit Action: 112c App Bond - BF  
5.15 ac Pond

Permit/Job#: M2017032

**PROJECT IDENTIFICATION**Task #: 007  
Date: 8/24/2018  
User: AMEState: Colorado  
County: OteroAbbreviation: None  
Filename: M032-007

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:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.52	NA

Total unit Cost/Hour: \$208.49  
Total Fleet Cost/Hour: **\$416.99****MATERIAL QUANTITIES**Initial Volume: 182,791  
Swell factor: 1.165  
Loose volume: **212,952 LCY**Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 400 feet  
Unadjusted hourly production: 183.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: -5 %  
Average site altitude: 4,130 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

**Job Condition Correction Factor**

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

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8807

Adjusted unit production: 161.43 LCY/hr

Adjusted fleet production: **322.86** LCY/hr

### **JOB TIME AND COST**

Fleet size: 2 Dozer(s)

Unit cost: \$1.292/LCY

Total job time: **659.58** Hours

Total job cost: **\$275,036**



**WHEEL LOADER – LOAD AND CARRY WORK**Task description: Spread growth medium across 14.19 ac

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
5.15 ac Pond

**PROJECT IDENTIFICATION**

Task #: 008 State: Colorado Abbreviation: None  
 Date: 8/24/2018 County: Otero Filename: 032-008  
 User: AME

Agency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: CAT 938H Horsepower: 172  
 Attachment 1: ROPS Cab Shift Basis: 1 per day  
 Data Source: (CRG)

**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$25.88	NA
Operating Cost/Hour:	\$32.57	100
Operator Cost/Hour:	\$40.90	NA
Total Unit Cost/Hour:	\$99.35	
Total Fleet Cost/Hour:	\$198.70	

**MATERIAL QUANTITIES**

Initial volume: 11,447 CCY Swell factor: 1.215  
 Loose volume: 13,908 LCY

Source of estimated volume: Application  
 Source of estimated swell factor: Cat Handbook

**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	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:		-0.080	minutes
Adjusted Basic Cycle Time:		0.403	minutes

**Rolling Resistance – Road Conditions**

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0  
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	1000	1.00	5.00	6.00	1.0071	(Cat HB)
Return Route:	1000	1.00	5.00	6.00	0.8734	(Cat HB)

Total Travel Time: 1.8805 minutes  
 Total Cycle Time: 2.2830 minutes

Load Bucket Capacity

Rated Capacity: 3.90 LCY (heaped)  
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100  
 Adjusted Capacity: 4.29 LCY

Job Condition Correction Factors

Site Altitude: 4130 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: 112.75 LCY/Hour  
 Adjusted Hourly Unit Production: 93.58 LCY/Hour  
 Adjusted Hourly Fleet Production: 187.16 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 74.31 Hours  
 Unit cost: \$1.062 /LCY Total job cost: \$14,766

**REVEGETATION WORK**Task description: Revegetate 14.19 acresSite: 22 West Pit Permit Action: 112c App Bond - BF  
5.15 ac PondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 009 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-009  
User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-6-6	667.00	pound	\$0.17	\$113.39
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$113.39</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$34.72
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$34.72</b>

**TILLING**

Description	Cost /Acre
Subsoil scarification, (MEANS 32 91 13.23 3100)	\$191.66
<b>Total Tilling Cost/Acre</b>	<b>\$191.66</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.20	7.81	\$5.80
Blue Grama - Lovington	0.40	6.53	\$6.66
Prairie Clover, White	0.70	5.93	\$28.49
Sideoats Grama - Vaughn	2.70	8.86	\$27.65
Western Wheatgrass - Arriba	3.20	8.08	\$26.50
<b>Totals Seed Mix</b>	<b>7.20</b>	<b>37.21</b>	<b>\$95.09</b>

**Application**

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

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

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$4.26	\$4.26
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$583.07</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, hand, aquatic area, annuals [DMG]	\$133.12
Weed spray, hand, aquatic area, nox. [DMG]	\$175.00
<b>Total Mulch Application Cost/Acre</b>	<b>\$376.90</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 14.19                      Cost /Acre: \$1,626.83  
 Estimated Failure Rate: 25%                      Cost /Acre\*: \$327.09  
 \*Selected Replanting Work Items: SEEDING

Initial Job Cost: \$23,084.72  
 Reseeding Job Cost: \$1,160.35  
 Total Job Cost: \$24,245  
 Job Hours: 28.00

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mobilization/Demobilization**

Site: **22 West Pit** Permit Action: **112c App Bond - BF**  
**5.15 ac Pond** Permit/Job#: **M2017032**

**PROJECT IDENTIFICATION**

Task #: **010** State: **Colorado** Abbreviation: **None**  
 Date: **8/24/2018** County: **Otero** Filename: **M032-010**  
 User: **AME**

Agency or organization name: **DRMS****EQUIPMENT TRANSPORT RIG COST**

Shift basis: **1 per day**  
 Cost Data Source: **CRG Data**

Truck Tractor Description: **GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)**Truck Trailer Description: **GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT  
TRAILER (25T, 50T, AND 100T)****Cost Breakdown:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
Ownership Cost/Hour:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

