



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman St. Room 215
Denver, CO 80203

April 10, 2018

Mr. George Glasier
Pinon Ridge Mining LLC
P O Box 825
31161 Highway 90
Nucla, CO 8142-4000

Re: Topaz Mine, Permit No. M-1980-055-HR, Financial Warranty Increase, Revision No. SI-3

Dear Mr. Glasier:

In an effort to ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan, the Colorado Division of Reclamation, Mining and Safety (Division) has updated the reclamation cost estimate (copy enclosed). ***Therefore, pursuant to Section 34-32-117(4) of the Colorado Land Reclamation Act, adequate Financial Warranty must be submitted to the Division within 60 days of the mailing date of this letter.*** The additional amount needs to be accepted prior to **Friday, June 08, 2018**. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted.

Staff calculations estimate the cost to reclaim the above referenced site to be \$99,893.00. This is an increase of \$5,102.00 over the \$94,791.00 currently held by the Division. This estimate is based on conditions observed during the March 28, 2018 inspection.

Please make arrangements with Barbara Coria at the Division of Reclamation, Mining and Safety Denver Office, phone no. 303.866.3567, ext. 8148 for submittal of the financial warranty. Any questions regarding completion, execution and/or submittal of financial warranty forms should also be directed to Barbara Coria. If you require additional information, have questions or concerns, please contact me at the DRMS Grand Junction Field Office, by phone at (970)-243-6368 or by email at lucas.west@state.co.us.

Sincerely,

Lucas J. West
Environmental Protection Specialist
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203
Phone: (970)-243-6368



Enclosure: Reclamation Cost Estimate Update

Cc: Barbara J. Coria, DRMS Financial Assurance Specialist
Russ Means, Senior Environmental Protection Specialist

Ec: James Blair, Bureau of Land Management

COST SUMMARY WORK

Task description: Cost Summary

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 000
Date: 4/9/2018
User: LJW

State: Colorado
County: San Miguel

Abbreviation: None
Filename: M055-000

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolition of vent collars, removal of fans, onsite disposal	DEMOLISH	1	48.00	\$3,009.33
002	Demolition of structures at portal and pad, onsite disposal	DEMOLISH	1	16.00	\$3,034.81
002b	Backfill ore pad liner and gravel	LOADER	1	4.19	\$334.00
003	Excavate at vent collars for capping	EXCAVATE	1	2.80	\$284.00
004	Install atmospheric bulkhead underground	MINESEAL	1	16.00	\$1,500.00
005	Portal closure	MINESEAL	1	40.00	\$5,804.00
006	Recontour vent access roads	EXCAVATE	1	6.25	\$634.00
007	Rip compaction on vent pad areas	RIPPER	1	2.99	\$747.00
008	Grade vent pad areas	DOZER	1	6.14	\$1,477.00
009	Revegetate vent pad areas	REVEGE	1	8.00	\$948.00
010	Rip compaction on vent roads	RIPPER	1	3.72	\$921.00
011	Grade vent access roads	DOZER	1	4.04	\$972.00
012	Revegetate vent access roads	REVEGE	1	8.00	\$2,850.00
013	Grade dump slopes, push up to 2:1	DOZER	1	34.24	\$8,239.00
014	Grade dump pad, push against cut face	DOZER	1	29.19	\$7,023.00
015	Rip compaction on waste dump pad and access road	RIPPER	1	11.26	\$2,811.00
016	Contour portal and cut face, shape pad	DOZER	1	7.67	\$1,846.00
017	Haul topsoil from stockpile to waste dump	TRUCK1	1	14.18	\$2,780.00
018	Spread topsoil on contoured waste dump pad	DOZER	1	2.81	\$676.00
019	Close and seal water quality monitoring wells	BOREHOLE	1	30.00	\$430.83
020	Grade and contour access roads	DOZER	1	2.68	\$645.00
021	Recontour upland diversions and runoff catchments	EXCAVATE	1	1.31	\$133.00
022	Revegetate waste dump, access road, and SWMPs	REVEGE	1	20.00	\$15,634.00
023	Haul reclamation equipment to and from site	MOBILIZE	1	7.00	\$4,904.00
<u>SUBTOTALS:</u>				326.47	\$67,637

