

## COST SUMMARY WORK

Task description: Reclaim the Velarde Pit

Site: Velarde Pit

Permit Action: 2019 Inspection

Permit/Job#: M2002118

### PROJECT IDENTIFICATION

Task #: 999

State: Colorado

Abbreviation: None

Date: 2/8/2019

County: Huerfano

Filename: M118-999

User: JPL

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade slopes to 3H:1V	DOZER	1	11.77	\$1,944.00
002	Replace overburden 1ft on 20 acres	SCRAPER1	1	31.04	\$25,750.00
003	Topsoil 30 acres with 0.5 ft	SCRAPER1	1	20.69	\$17,111.00
004	Rip 5 acres	RIPPER	1	7.98	\$1,335.00
005	Revegetation of 30 acres	REVEGE	1	40.00	\$40,628.00
006	Mob/Demob	MOBILIZE	1	3.50	\$4,537.00
<b><u>SUBTOTALS:</u></b>				<b>114.98</b>	<b>\$91,305</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$1,844.36

Performance bond: 1.05

Total = \$958.70

Job superintendent: 104.62

Total = \$7,642.49

Profit: 10.00

Total = \$9,130.50

TOTAL O & P = \$19,576.05

CONTRACT AMOUNT (direct + O & P) = \$110,881.05

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00

Total = 500.00

Engineering work and/or contract/bid preparation: 4.25

Total = \$4,712.44

Reclamation management and/or administration: 5.00

\$5,544.05

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$30,332.55

**TOTAL BOND AMOUNT (direct + indirect) = \$121,637.55**

**SCRAPER TEAM WORK**Task description: Replace overburden 1ft on 20 acresSite: Velarde PitPermit Action: 2019 InspectionPermit/Job#: M2002118**PROJECT IDENTIFICATION**Task #: 002State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: NAUser: JPLAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	Cat D7R DS XR Series II
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	25	NA	NA	NA	NA
Ownership cost/hour:	\$155.61	\$61.41	NA	NA	NA	NA
Operating cost/hour:	\$166.86	\$13.55	NA	NA	NA	NA
%Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$6.02	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$31.05	\$41.52	NA	NA	NA	NA
Unit Subtotals:	\$353.51	\$122.51	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	\$829.53	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$829.53****MATERIAL QUANTITIES**Initial volume: 32,266

CCY

Swell factor: 1.125Loose volume: **36,299**

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 2,650 lbs/LCY  
 Material description: Decomposed rock - 25% Rock, 75% Earth  
 Rated Payload: 81,600 pounds  
 Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY  
 Heaped Volume: 34.00 LCY  
 Average Volume: 29.00 LCY  
 Adjusted Capacity: **29.00** LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6100 feet

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

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	2.00	5.00	7.00	1362	0.66

Haul Time: 0.66 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-2.00	5.00	3.00	2949	0.41

Return Time: 0.41 minutesTotal Scraper team cycle time: 2.47 minutesAdjusted for job conditions: 584.70 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,169.39 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,169.39 LCY/HourUnadjusted unit production/hour: 704.45 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 31.04 HoursUnit cost: \$0.709 /LCY Total job cost: \$25,750

**SCRAPER TEAM WORK**Task description: Topsoil 30 acres with 0.5 ftSite: Velarde PitPermit Action: 2019 InspectionPermit/Job#: M2002118**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: NaUser: JPLAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	Cat D7R DS XR Series II
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	20	NA	NA	NA	NA
Ownership cost/hour:	\$155.61	\$61.41	NA	NA	NA	NA
Operating cost/hour:	\$166.86	\$10.84	NA	NA	NA	NA
%Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$6.02	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$31.05	\$41.52	NA	NA	NA	NA
Unit Subtotals:	\$353.51	\$119.80	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	\$826.82	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$826.82****MATERIAL QUANTITIES**Initial volume: 19,360

CCY

Swell factor: 1.250Loose volume: **24,200**

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 2,650 lbs/LCY  
 Material description: Decomposed rock - 25% Rock, 75% Earth  
 Rated Payload: 81,600 pounds  
 Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY  
 Heaped Volume: 34.00 LCY  
 Average Volume: 29.00 LCY  
 Adjusted Capacity: **29.00** LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6100 feet

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

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	2.00	5.00	7.00	1362	0.66

Haul Time: 0.66 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-2.00	5.00	3.00	2949	0.41

Return Time: 0.41 minutesTotal Scraper team cycle time: 2.47 minutesAdjusted for job conditions: 584.70 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,169.39 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,169.39 LCY/HourUnadjusted unit production/hour: 704.45 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 20.69 HoursUnit cost: \$0.707 /LCY Total job cost: \$17,111