**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 16M	28.73	\$77.19	\$117.55	1	\$194.74	\$117.55	\$250.00
Cat 345D L 12'- 10" Stick	54.31	\$66.64	\$125.45	1	\$192.09	\$125.45	\$250.00
CAT 938H	16.34	\$25.88	\$88.67	2	\$229.10	\$177.34	\$500.00
Cat D8T - 8SU	53.08	\$102.55	\$125.45	2	\$456.00	\$250.90	\$500.00
Subtotals:					<b>\$1,071.93</b>	<b>\$671.24</b>	<b>\$1,500.00</b>

**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	\$97.40	1	\$97.40	\$97.40
Drill/Broadcast Seeder with Tractor	\$36.08	1	\$36.08	\$36.08
Subtotals:			<b>\$133.48</b>	<b>\$133.48</b>

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>ROCKY FORD</u>	
Total one-way travel distance:	<u>4.00</u>	miles
Average Travel Speed:	<u>30.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$9,896.43</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$35.59</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>1.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>1.50</u>	<u>NA</u>
Subtotals:	<u>3.27</u>	<u>0.27</u>

**JOB TIME AND COST**

Total job time:	<u>6.53</u>	Hours
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Total job cost:	<u>\$9,932</u>
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## COST SUMMARY WORK

Task description: Cost Summary

Site: 22 West Pit Permit Action: 112c App Bond - BF  
2.83 ac Pond

Permit/Job#: M2017032

### PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-000  
User: AME

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade plant site area	GRADER	1	6.70	\$1,174.00
002	Grade 2,000' pond shoreline to 3H:1V	EXCAVATE	1	14.74	\$2,693.00
003	Grade 100' pond shoreline to 5H:1V	EXCAVATE	1	0.49	\$90.00
004	Remove 100 cy scrap from site	TRUCK1	1	4.27	\$843.00
005	Remove 300 cy concrete rubble from site	TRUCK1	1	7.86	\$1,552.00
006	Rip 8.54 ac stockpile area	RIPPER	1	12.86	\$2,898.00
007	Backfill 2.83 ac existing pond	DOZER	2	362.45	\$151,136.00
008	Spread growth medium across 11.87 ac	LOADER	2	62.15	\$12,351.00
009	Revegetate 11.87 acres	REVEGE	1	23.00	\$20,281.00
010	Mobilization/Demobilization	MOBILIZE	1	6.53	\$9,932.00
<b><u>SUBTOTALS:</u></b>				<b>501.05</b>	<b>\$202,950</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$4,099.59
Performance bond:	1.05	Total =	\$2,130.98
Job superintendent:	100.00	Total =	\$7,305.00
Profit:	10.00	Total =	\$20,295.00

TOTAL O & P = \$33,830.57

CONTRACT AMOUNT (direct + O & P) = \$236,780.57

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	0.00	Total =	\$0.00
Reclamation management and/or administration:	5.00		\$11,839.03

CONTINGENCY: 0.00 Total = \$0.00

TOTAL INDIRECT COST = \$46,169.60

**TOTAL BOND AMOUNT (direct + indirect) = \$249,119.60**

## MOTOR GRADER WORK

Task description: Grade plant site area

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
2.83 ac Pond

### PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-001  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297  
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$77.19</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$63.34</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$4.07</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$1.77</u>	<u>50</u>
Operator Cost/Hour:	<u>\$28.69</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$175.05</u>	
Total Fleet Cost/Hour:	<u>\$175.05</u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 12.33 acres

Source of estimated acreage: Application

### HOURLY PRODUCTION

Average Grader Speed: 1.50 mph  
Selected Application: Finish grading (0-2.5 mph) - 1.5  
Selected Blade Angle: 30 degrees  
Effective Blade Length: 13.90 feet  
Width of blade overlap per pass: 2.00 feet  
Net grading or ripping width per pass: 11.90 feet  
Unadjusted Hourly Unit Production: 2.1636 acres/hour

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Adjusted Hourly Unit Production: 1.8391 acres/Hour  
Adjusted Hourly Fleet Production: 1.8391 acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 6.70 Hours  
Unit cost: \$95.18 per acre Total job cost: \$1,174



## HYDRAULIC EXCAVATOR WORK

Task description: Grade 2,000' pond shoreline to 3H:1V

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
2.83 ac Pond

### PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-002  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick Horsepower: 380  
Attachment 1: ROPS Cab Weight (MT): 49.37  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

	Utilization %
Ownership Cost/Hour: <u>\$66.64</u>	<u>NA</u>
Operating Cost/Hour: <u>\$78.14</u>	<u>100</u>
Operator Cost/Hour: <u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour: <u>\$182.57</u>	
Total Fleet Cost/Hour: <u>\$182.57</u>	

### MATERIAL QUANTITIES

Initial volume: 6,250 CCY Swell factor: 1.230  
Loose volume: 7,688 LCY

Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Rated Capacity: 3.14 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050  
Adjusted Capacity: 3.30 LCY