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
Performance bond: 1.05
Job superintendent: 163.23

Total = \$1,366.27
Total = \$710.19
Total = \$11,923.95

Profit: 10.00

Total =	<u>\$6,763.70</u>
TOTAL O & P =	<u>\$20,764.11</u>
CONTRACT AMOUNT (direct + O & P) =	<u>\$88,401.11</u>

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	<u>0.00</u>	Total =	<u>0.00</u>
Engineering work and/or contract/bid preparation:	<u>8.00</u>	Total =	<u>\$7,072.09</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$4,420.06</u>

CONTINGENCY:	<u>0.00</u>	Total =	<u>\$0.00</u>
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TOTAL INDIRECT COST =	<u>\$32,256.25</u>
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TOTAL BOND AMOUNT (direct + indirect) =	<u>\$99,893.25</u>
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DEMOLITION WORK

Task description: Demolition of vent collars, removal of fans, onsite disposal

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 4/10/2018

County: San Miguel

Filename: M055-001

User: LJW

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 96.90 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Remove steel fans/diffusers	4 ft H x 6 ft Diam	Loading and 2 mile haul, no salvage - Machine loading	24.00	CY	\$17.70	\$424.80
Break concrete collars, push down shafts	12 ft Diam x 1 ft thick	Floor, concrete, demolition only, average reinforcing - 12 in. thick	510.00	SF	\$1.18	\$601.80
Cut off steel casings (6)	6 ft Diam x 3 ft H	USER PROVIDED ITEM	1.00	EA	\$945.00	\$945.00
Weld on steel plates (6)	6' x 6' x 0.5"	USER PROVIDED ITEM	1.00	EA	\$315.00	\$315.00
Frame/pour reinf'd concrete caps	6' x 6' x 6"	USER PROVIDED ITEM	1.00	EA	\$819.00	\$819.00

Job Hours: 48.00

Subtotal
(unadjusted): \$3,105.60

Total Cost
(adjusted for location): \$3,009.33

DEMOLITION WORK

Task description:

Demolition of structures at portal and pad, onsite disposalSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 002State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-002User: LJWAgency or organization name: DRMS

UNIT COSTS

Location adjustment: 89.00 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Shop building	35x20x20	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	14,000.00	CF	\$0.18	\$2,506.00
Shop bldg concrete slab	35x20	Demo. and on-site disposal in existing pit, 4 in. thick - Max. 200 ft. push	700.00	SF	\$0.41	\$284.90
Water tanks with cribbing	10x10x10 ft mass	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	1,000.00	CF	\$0.18	\$179.00
Hydrocarbon storage	10x5x5 ft	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	250.00	CF	\$0.18	\$44.75
Electric switch gear	10x5x5 ft	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	250.00	CF	\$0.18	\$44.75
Receiver tank and piping	10x10x5 ft	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	500.00	CF	\$0.18	\$89.50
Portal shed, steel sets, timbers	10x10x15 ft	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 50 ft. push	1,500.00	CF	\$0.17	\$261.00

Job Hours: 16.00Subtotal
(unadjusted): \$3,409.90Total Cost
(adjusted for location): \$3,034.81

WHEEL LOADER – LOAD AND CARRY WORKTask description: Backfill ore pad liner and gravelSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 002BState: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-002bUser: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 924HHorsepower: 128Attachment 1: ROPS CabShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$18.14	NA
Operating Cost/Hour:	\$20.22	100
Operator Cost/Hour:	\$41.20	NA
Total Unit Cost/Hour:	\$79.56	
Total Fleet Cost/Hour:	\$79.56	

MATERIAL QUANTITIESInitial volume: 605

CCY

Swell factor: 1.060Loose volume: 641

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Loader Cycle Time:**Unadjusted Basic Cycle Time (load, dump, maneuver): 0.475 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -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:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.100	minutes
Adjusted Basic Cycle Time:		0.375	minutes

Rolling Resistance – Road ConditionsHaul: Hard, smooth, stabilized, surfaced, watered, maintained 2.0Return: Hard, smooth, stabilized, surfaced, watered, maintained 2.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
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Haul Route:	400	0.00	2.00	2.00	0.1972	(Cat HB)
Return Route:	400	0.00	2.00	2.00	0.1972	(Cat HB)

