

COST SUMMARY WORK

Task description: _____

Site: PVRE Pit #1 Permit Action: Application Cost Estimate Permit/Job#: M2017009

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 5/24/2017 County: Logan Filename: M009-000
User: JLE
Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill and Grade Affected Area	DOZER	1	39.26	\$7,899.00
002	Replace Topsoil and Overburden	SCRAPER1	1	16.48	\$15,845.00
003	Revegetation of the affected area	REVEGE	1	4.70	\$8,491.00
004	Mobilization of Equipment	MOBILIZE	1	2.08	\$4,758.00
<u>SUBTOTALS:</u>				62.52	\$36,993

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$747.26
Performance bond:	1.05	Total =	\$388.43
Job superintendent:	29.50	Total =	\$2,154.76
Profit:	10.00	Total =	\$3,699.30
		TOTAL O & P =	\$6,989.75
		CONTRACT AMOUNT (direct + O & P) =	\$43,982.75

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	0.00	Total =	0.00
Engineering work and/or contract/bid preparation:	0.00	Total =	\$0.00
Reclamation management and/or administration:	5.00		\$2,199.14
CONTINGENCY:		Total =	\$0.00

TOTAL INDIRECT COST = \$9,188.89

TOTAL BOND AMOUNT (direct + indirect) = \$46,181.89

BULLDOZER WORK

Task description: Backfill and Grade Affected Area

Site: PVRE Pit #1 Permit Action: Application Cost Estimate Permit/Job#: M2017009

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 5/24/2017 County: Logan Filename: M009-001
User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$1.80	25
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$201.18	
Total Fleet Cost/Hour:	\$201.18	

MATERIAL QUANTITIES

Initial Volume: 15,165
Swell factor: 1.000
Loose volume: **15,165** LCY

Source of estimated volume: 1 foot over 9.4 acres
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 200 feet
Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 3,940 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	1.000	(EXCL.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7852

Adjusted unit
production: 386.24 LCY/hr

Adjusted fleet
production: **386.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.521/LCY

Total job time: **39.26** Hours

Total job cost: **\$7,899**

SCRAPER TEAM WORK

Task description: Replace Topsoil and Overburden

Site: PVRE Pit #1

Permit Action: Application Cost Estimate

Permit/Job#: M2017009

PROJECT IDENTIFICATION

Task #: 002

State: Colorado

Abbreviation: None

Date: 5/24/2017

County: Logan

Filename: M009-002

User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 12M
-Water Truck:	Water Tanker, 5,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	NA	NA	50	25	25
Ownership cost/hour:	\$152.84	NA	NA	\$83.81	\$28.02	\$24.01
Operating cost/hour:	\$158.39	NA	NA	\$33.09	\$7.07	\$8.53
% Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.26	NA	NA	\$41.85	\$28.90	\$21.39
Unit Subtotals:	\$342.49	NA	NA	\$158.74	\$63.99	\$53.94
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$684.98	Support:	\$158.74	Maint:	\$117.93

Total work team cost/hour: **\$961.65**

MATERIAL QUANTITIES

Initial volume: 21,535

CCY

Swell factor: 1.000

Loose volume: **21,535**

LCY

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

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</u>	Heaped Volume:	<u>34.00</u>	LCY
Rated Payload:	<u>81,600 pounds</u>	Average Volume:	<u>29.00</u>	LCY
Payload Capacity:	<u>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:

Scraper Loading Time: 1.00 Minutes
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 3940 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0**Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	350.00	0.00	3.00	3.00	2800	0.34

Haul Time: 0.34 minutes**Return Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	350.00	0.00	3.00	3.00	2949	0.27

Return Time: 0.27 minutes

Total Scraper team cycle time: 2.21 minutes
 Adjusted for job conditions: 1,306.97 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,306.97 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,306.97 LCY/Hour

Unadjusted unit production/hour: 1,574.66 LCY/Hour
 Optimal Number of Scrapers per push
 dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 16.48 HoursUnit cost: \$0.736 /LCY Total job cost: \$15,845

REVEGETATION WORK

Task description: Revegetation of the affected area

Site: PVRE Pit #1 Permit Action: Application Cost Estimate Permit/Job#: M2017009

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 5/24/2017 County: Logan Filename: M009-003
User: JLE
Agency or organization name: DRMS

FERTILIZING

Materials

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

Application

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

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$106.29
Total Tilling Cost/Acre	\$106.29

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alfalfa - Common	0.40	1.93	\$1.02
Sideoats Grama - Butte	1.37	4.50	\$13.25
Intermediate Wheatgrass - Oahe	3.00	6.40	\$11.52
Tall Wheatgrass - Jose	5.10	9.25	\$12.34
Western Wheatgrass - Arriba	4.80	12.12	\$38.78
Totals Seed Mix	14.67	34.20	\$76.91

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	1.00	TON	\$261.00	\$261.00
Total Mulch Materials Cost/Acre				\$261.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
Total Mulch Application Cost/Acre	\$165.34

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres:	9.4	Cost /Acre:	\$841.54
Estimated Failure Rate:	20%	Cost /Acre*:	\$308.91
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$7,910.48
Reseeding Job Cost:	\$580.75
Total Job Cost:	\$8,491
Job Hours:	4.70

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: Mobilization of Equipment

Site: PVRE Pit #1

Permit Action: Application Cost
Estimate

Permit/Job#: M2017009

PROJECT IDENTIFICATION

Task #: 004

State: Colorado

Abbreviation: None

Date: 5/24/2017

County: Logan

Filename: M009-004

User: JLE

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

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

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$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 D8T - 8SU	53.08	\$91.36	\$125.45	1	\$216.81	\$125.45	\$250.00
Cat 637G w/push-pull	59.59	\$152.84	\$125.45	2	\$556.58	\$250.90	\$250.00
CAT 12M	16.01	\$28.02	\$88.67	1	\$116.69	\$88.67	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$12.22	\$88.67	1	\$100.89	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$7.03	\$88.67	1	\$95.70	\$88.67	\$250.00

Subtotals: **\$1,086.67** **\$642.36** **\$1,250.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 5,000 Gal.	\$79.53	1	\$79.53	\$79.53
Fuel Tanker, 4x2, 170 HP	\$44.01	2	\$88.02	\$88.02

Subtotals: **\$167.55** **\$167.55**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>STERLING</u>	
Total one-way travel distance:	<u>1.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$4,750.19</u>
* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$7.45</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.02</u>	<u>0.02</u>
Return Time (Hours):	<u>0.02</u>	<u>0.02</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>1.04</u>	<u>0.04</u>

JOB TIME AND COST

Total job time:	<u>2.09</u>	Hours
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Total job cost:	<u>\$4,758</u>
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