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Unadjusted Hourly Unit Production: 628.00 LCY/Hour  
Adjusted Hourly Unit Production: 521.24 LCY/Hour  
Adjusted Hourly Fleet Production: 521.24 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 14.75 Hours  
Unit cost: \$0.350 /LCY Total job cost: \$2,693

## HYDRAULIC EXCAVATOR WORK

Task description: Grade 100' pond shoreline to 5H:1V

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
2.83 ac Pond

### PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-003  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick Horsepower: 380  
Attachment 1: ROPS Cab Weight (MT): 49.37  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$66.64	NA
Operating Cost/Hour:	\$78.14	100
Operator Cost/Hour:	\$37.79	NA
Total Unit Cost/Hour:	\$182.57	
Total Fleet Cost/Hour:	\$182.57	

### MATERIAL QUANTITIES

Initial volume: 210 CCY Swell factor: 1.230  
Loose volume: 258 LCY

Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Rated Capacity: 3.14 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050  
Adjusted Capacity: 3.30 LCY

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Unadjusted Hourly Unit Production: 628.00 LCY/Hour  
Adjusted Hourly Unit Production: 521.24 LCY/Hour  
Adjusted Hourly Fleet Production: 521.24 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 0.50 Hours  
Unit cost: \$0.350 /LCY Total job cost: \$90

**TRUCK/LOADER TEAM WORK**Task description: **Remove 100 cy scrap from site**Site: **22 West Pit** Permit Action: 112c App Bond - BF  
2.83 ac PondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 004 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-004  
User: AMEAgency 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 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$22.72	\$25.88	NA	NA	NA	NA
Operating cost/hour:	\$44.95	\$32.57	NA	NA	NA	NA
%Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$30.37	\$40.90	NA	NA	NA	NA
Unit Subtotals:	\$98.03	\$99.35	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$197.38		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$197.38****MATERIAL QUANTITIES**Initial volume: 150 CCY Swell factor: 1.000  
Loose volume: 150 LCYSource of estimated volume: Application  
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 Pounds/LCY  
Description: User Provided  
Rated Payload: 50,300 Pounds

Payload Capacity: 50,300.00 LCY

**Truck Bed (volume) Basis:**

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

Final Truck Volume Based on Number of Loader Passes: 15.80 LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity: 3.900 LCY (heaped)  
 Bucket Fill Factor: 0.675 Blasted rock - poorly blasted (60 - 75%) 0.675  
 Adjusted Capacity: 2.633 LCY

**Job Condition Corrections:**

Site Altitude (ft.): 4130 feet

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

Net Correction: 0.830 0.830

**Loading Tool Cycle Time:** Number of Loading Tool Passes Required to Fill Truck: 6 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.020	minutes
Adjusted Loader Cycle Time:		<b>0.503</b>	minutes
Net Load Time per Truck:		<b>2.613</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes  
 Truck Load Time: 2.613 Minutes Adjusted for site altitude: 2.613 Minutes  
 Truck Maneuver and Dump Time: 0.90 Minutes Adjusted for site altitude: 0.900 Minutes

**Truck Travel (Haul & Return) Time:**  
penetration 1.2

Road Condition: Very hard, smooth, asphalt or concrete, no tire

## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	1.00	1.20	2.20	2868	9.354

Haul Time: **9.354** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	-1.00	1.20	0.20	2938	9.020

Return Time: **9.020** minutesTotal Truck Cycle Time: **22.387** minutes

## Loading Tool unit

Production 304.48 LCY/Hour      Adjusted for job efficiency: 252.72 LCY/Hour  
Truck Unit Production 42.33 LCY/Hour      Adjusted for job efficiency: 35.14 LCY/Hour

Optimal No. of Trucks: 7 Truck(s)      Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 35.14 LCY/Hour  
Adjusted single truck/loader team production: 35.14 LCY/Hour  
Adjusted multiple truck/loader team production: **35.14** LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: **4.27** Hours

Unit cost: \$5.617 /LCY      Total job cost: **\$843**

**TRUCK/LOADER TEAM WORK**Task description: **Remove 300 cy concrete rubble from site**Site: **22 West Pit** Permit Action: 112c App Bond - BF  
2.83 ac PondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 005 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-005  
User: AMEAgency 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 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$22.72	\$25.88	NA	NA	NA	NA
Operating cost/hour:	\$44.95	\$32.57	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$30.37	\$40.90	NA	NA	NA	NA
Unit Subtotals:	\$98.03	\$99.35	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$197.38		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$197.38****MATERIAL QUANTITIES**Initial volume: 300 CCY Swell factor: 1.000  
Loose volume: 300 LCYSource of estimated volume: Application  
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 Pounds/LCY  
Description: User Provided  
Rated Payload: 50,300 Pounds