Total Travel Time: 0.3945 minutes
Total Cycle Time: 0.7695 minutes

Load Bucket Capacity

Rated Capacity: 2.70 LCY (heaped)
Bucket Fill Factor: 0.875 Loose material - 1/2" to 3/4" (85 - 90%) 0.875
Adjusted Capacity: 2.36 LCY

Job Condition Correction Factors

Site Altitude: 5800 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: 184.22 LCY/Hour
Adjusted Hourly Unit Production: 152.90 LCY/Hour
Adjusted Hourly Fleet Production: 152.90 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 4.19 Hours
Unit cost: \$0.520 /LCY Total job cost: \$334

HYDRAULIC EXCAVATOR WORK

Task description: Excavate at vent collars for capping

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 003

State: Colorado

Abbreviation: None

Date: 4/9/2018

County: San Miguel

Filename: M055-003

User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 320D L 9'-6" Stick

Attachment 1: ROPS Cab

Horsepower: 148

Weight (MT): 21.55

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$31.02	NA
Operating Cost/Hour:	\$32.50	100
Operator Cost/Hour:	\$37.79	NA
Total Unit Cost/Hour:	\$101.31	
Total Fleet Cost/Hour:	\$101.31	

MATERIAL QUANTITIES

Initial volume: 450

CCY

Swell factor: 1.330

Loose volume: 599

LCY

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

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: BELOW AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.323 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 1.54 LCY (heaped)
Bucket Fill Factor: 1.000 Rock - Well Blasted (95%-105%) 1.000
Adjusted Capacity: 1.54 LCY

Job Condition Correction Factors

Site Altitude: 7000 feet

Altitude Adj:	<u>0.90</u>	Source
Job Efficiency:	<u>0.83</u>	(CAT HB)
Net Correction:	<u>0.75</u>	(1 shift/day)
		multiplier

Unadjusted Hourly Unit Production: 286.07 LCY/Hour
Adjusted Hourly Unit Production: 213.69 LCY/Hour
Adjusted Hourly Fleet Production: 213.69 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 2.80 Hours

Unit cost: \$0.474 /LCY Total job cost: \$284

SAFEGUARDING UNDERGROUND OPENINGS

Task description: Install atmospheric bulkhead underground

Site: Topaz Mine Permit Action: 2018 Update Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 4/9/2018 County: San Miguel Filename: M055-004
User: LJW

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Underground workings	12x15	PUF wall, non backed	1.00	EA	\$1,500.00	\$1,500.00

Job Hours: 16.00

Total Cost: \$1,500.00

SAFEGUARDING UNDERGROUND OPENINGS

Task description: Portal closure

Site: Topaz Mine Permit Action: 2018 Update Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 4/9/2018 County: San Miguel Filename: M055-005
User: LJW

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Place debris in adit	10x10	Adit closure - backfilling (per cu. yd.)	150.00	CY	\$27.00	\$4,050.00
Earthen backfill, 30 ft.	10x10	Adit closure - backfilling (per opening)	1.00	EA	\$1,754.00	\$1,754.00

Job Hours: 40.00

Total Cost: \$5,804.00

HYDRAULIC EXCAVATOR WORK

Task description: Recontour vent access roads

Site: Topaz Mine Permit Action: 2018 Update Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 4/9/2018 County: San Miguel Filename: M055-006
User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 320D L 9'-6" Stick Horsepower: 148
Attachment 1: ROPS Cab Weight (MT): 21.55
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$31.02</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$32.50</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$101.31</u>	
Total Fleet Cost/Hour:	<u>\$101.31</u>	

MATERIAL QUANTITIES

Initial volume: 1,110 CCY Swell factor: 1.165
Loose volume: 1,293 LCY

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

Load Bucket Capacity

Rated Capacity: 1.54 LCY (heaped) Bucket Size Class: Medium
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity: 1.31 LCY

Job Condition Correction Factors

Site Altitude: 7000 feet

		Source
Altitude Adj:	<u>0.90</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.75</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 276.55 LCY/Hour
Adjusted Hourly Unit Production: 206.58 LCY/Hour
Adjusted Hourly Fleet Production: 206.58 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 6.26 Hours
Unit cost: \$0.490 /LCY Total job cost: \$634