**BULLDOZER RIPPING WORK**Task description: **Rip 5 acres**Site: **Velarde Pit** Permit Action: **2019 Inspection** Permit/Job#: **M2002118****PROJECT IDENTIFICATION**

Task #: **004** State: **Colorado** Abbreviation: **None**  
 Date: **2/8/2019** County: **Huerfano** Filename: **Na**  
 User: **JPL**

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

Basic Machine: **Cat D7R DS XR Series II** Horsepower: **240**  
 Ripper Attachment: **3-Shank Ripper** Shift Basis: **1 per day**  
 Data Source: **(CRG)**

**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$61.41	NA
Operating Cost/Hour:	\$54.22	100
Ripper Ownership Cost/Hour:	\$6.02	NA
Ripper Operating Cost/Hour:	\$4.12	100
Operator Cost/Hour:	\$41.52	NA
Total Unit Cost/Hour:	\$167.28	
Total Fleet Cost/Hour:	<b>\$167.28</b>	

**MATERIAL QUANTITIES**Selected estimating method: **Area****Alternate Methods:**

Seismic: **NA** Bank Volume: **NA** BCY **NA**  
 Area: **5.00** acres Rip Depth (ft): **1.50** Volume: **12,100** BCY or CCY

Source of estimated quantity: **Exhibit L****HOURLY PRODUCTION****Seismic:**Seismic Velocity: **NA** feet/second**Area:**

Average Ripping Depth: **2.45** mph  
 Average Ripping Width: **6.50** degrees  
 Average Ripping Length: **500.00** feet  
 Average Dozer Speed: **88.00** feet  
 Average Maneuver Time: **0.25** feet  
 Production per unit area: **0.755** acres/hour

**Job Condition Correction Factors**

Unadjusted Hourly Unit Production: **0.755** Acres/hr  
 Site Altitude: **6,100** feet  
 Altitude Adj: **1.00** (CAT HB)  
 Job Efficiency: **0.83** (1 shift/day)  
 Net Correction: **0.83** multiplier  
 Adjusted Hourly Unit Production: **0.63** Acres/hr  
 Adjusted Hourly Fleet Production: **0.63** Acres/hr

**JOB TIME AND COST**

Fleet size: 1 Grader(s)Total job time: 7.98 HoursUnit cost: \$267.059 Per acreTotal job cost: \$1,335

**REVEGETATION WORK**Task description: Revegetation of 30 acresSite: Velarde PitPermit Action: 2019 InspectionPermit/Job#: M2002118**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: NaUser: JPLAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	40.00	pound	\$0.34	\$13.60
Triple superphosphate, 0-46-0	40.00	pound	\$0.44	\$17.60
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$31.20</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
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$106.29
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
<b>Total Tilling Cost/Acre</b>	<b>\$299.89</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$16.66
Indian Ricegrass - Nespar	1.00	3.24	\$7.75
Sideoats Grama - Vaughn	1.00	3.28	\$10.24
Western Wheatgrass - Arriba	1.00	2.53	\$8.28
<b>Totals Seed Mix</b>	<b>4.00</b>	<b>25.37</b>	<b>\$42.93</b>

**Application**

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

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

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$576.00</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
<b>Total Mulch Application Cost/Acre</b>	<b>\$68.78</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:	30	Cost /Acre:	\$1,285.52
Estimated Failure Rate:	25%	Cost /Acre*:	\$274.93
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$38,565.60</b>
Reseeding Job Cost:	<b>\$2,061.98</b>
Total Job Cost:	<b>\$40,628</b>
Job Hours:	<b>40.00</b>

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mob/Demob**Site: **Velarde Pit**Permit Action: **2019 Inspection**Permit/Job#: **M2002118****PROJECT IDENTIFICATION**Task #: **006**State: **Colorado**Abbreviation: **None**Date: **2/8/2019**County: **Huerfano**Filename: **M118-006**User: **JPL**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 D7R DS XR Series II	35.93	\$67.43	\$117.55	1	\$184.98	\$117.55	\$250.00
Cat 637G	57.28	\$155.61	\$125.45	2	\$562.12	\$250.90	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	2	\$208.42	\$177.34	\$250.00

Subtotals: **\$955.52** **\$545.79** **\$750.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
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Subtotals: **\$0.00** **\$0.00**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>WALSENBURG</u>	
Total one-way travel distance:	<u>15.00</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$4,537.02</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$0.00</u>
** one round trip, no haul rig:	

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.38	0.38
Return Time (Hours):	0.38	0.38
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.75	0.75

**JOB TIME AND COST**

Total job time: 3.50 Hours

Total job cost: \$4,537