Payload Capacity: 50,300.00 LCY

**Truck Bed (volume) Basis:**

Struck Volume: 12.00 LCY

Heaped Volume: 18.00 LCY

Average Volume: 15.00 LCY

Adjusted Volume: 18.00 LCY

Final Truck Volume Based on Number of Loader Passes: 16.38 LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	<u>3.900</u>	LCY (heaped)
Bucket Fill Factor:	<u>1.050</u>	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<u>4.095</u>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 4130 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: 4 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		<u>0.020</u>	minutes
Adjusted Loader Cycle Time:		<u>0.503</u>	minutes
Net Load Time per Truck:		<u>1.608</u>	minutes

**Truck Cycle Time:**

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes

Truck Load Time: 1.608 Minutes Adjusted for site altitude: 1.608 Minutes

Truck Maneuver and Dump Time: 0.90 Minutes Adjusted for site altitude: 0.900 Minutes

**Truck Travel (Haul & Return) Time:**  
**penetration 1.2**

Road Condition: Very hard, smooth, asphalt or concrete, no tire

## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	1.00	1.20	2.20	2868	9.354

Haul Time: **9.354** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	-1.00	1.20	0.20	2938	9.020

Return Time: **9.020** minutesTotal Truck Cycle Time: **21.382** minutes

## Loading Tool unit

Production	<u>466.33</u>	LCY/Hour	Adjusted for job efficiency:	<u>387.06</u>	LCY/Hour
Truck Unit Production	<u>45.96</u>	LCY/Hour	Adjusted for job efficiency:	<u>38.15</u>	LCY/Hour

Optimal No. of Trucks:	<u>10</u>	Truck(s)	Selected Number of Trucks:	<u>1</u>	Truck(s)
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Adjusted hourly truck team production:	<u>38.15</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>38.15</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<b><u>38.15</u></b>	LCY/Hour

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<b><u>7.86</u></b>	Hours
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Unit cost:	<u>\$5.174</u>	/LCY	Total job cost:	<b><u>\$1,552</u></b>
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## BULLDOZER RIPPING WORK

Task description: Rip 8.54 ac stockpile area

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
2.83 ac Pond

### PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-006  
User: AME

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:	<u>\$93.62</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$73.35</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$8.93</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$7.78</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.52</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$225.20</u>	
Total Fleet Cost/Hour:	<u>\$225.20</u>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 8.54 acres Rip Depth (ft): 2.00 Volume: 27,556 BCY or CCY

Source of estimated quantity: Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	<u>2.56</u>	<u>mph</u>
Average Ripping Width:	<u>7.08</u>	<u>degrees</u>
Average Ripping Length:	<u>300.00</u>	<u>feet</u>
Average Dozer Speed:	<u>88.00</u>	<u>feet</u>
Average Maneuver Time:	<u>0.25</u>	<u>feet</u>
Production per unit area:	<u>0.800</u>	<u>acres/hour</u>

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production:	<u>0.800</u>	<u>Acres/hr</u>
Site Altitude:	<u>4,130</u>	<u>feet</u>
Altitude Adj:	<u>1.00</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.83</u>	<u>multiplier</u>

Adjusted Hourly Unit Production: 0.66 Acres/hr  
Adjusted Hourly Fleet Production: 0.66 Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 12.87 Hours

Unit cost: \$339.348 Per acre Total job cost: \$2,898



**BULLDOZER WORK**Task description: **Backfill 2.83 ac existing pond**Site: **22 West Pit**Permit Action: 112c App Bond - BF  
2.83 ac PondPermit/Job#: **M2017032****PROJECT IDENTIFICATION**Task #: **007**  
Date: **8/24/2018**  
User: **AME**State: **Colorado**  
County: **Otero**Abbreviation: **None**  
Filename: **M032-007**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:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.52	NA

Total unit Cost/Hour: **\$208.49**  
Total Fleet Cost/Hour: **\$416.99****MATERIAL QUANTITIES**Initial Volume: **100,446**  
Swell factor: **1.165**  
Loose volume: **117,020 LCY**Source of estimated volume: **Application**  
Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **400 feet**  
Unadjusted hourly production: **183.3 LCY/hr**Materials consistency description: **Consolidated stockpile 1.0**Average push gradient: **-5 %**  
Average site altitude: **4,130 feet**Material weight: **2,900 lbs/LCY**Weight description: **Decomposed rock - 50% Rock, 50% Earth****Job Condition Correction Factor**

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

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8807

Adjusted unit production: 161.43 LCY/hr

Adjusted fleet production: **322.86** LCY/hr

### **JOB TIME AND COST**

Fleet size: 2 Dozer(s)

Unit cost: \$1.292/LCY

Total job time: **362.45** Hours

Total job cost: **\$151,136**

**WHEEL LOADER – LOAD AND CARRY WORK**Task description: Spread growth medium across 11.87 ac

Site: 22 West Pit Permit Action: 112c App Bond - BF Permit/Job#: M2017032  
2.83 ac Pond

**PROJECT IDENTIFICATION**

Task #: 008 State: Colorado Abbreviation: None  
 Date: 8/24/2018 County: Otero Filename: M032-008  
 User: AME