HYDRAULIC EXCAVATOR WORK

Task description: Recontour vent access roads

Site: Topaz Mine Permit Action: 2018 Update Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 4/9/2018 County: San Miguel Filename: M055-006
User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 320D L 9'-6" Stick Horsepower: 148
Attachment 1: ROPS Cab Weight (MT): 21.55
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$31.02</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$32.50</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$101.31</u>	
Total Fleet Cost/Hour:	<u>\$101.31</u>	

MATERIAL QUANTITIES

Initial volume: 1,110 CCY Swell factor: 1.165
Loose volume: 1,293 LCY

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

Load Bucket Capacity

Rated Capacity: 1.54 LCY (heaped) Bucket Size Class: Medium
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity: 1.31 LCY

Job Condition Correction Factors

Site Altitude: 7000 feet

		Source
Altitude Adj:	<u>0.90</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.75</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 276.55 LCY/Hour
Adjusted Hourly Unit Production: 206.58 LCY/Hour
Adjusted Hourly Fleet Production: 206.58 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 6.26 Hours
Unit cost: \$0.490 /LCY Total job cost: \$634

BULLDOZER RIPPING WORK

Task description: Rip compaction on vent pad areas

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 007

State: Colorado

Abbreviation: None

Date: 4/9/2018

County: San Miguel

Filename: M055-007

User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU
Ripper Attachment: 1-Shank Ripper

Horsepower: 405
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper Ownership Cost/Hour:	\$12.57	NA
Ripper Operating Cost/Hour:	\$7.32	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$249.56	
Total Fleet Cost/Hour:	\$249.56	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA
Area: 1.50 acres
Bank Volume: NA BCY
Rip Depth (ft): 1.00 Volume: 2,420 BCY or CCY

Source of estimated quantity: Permit maps

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 4.05 mph
Average Ripping Width: 6.08 degrees
Average Ripping Length: 100.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.604 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.604 Acres/hr
Site Altitude: 7,000 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.50 Acres/hr
Adjusted Hourly Fleet Production: 0.50 Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 2.99 Hours

Unit cost: \$497.745 Per acre Total job cost: \$747

BULLDOZER WORKTask description: Grade vent pad areasSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 008State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-008User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$100.59</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$87.23</u>	<u>100</u>
Ripper own.		
Cost/Hour:	<u>\$10.94</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.85</u>	<u>NA</u>

Total unit Cost/Hour: \$240.61Total Fleet Cost/Hour: \$240.61**MATERIAL QUANTITIES**Initial Volume: 4,356Swell factor: 1.125Loose volume: 4,901 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feetUnadjusted hourly production: 2,110.5 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average push gradient: 0 %Average site altitude: 7,000 feetMaterial weight: 2,650 lbs/LCYWeight description: Decomposed rock - 25% Rock, 75% EarthJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3782

Adjusted unit
production: 798.19 LCY/hr

Adjusted fleet
production: 798.19 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.301/LCY

Total job time: 6.14 Hours
Total job cost: \$1,477

REVEGETATION WORKTask description: Revegetate vent pad areasSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 009State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-009User: LJWAgency 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
Blue Grama - Native	0.96	15.67	\$13.92
Indian Ricegrass - Native	7.42	24.02	\$51.94
Sand Dropseed	0.14	16.71	\$1.52
Bottlebrush Squirreltail	4.08	17.98	\$95.88
Galleta	4.94	18.03	\$122.02
Muttongrass	0.20	4.13	\$6.91
Sagebrush, Mountain or Big	0.20	10.56	\$3.95
Saltbush, Four Wing	0.50	0.69	\$6.25
Winter Fat	0.50	1.27	\$10.25

Totals Seed Mix	18.94	109.07	\$312.63
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Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	1.50	ACRE	\$2.74	\$4.11
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
Total Mulch Materials Cost/Acre				\$526.11

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Weed spray, hand, non-aquatic area, nox. [DMG]	\$180.00
Total Mulch Application Cost/Acre	\$246.02