Agency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: CAT 938H Horsepower: 172  
 Attachment 1: ROPS Cab Shift Basis: 1 per day  
 Data Source: (CRG)

**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$25.88	NA
Operating Cost/Hour:	\$32.57	100
Operator Cost/Hour:	\$40.90	NA
Total Unit Cost/Hour:	\$99.35	
Total Fleet Cost/Hour:	\$198.70	

**MATERIAL QUANTITIES**

Initial volume: 9,575 CCY Swell factor: 1.215  
 Loose volume: 11,634 LCY

Source of estimated volume: Application  
 Source of estimated swell factor: Cat Handbook

**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	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:		-0.080	minutes
Adjusted Basic Cycle Time:		0.403	minutes

**Rolling Resistance – Road Conditions**

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0  
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	1000	1.00	5.00	6.00	1.0071	(Cat HB)
Return Route:	1000	1.00	5.00	6.00	0.8734	(Cat HB)

Total Travel Time: 1.8805 minutes  
 Total Cycle Time: 2.2830 minutes

Load Bucket Capacity

Rated Capacity: 3.90 LCY (heaped)  
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100  
 Adjusted Capacity: 4.29 LCY

Job Condition Correction Factors

Site Altitude: 4130 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: 112.75 LCY/Hour  
 Adjusted Hourly Unit Production: 93.58 LCY/Hour  
 Adjusted Hourly Fleet Production: 187.16 LCY/Hour

JOB TIME AND COST

Fleet size:	<u>2</u>	Loader(s)	Total job time:	<u>62.16</u>	Hours
Unit cost:	<u>\$1.062</u>	/LCY	Total job cost:	<u>\$12,351</u>	

**REVEGETATION WORK**Task description: Revegetate 11.87 acresSite: 22 West Pit Permit Action: 112c App Bond - BF  
2.83 ac PondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 009 State: Colorado Abbreviation: None  
Date: 8/24/2018 County: Otero Filename: M032-009  
User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-6-6	667.00	pound	\$0.17	\$113.39
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$113.39</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$34.72
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$34.72</b>

**TILLING**

Description	Cost /Acre
Subsoil scarification, (MEANS 32 91 13.23 3100)	\$191.66
<b>Total Tilling Cost/Acre</b>	<b>\$191.66</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.20	7.81	\$5.80
Blue Grama - Lovington	0.40	6.53	\$6.66
Prairie Clover, White	0.70	5.93	\$28.49
Sideoats Grama - Vaughn	2.70	8.86	\$27.65
Western Wheatgrass - Arriba	3.20	8.08	\$26.50
<b>Totals Seed Mix</b>	<b>7.20</b>	<b>37.21</b>	<b>\$95.09</b>

**Application**

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

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

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$4.26	\$4.26
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$583.07</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, hand, aquatic area, annuals [DMG]	\$133.12
Weed spray, hand, aquatic area, nox. [DMG]	\$175.00
<b>Total Mulch Application Cost/Acre</b>	<b>\$376.90</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres:	11.87	Cost /Acre:	\$1,626.83
Estimated Failure Rate:	25%	Cost /Acre*:	\$327.09
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$19,310.47</b>
Reseeding Job Cost:	<b>\$970.64</b>
Total Job Cost:	<b>\$20,281</b>
Job Hours:	<b>23.00</b>



**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mobilization/Demobilization**

Site: **22 West Pit** Permit Action: 112c App Bond - BF  
2.83 ac Pond Permit/Job#: M2017032

**PROJECT IDENTIFICATION**

Task #: 010 State: Colorado Abbreviation: None  
 Date: 8/24/2018 County: Otero Filename: M032-010  
 User: AME

Agency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**

Shift basis: 1 per day  
 Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT  
TRAILER (25T, 50T, AND 100T)**Cost Breakdown:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
Ownership Cost/Hour:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

**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 16M	28.73	\$77.19	\$117.55	1	\$194.74	\$117.55	\$250.00
Cat 345D L 12'- 10" Stick	54.31	\$66.64	\$125.45	1	\$192.09	\$125.45	\$250.00
CAT 938H	16.34	\$25.88	\$88.67	2	\$229.10	\$177.34	\$500.00
Cat D8T - 8SU	53.08	\$102.55	\$125.45	2	\$456.00	\$250.90	\$500.00

Subtotals: **\$1,071.93** **\$671.24** **\$1,500.00**

**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	\$97.40	1	\$97.40	\$97.40
Drill/Broadcast Seeder with Tractor	\$36.08	1	\$36.08	\$36.08

Subtotals: **\$133.48** **\$133.48**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>ROCKY FORD</u>	
Total one-way travel distance:	<u>4.00</u>	miles
Average Travel Speed:	<u>30.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$9,896.43</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$35.59</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>1.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>1.50</u>	<u>NA</u>
Subtotals:	<u>3.27</u>	<u>0.27</u>

**JOB TIME AND COST**

Total job time:	<u>6.53</u>	Hours
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Total job cost:	<u>\$9,932</u>
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## COST SUMMARY WORK

Task description: Cost Summary

Site: 22 West Pit

Permit Action: 112c App Bond

Permit/Job#: M2017032

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 8/16/2018

County: Otero

Filename: M032-000

User: AME

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade plant site area	GRADER	1	6.70	\$1,174.00
002	Grade 675' pond shoreline to 3H:1V	EXCAVATE	1	4.97	\$909.00
003	Grade 100' pond shoreline to 5H:1V	EXCAVATE	1	0.49	\$90.00
004	Remove 100 cy scrap from site	TRUCK1	1	4.27	\$843.00
005	Remove 300 cy concrete rubble from site	TRUCK1	1	7.86	\$1,552.00
006	Spread growth medium across 0.5 ac	LOADER	1	4.56	\$453.00
007	Revegetate 0.5 acres	REVEGE	1	3.00	\$2,555.00
008	Mobilization/Demobilization	MOBILIZE	1	4.53	\$4,766.00
<b><u>SUBTOTALS:</u></b>				<b>36.38</b>	<b>\$12,342</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$249.31

Performance bond: 1.05

Total = \$129.59

Job superintendent: 18.19

Total = \$1,328.78

Profit: 10.00

Total = \$1,234.20

TOTAL O & P = \$2,941.88

CONTRACT AMOUNT (direct + O & P) = \$15,283.88

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00

Total = 500.00

Engineering work and/or contract/bid preparation: 0.00

Total = \$0.00

Reclamation management and/or administration: 5.00

\$764.19

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$4,206.07

**TOTAL BOND AMOUNT (direct + indirect) = \$16,548.07**

## MOTOR GRADER WORK

Task description: Grade plant site area

Site: 22 West Pit Permit Action: 112c App Bond Permit/Job#: M2017032

### PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None  
Date: 8/16/2018 County: Otero Filename: M032-001  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297  
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$77.19</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$63.34</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$4.07</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$1.77</u>	<u>50</u>
Operator Cost/Hour:	<u>\$28.69</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$175.05</u>	
Total Fleet Cost/Hour:	<u><b>\$175.05</b></u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 12.33 acres

Source of estimated acreage: Application

### HOURLY PRODUCTION

Average Grader Speed: 1.50 mph  
Selected Application: Finish grading (0-2.5 mph) - 1.5  
Selected Blade Angle: 30 degrees  
Effective Blade Length: 13.90 feet  
Width of blade overlap per pass: 2.00 feet  
Net grading or ripping width per pass: 11.90 feet  
Unadjusted Hourly Unit Production: 2.1636 acres/hour

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Adjusted Hourly Unit Production: 1.8391 acres/Hour  
Adjusted Hourly Fleet Production: **1.8391** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **6.70** Hours

Unit cost: \$95.18 per acre Total job cost: **\$1,174**

## HYDRAULIC EXCAVATOR WORK

Task description: Grade 675' pond shoreline to 3H:1V

Site: 22 West Pit Permit Action: 112c App Bond Permit/Job#: M2017032

### PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None  
Date: 8/16/2018 County: Otero Filename: M032-002  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick Horsepower: 380  
Attachment 1: ROPS Cab Weight (MT): 49.37  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$66.64</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$78.14</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$182.57</u>	
Total Fleet Cost/Hour:	<u>\$182.57</u>	

### MATERIAL QUANTITIES

Initial volume: 2,109 CCY Swell factor: 1.230  
Loose volume: 2,594 LCY

Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Rated Capacity: 3.14 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050  
Adjusted Capacity: 3.30 LCY

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Unadjusted Hourly Unit Production: 628.00 LCY/Hour  
Adjusted Hourly Unit Production: 521.24 LCY/Hour  
Adjusted Hourly Fleet Production: 521.24 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 4.98 Hours  
Unit cost: \$0.350 /LCY Total job cost: \$909

## HYDRAULIC EXCAVATOR WORK

Task description: Grade 100' pond shoreline to 5H:1V

Site: 22 West Pit Permit Action: 112c App Bond Permit/Job#: M2017032

### PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None  
Date: 8/16/2018 County: Otero Filename: M032-003  
User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 345D L 12'-10" Stick Horsepower: 380  
Attachment 1: ROPS Cab Weight (MT): 49.37  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$66.64</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$78.14</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$182.57</u>	
Total Fleet Cost/Hour:	<u>\$182.57</u>	

### MATERIAL QUANTITIES

Initial volume: 210 CCY Swell factor: 1.230  
Loose volume: 258 LCY

Source of estimated volume: Application  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.315 minutes

#### Load Bucket Capacity

Rated Capacity: 3.14 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050  
Adjusted Capacity: 3.30 LCY

#### Job Condition Correction Factors

Site Altitude: 4130 feet

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

Unadjusted Hourly Unit Production: 628.00 LCY/Hour  
Adjusted Hourly Unit Production: 521.24 LCY/Hour  
Adjusted Hourly Fleet Production: 521.24 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 0.50 Hours  
Unit cost: \$0.350 /LCY Total job cost: \$90