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: 0.5 Cost /Acre: \$1,458.27
 Estimated Failure Rate: 30% Cost /Acre*: \$1,458.27
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING
 Initial Job Cost: \$729.14
 Reseeding Job Cost: \$218.74
 Total Job Cost: \$948
 Job Hours: 8.00

BULLDOZER RIPPING WORK

Task description: Rip compaction on vent roads

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 010

State: Colorado

Abbreviation: None

Date: 4/9/2018

County: San Miguel

Filename: M055-010

User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper Ownership Cost/Hour:	\$10.94	NA
Ripper Operating Cost/Hour:	\$6.82	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$247.43	
Total Fleet Cost/Hour:	\$247.43	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 2.75 acres

Rip Depth (ft): 1.00

Volume: 4,437

BCY or CCY

Source of estimated quantity: Permit maps

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.63</u>	mph
Average Ripping Width:	<u>7.67</u>	degrees
Average Ripping Length:	<u>500.00</u>	feet
Average Dozer Speed:	<u>88.00</u>	feet
Average Maneuver Time:	<u>0.25</u>	feet
Production per unit area:	<u>0.891</u>	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.891 Acres/hr

Site Altitude: 7,000 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.74 Acres/hr

Adjusted Hourly Fleet Production: 0.74 Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: 3.72 Hours

Unit cost: \$334.760 Per acre

Total job cost: \$921

BULLDOZER WORKTask description: Grade vent access roadsSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 011State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-011User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper own. Cost/Hour:	\$10.94	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$240.61Total Fleet Cost/Hour: \$240.61**MATERIAL QUANTITIES**Initial Volume: 2,218Swell factor: 1.125Loose volume: 2,495 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 70 feetUnadjusted hourly
production: 1,633.5 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average push
gradient: 0 %Average site altitude: 7,000 feetMaterial weight: 2,650 lbs/LCYWeight description: Decomposed rock - 25% Rock, 75% Earth**Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3782

Adjusted unit
production: 617.79 LCY/hr

Adjusted fleet
production: 617.79 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.389/LCY

Total job time: 4.04 Hours

Total job cost: \$972

REVEGETATION WORKTask description: Revegetate vent access roadsSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HRPROJECT IDENTIFICATIONTask #: 012State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-012User: LJWAgency or organization name: DRMSFERTILIZING**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
Blue Grama - Native	0.96	15.67	\$13.92
Indian Ricegrass - Native	7.42	24.02	\$51.94
Sand Dropseed	0.14	16.71	\$1.52
Bottlebrush Squirreltail	4.08	17.98	\$95.88
Galleta	4.94	18.03	\$122.02
Muttongrass	0.20	4.13	\$6.91
Sagebrush, Mountain or Big	0.20	10.56	\$3.95
Saltbush, Four Wing	0.50	0.69	\$6.25
Winter Fat	0.50	1.27	\$10.25

Totals Seed Mix	18.94	109.07	\$312.63
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Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	2.75	ACRE	\$2.74	\$7.54
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
Total Mulch Materials Cost/Acre				\$529.54

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Weed spray, hand, non-aquatic area, nox. [DMG]	\$180.00
Total Mulch Application Cost/Acre	\$246.02

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 1.5 Cost /Acre: \$1,461.70
 Estimated Failure Rate: 30% Cost /Acre*: \$1,461.70
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$2,192.55
 Reseeding Job Cost: \$657.77
 Total Job Cost: \$2,850
 Job Hours: 8.00

BULLDOZER WORKTask description: Grade dump slopes, push up to 2:1Site: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 013State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-013User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper own. Cost/Hour:	\$10.94	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$240.61Total Fleet Cost/Hour: \$240.61**MATERIAL QUANTITIES**Initial Volume: 7,000Swell factor: 1.215Loose volume: 8,505 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly
production: 910.5 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average push
gradient: 10 %Average site altitude: 5,800 feetMaterial weight: 3,300 lbs/LCYWeight description: Decomposed rock - 75% Rock, 25% EarthJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.697	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2728

Adjusted unit
production: 248.38 LCY/hr

Adjusted fleet
production: 248.38 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.969/LCY

Total job time: 34.24 Hours
Total job cost: \$8,239

BULLDOZER WORKTask description: Grade dump pad, push against cut faceSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 014State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-014User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper own. Cost/Hour:	\$10.94	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$240.61Total Fleet Cost/Hour: \$240.61**MATERIAL QUANTITIES**Initial Volume: 6,000Swell factor: 1.215Loose volume: 7,290 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly
production: 910.5 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average push
gradient: 5 %Average site altitude: 5,800 feetMaterial weight: 3,300 lbs/LCYWeight description: Decomposed rock - 75% Rock, 25% EarthJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.697	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2743

Adjusted unit
production: 249.75 LCY/hr

Adjusted fleet
production: 249.75 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.963/LCY

Total job time: 29.19 Hours

Total job cost: \$7,023

BULLDOZER RIPPING WORK

Task description: Rip compaction on waste dump pad and access road

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 015

State: Colorado

Abbreviation: None

Date: 4/9/2018

County: San Miguel

Filename: M055-015

User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Ripper Attachment: 1-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper Ownership Cost/Hour:	\$12.57	NA
Ripper Operating Cost/Hour:	\$7.32	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$249.56	
Total Fleet Cost/Hour:	\$249.56	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 6.60 acres

Rip Depth (ft): 1.00

Volume: 10,648

BCY or CCY

Source of estimated quantity: Permit maps

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>4.05</u>	mph
Average Ripping Width:	<u>6.08</u>	degrees
Average Ripping Length:	<u>500.00</u>	feet
Average Dozer Speed:	<u>88.00</u>	feet
Average Maneuver Time:	<u>0.25</u>	feet
Production per unit area:	<u>0.706</u>	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.706 Acres/hr

Site Altitude: 7,000 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.59 Acres/hr

Adjusted Hourly Fleet Production: 0.59 Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: 11.26 Hours

Unit cost: \$425.939 Per acre

Total job cost: \$2,811

BULLDOZER WORKTask description: Contour portal and cut face, shape padSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 016State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-016User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$100.59</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$87.23</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$10.94</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.85</u>	<u>NA</u>

Total unit Cost/Hour: \$240.61Total Fleet Cost/Hour: \$240.61**MATERIAL QUANTITIES**Initial Volume: 3,000Swell factor: 1.165Loose volume: 3,495 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 80 feetUnadjusted hourly
production: 1,460.1 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average push
gradient: 5 %Average site altitude: 5,800 feetMaterial weight: 2,900 lbs/LCYWeight description: Decomposed rock - 50% Rock, 50% Earth**Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3120

Adjusted unit
production: 455.55 LCY/hr

Adjusted fleet
production: 455.55 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.528/LCY

Total job time: 7.67 Hours

Total job cost: \$1,846

TRUCK/LOADER TEAM WORKTask description: Haul topsoil from stockpile to waste dumpSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 017State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-017User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Shift basis: 1 per day

		Equipment Description
Truck Loader Team -Truck:		Generic 10-12 cy, 6x4
-Loader:		CAT 924H
Support Equipment -Load Area:		NA
-Dump Area:		NA
Road Maintenance -Motor Grader:		NA
-Water Truck:		NA

<u>Cost Breakdown:</u>	<u>Truck/Loader Team</u>		<u>Support Equipment</u>		<u>Maintenance Equipment</u>	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$18.29	\$18.14	NA	NA	NA	NA
Operating cost/hour:	\$39.97	\$20.22	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:	\$0.00	\$41.20	NA	NA	NA	NA
Unit Subtotals:	\$58.26	\$79.56	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$196.08		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$196.08**MATERIAL QUANTITIES**Initial volume: 3,254

CCY

Swell factor: 1.215Loose volume: 3,954

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00**HOURLY PRODUCTION****Truck Capacity:****Truck Payload (weight) Basis:**Material weight: 1,600

Pounds/LCY

Description: Top SoilRated Payload: 35,400

Pounds

Payload Capacity: 22.13 LCY**Truck Bed (volume) Basis:**

Struck Volume: 10.00 LCY
 Heaped Volume: 12.00 LCY
 Average Volume: 11.00 LCY
 Adjusted Volume: 12.00 LCY

Final Truck Volume Based on Number of Loader Passes: 11.34 LCY**Loading Tool Capacity**Bucket Size Class: NA