**TRUCK/LOADER TEAM WORK**Task description: **Remove 100 cy scrap from site**Site: **22 West Pit**Permit Action: **112c App Bond**Permit/Job#: **M2017032****PROJECT IDENTIFICATION**Task #: **004**State: **Colorado**Abbreviation: **None**Date: **8/16/2018**County: **Otero**Filename: **M032-004**User: **AME**Agency 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 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$22.72	\$25.88	NA	NA	NA	NA
Operating cost/hour:	\$44.95	\$32.57	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$30.37	\$40.90	NA	NA	NA	NA
Unit Subtotals:	\$98.03	\$99.35	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$197.38		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$197.38****MATERIAL QUANTITIES**Initial volume: **150**

CCY

Swell factor: **1.000**Loose volume: **150**

LCY

Source of estimated volume: **Application**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**

Pounds/LCY

Description: **User Provided**Rated Payload: **50,300**

Pounds

Payload Capacity: **50,300.00**

LCY

**Truck Bed (volume) Basis:**

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

Final Truck Volume Based on Number of Loader Passes: **15.80** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.675	Blasted rock - poorly blasted (60 - 75%) 0.675
Adjusted Capacity:	<b>2.633</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 4130 feet

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

**Loading Tool Cycle Time:** Number of Loading Tool Passes Required to Fill Truck: 6 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.020	minutes
Adjusted Loader Cycle Time:		<b>0.503</b>	minutes
Net Load Time per Truck:		<b>2.613</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	2.613	Minutes	Adjusted for site altitude:	2.613	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

**Truck Travel (Haul & Return) Time:**  
penetration 1.2

Road Condition: Very hard, smooth, asphalt or concrete, no tire



## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	1.00	1.20	2.20	2868	9.354

Haul Time: **9.354** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	-1.00	1.20	0.20	2938	9.020

Return Time: **9.020** minutesTotal Truck Cycle Time: **22.387** minutes

## Loading Tool unit

Production 304.48 LCY/Hour      Adjusted for job efficiency: 252.72 LCY/Hour  
Truck Unit Production 42.33 LCY/Hour      Adjusted for job efficiency: 35.14 LCY/Hour

Optimal No. of Trucks: 7 Truck(s)      Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 35.14 LCY/Hour  
Adjusted single truck/loader team production: 35.14 LCY/Hour  
Adjusted multiple truck/loader team production: **35.14** LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: **4.27** Hours

Unit cost: \$5.617 /LCY      Total job cost: **\$843**

**TRUCK/LOADER TEAM WORK**Task description: **Remove 300 cy concrete rubble from site**Site: **22 West Pit**Permit Action: **112c App Bond**Permit/Job#: **M2017032****PROJECT IDENTIFICATION**Task #: **005**State: **Colorado**Abbreviation: **None**Date: **8/16/2018**County: **Otero**Filename: **M032-005**User: **AME**Agency 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 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$22.72	\$25.88	NA	NA	NA	NA
Operating cost/hour:	\$44.95	\$32.57	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$30.37	\$40.90	NA	NA	NA	NA
Unit Subtotals:	\$98.03	\$99.35	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$197.38		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$197.38****MATERIAL QUANTITIES**Initial volume: **300**

CCY

Swell factor: **1.000**Loose volume: **300**

LCY

Source of estimated volume: **Application**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**

Pounds/LCY

Description: **User Provided**Rated Payload: **50,300**

Pounds

Payload Capacity: **50,300.00**

LCY

Truck Bed (volume) Basis:

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

Final Truck Volume Based on Number of Loader Passes: 16.38 LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	1.050	Other - moist loam (100-110%) 1.050
Adjusted Capacity:	<b>4.095</b>	LCY

Job Condition Corrections:

Site Altitude (ft.): 4130 feet

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

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.020	minutes
Adjusted Loader Cycle Time:		<b>0.503</b>	minutes
Net Load Time per Truck:		<b>1.608</b>	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.608	Minutes	Adjusted for site altitude:	1.608	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time:  
penetration 1.2

Road Condition: Very hard, smooth, asphalt or concrete, no tire

## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	1.00	1.20	2.20	2868	9.354

Haul Time: **9.354** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	26400.00	-1.00	1.20	0.20	2938	9.020

Return Time: **9.020** minutesTotal Truck Cycle Time: **21.382** minutes

## Loading Tool unit

Production	<u>466.33</u>	LCY/Hour	Adjusted for job efficiency:	<u>387.06</u>	LCY/Hour
Truck Unit Production	<u>45.96</u>	LCY/Hour	Adjusted for job efficiency:	<u>38.15</u>	LCY/Hour

Optimal No. of Trucks:	<u>10</u>	Truck(s)	Selected Number of Trucks:	<u>1</u>	Truck(s)
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Adjusted hourly truck team production:	<u>38.15</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>38.15</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<b><u>38.15</u></b>	LCY/Hour

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<b><u>7.86</u></b>	Hours
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Unit cost:	<u>\$5.174</u>	/LCY	Total job cost:	<b><u>\$1,552</u></b>
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**WHEEL LOADER – LOAD AND CARRY WORK**Task description: Spread growth medium across 0.5 acSite: 22 West PitPermit Action: 112c App BondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 006State: ColoradoAbbreviation: NoneDate: 8/16/2018County: OteroFilename: M032-006User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 938HAttachment 1: ROPS CabHorsepower: 172Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$25.88	NA
Operating Cost/Hour:	\$32.57	100
Operator Cost/Hour:	\$40.90	NA
Total Unit Cost/Hour:	\$99.35	
Total Fleet Cost/Hour:	\$99.35	

**MATERIAL QUANTITIES**Initial volume: 410

CCY

Swell factor: 1.215Loose volume: 498

LCY

Source of estimated volume: ApplicationSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Loader Cycle Time:** Unadjusted Basic Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Fragile target 0.05	0.050	(Cat HB)
Net Cycle Time Adjustment:		-0.030	minutes
Adjusted Basic Cycle Time:		0.453	minutes

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

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	800	1.00	5.00	6.00	0.8057	(Cat HB)
Return Route:	800	1.00	5.00	6.00	0.6987	(Cat HB)

Total Travel Time: 1.5044 minutes  
 Total Cycle Time: 1.9569 minutes

Load Bucket Capacity

Rated Capacity: 3.90 LCY (heaped)  
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100  
 Adjusted Capacity: 4.29 LCY

Job Condition Correction Factors

Site Altitude: 4130 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: 131.54 LCY/Hour  
 Adjusted Hourly Unit Production: 109.17 LCY/Hour  
 Adjusted Hourly Fleet Production: 109.17 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 4.56 Hours  
 Unit cost: \$0.910 /LCY Total job cost: \$453

**REVEGETATION WORK**Task description: Revegetate 0.5 acresSite: 22 West PitPermit Action: 112c App BondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 007State: ColoradoAbbreviation: NoneDate: 8/16/2018County: OteroFilename: M032-007User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-6-6	667.00	pound	\$0.17	\$113.39
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$113.39</b>

**Application**

Description	Cost /Acre
Push rotary spreader (MEANS 32 01 90.13 0110)	\$99.32
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$99.32</b>

**TILLING**

Description	Cost /Acre
Subsoil scarification, (MEANS 32 91 13.23 3100)	\$191.66
<b>Total Tilling Cost/Acre</b>	<b>\$191.66</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.40	15.61	\$11.60
Blue Grama - Lovington	0.80	13.06	\$13.31
Prairie Clover, White	1.40	11.86	\$56.98
Sideoats Grama - Vaughn	5.40	17.73	\$55.30
Western Wheatgrass - Arriba	6.40	16.16	\$52.99
<b>Totals Seed Mix</b>	<b>14.40</b>	<b>74.42</b>	<b>\$190.18</b>

**Application**

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

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

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$4.26	\$4.26
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$583.07</b>

**Application**

Description	Cost /Acre
Hand spread, 1" deep (MEANS 32 91 13.16 0200)	\$3,242.00
Weed spray, hand, aquatic area, annuals [DMG]	\$133.12
Weed spray, hand, aquatic area, nox. [DMG]	\$175.00
<b>Total Mulch Application Cost/Acre</b>	<b>\$3,550.12</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 0.5                      Cost /Acre: \$4,994.96  
 Estimated Failure Rate: 25%                      Cost /Acre\*: \$457.40  
 \*Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$2,497.48**  
 Reseeding Job Cost: **\$57.18**  
 Total Job Cost: **\$2,555**  
 Job Hours: **3.00**



**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: Mobilization/DemobilizationSite: 22 West PitPermit Action: 112c App BondPermit/Job#: M2017032**PROJECT IDENTIFICATION**Task #: 008State: ColoradoAbbreviation: NoneDate: 8/16/2018County: OteroFilename: M032-008User: AMEAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per dayCost Data Source: CRG DataTruck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT  
TRAILER (25T, 50T, AND 100T)**Cost Breakdown:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
Ownership Cost/Hour:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

**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 16M	28.73	\$77.19	\$117.55	1	\$194.74	\$117.55	\$250.00
Cat 345D L 12'- 10" Stick	54.31	\$66.64	\$125.45	1	\$192.09	\$125.45	\$250.00
CAT 938H	16.34	\$25.88	\$88.67	2	\$229.10	\$177.34	\$500.00
Subtotals:					<b>\$615.93</b>	<b>\$420.34</b>	<b>\$1,000.00</b>

**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	\$97.40	1	\$97.40	\$97.40
Subtotals:			<b>\$97.40</b>	<b>\$97.40</b>

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>ROCKY FORD</u>	
Total one-way travel distance:	<u>4.00</u>	miles
Average Travel Speed:	<u>30.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$4,740.06</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$25.97</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>1.00</u>	<u>NA</u>
Unloading Time (Hours):	<u>1.00</u>	<u>NA</u>
Subtotals:	<u>2.27</u>	<u>0.27</u>

**JOB TIME AND COST**

Total job time:	<u>4.53</u>	Hours
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Total job cost:	<u>\$4,766</u>
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