Rated Capacity: 2.700 LCY (heaped)
 Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050
 Adjusted Capacity: 2.835 LCY

Job Condition Corrections:Site Altitude (ft.): 5800 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: 0.100Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.475 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		0.000	minutes
Adjusted Loader Cycle Time:		0.475	minutes
Net Load Time per Truck:		1.525	minutes

Truck Cycle Time:

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes
 Truck Load Time: 1.525 Minutes Adjusted for site altitude: 1.525 Minutes
 Truck Maneuver and Dump Time: 0.90 Minutes Adjusted for site altitude: 0.900 Minutes

Truck Travel (Haul & Return) Time:
penetration 4.0Road Condition: Rutted dirt, little maintenance, no water, 1" tire

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	4.00	7.00	1568	0.351

Haul Time: 0.351 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	4.00	1.00	2913	0.197

Return Time: 0.197 minutesTotal Truck Cycle Time: 3.473 minutes

Loading Tool unit Production 336.00 LCY/Hour
 Truck Unit Production 195.91 LCY/Hour
 Optimal No. of Trucks: 2 Truck(s)

Adjusted for job efficiency: 278.88 LCY/Hour
 Adjusted for job efficiency: 162.61 LCY/Hour
 Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 325.21 LCY/Hour
 Adjusted single truck/loader team production: 278.88 LCY/Hour
 Adjusted multiple truck/loader team production: 278.88 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 14.18 Hours
 Unit cost: \$0.703 /LCY Total job cost: \$2,780

BULLDOZER WORKTask description: Spread topsoil on contoured waste dump padSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 018State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-018User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper own. Cost/Hour:	\$10.94	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$240.61	
Total Fleet Cost/Hour:	\$240.61	

MATERIAL QUANTITIESInitial Volume: 3,954Swell factor: 1.000Loose volume: 3,954 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 60 feetUnadjusted hourly
production: 1,872.0 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push
gradient: 0 %Average site altitude: 5,800 feetMaterial weight: 1,600 lbs/LCYWeight description: Top SoilJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7519

Adjusted unit
production: 1,407.56 LCY/hr

Adjusted fleet
production: 1407.56 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.171/LCY

Total job time: 2.81 Hours

Total job cost: \$676

BOREHOLE SEALING WORK

Task description: Close and seal water quality monitoring wells

Site: Topaz Mine

Permit Action: 2018 Update

Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 019

State: Colorado

Abbreviation: None

Date: 4/9/2018

County: San Miguel

Filename: M055-019

User: LJW

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Shallow GW well, cut off casing	Exposed casing removal - Calculate Circumference in Linear Feet	2	24	4.00	LF	\$1.77	\$7.08
Shallow GW well, remove metal cover	Exposed casing removal - Calculate Circumference in Linear Feet	6	4	4.00	LF	\$1.77	\$7.08
Shallow GW well, backfill bentonite	Bentonite seal - 2 in. (labor, equip, materials)	2	22	1.00	LF	\$4.19	\$4.19
Shallow GW well, cement seal top	Portland cement grout - 2 in. (labor, equip, materials)	2	2	2.00	LF	\$7.44	\$14.88
Ambient well, remove metal cover	Exposed casing removal - Calculate Circumference in Linear Feet	6	4	4.00	LF	\$1.77	\$7.08
Ambient well, cut off casing	Exposed casing removal - Calculate Circumference in Linear Feet	4.5	700	4.00	LF	\$1.77	\$7.08
Ambient well, bentonite thru aquifer	Bentonite seal - 4 in. (lanor, equip, materials)	4	100	1.00	LF	\$4.65	\$4.65
Ambient well, mech plug	PVC plug - 4 in. diameter borehole	4	1	1.00	EA	\$29.95	\$29.95
Ambient well, cement seal top	Portland cement grout - 4 in. (labor, equip, materials)	4	4	4.00	LF	\$7.69	\$30.76
Monitoring well (west), remove metal cover	Exposed casing removal - Calculate Circumference in Linear Feet	6	4	4.00	LF	\$1.77	\$7.08
Monitoring well (west), cut off casing	Exposed casing removal - Calculate Circumference in Linear Feet	4.5	700			\$	\$
						\$	\$

Job Hours: CTJT

Total Cost: CTotalCost

BULLDOZER WORKTask description: Grade and contour access roadsSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 020State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-020User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper own.		
Cost/Hour:	\$10.94	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$240.61Total Fleet Cost/Hour: \$240.61**MATERIAL QUANTITIES**Initial Volume: 1,500Swell factor: 1.090Loose volume: 1,635 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell
factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 80 feetUnadjusted hourly
production: 1,460.1 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average push
gradient: 0 %Average site altitude: 5,800 feetMaterial weight: 2,400 lbs/LCYWeight description: Clay and gravel - Dry**Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.958	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4174

Adjusted unit
production: 609.45 LCY/hr

Adjusted fleet
production: 609.45 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.395/LCY

Total job time: 2.68 Hours

Total job cost: \$645

HYDRAULIC EXCAVATOR WORK

Task description: Recontour upland diversions and runoff catchments

Site: Topaz Mine Permit Action: 2018 Update Permit/Job#: M1980055HR

PROJECT IDENTIFICATION

Task #: 021 State: Colorado Abbreviation: None
Date: 4/9/2018 County: San Miguel Filename: M055-021
User: LJW

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 320D L 9'-6" Stick Horsepower: 148
Attachment 1: ROPS Cab Weight (MT): 21.55
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$31.02</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$32.50</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$101.31</u>	
Total Fleet Cost/Hour:	<u>\$101.31</u>	

MATERIAL QUANTITIES

Initial volume: 250 CCY Swell factor: 1.125
Loose volume: 281 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: BELOW AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.323 minutes

Load Bucket Capacity

Rated Capacity: 1.54 LCY (heaped) Bucket Size Class: Medium
Bucket Fill Factor: 1.000 Rock - Well Blasted (95%-105%) 1.000
Adjusted Capacity: 1.54 LCY

Job Condition Correction Factors

Site Altitude: 5800 feet

		Source
Altitude Adj:	<u>0.90</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.75</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 286.07 LCY/Hour
Adjusted Hourly Unit Production: 213.69 LCY/Hour
Adjusted Hourly Fleet Production: 213.69 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 1.32 Hours
Unit cost: \$0.474 /LCY Total job cost: \$133

REVEGETATION WORKTask description: Revegetate waste dump, access road, and SWMPsSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 022State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-022User: LJWAgency 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
Blue Grama - Native	0.96	15.67	\$13.92
Indian Ricegrass - Native	7.42	24.02	\$51.94
Sand Dropseed	0.14	16.71	\$1.52
Bottlebrush Squirreltail	4.08	17.98	\$95.88
Galleta	4.94	18.03	\$122.02
Muttongrass	0.20	4.13	\$6.91
Sagebrush, Mountain or Big	0.20	10.56	\$3.95
Saltbush, Four Wing	0.50	0.69	\$6.25
Winter Fat	0.50	1.27	\$10.25

Totals Seed Mix	18.94	109.07	\$312.63
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Application

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

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	8.50	ACRE	\$2.74	\$23.29
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
Total Mulch Materials Cost/Acre				\$545.29

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Weed spray, hand, non-aquatic area, nox. [DMG]	\$180.00
Total Mulch Application Cost/Acre	\$246.02

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: 8.14 Cost /Acre: \$1,477.45
 Estimated Failure Rate: 30% Cost /Acre*: \$1,477.45
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$12,026.44
 Reseeding Job Cost: \$3,607.93
 Total Job Cost: \$15,634
 Job Hours: 20.00

EQUIPMENT MOBILIZATION/DEMobilIZATIONTask description: Haul reclamation equipment to and from siteSite: Topaz MinePermit Action: 2018 UpdatePermit/Job#: M1980055HR**PROJECT IDENTIFICATION**Task #: 023State: ColoradoAbbreviation: NoneDate: 4/9/2018County: San MiguelFilename: M055-023User: LJWAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per day
Cost 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:**

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 D9T - 9SU	66.13	\$111.53	\$125.45	1	\$236.98	\$125.45	\$250.00
Cat 320D L 9'-6" Stick	23.70	\$31.02	\$88.67	1	\$119.69	\$88.67	\$250.00
CAT 924H	12.69	\$18.14	\$88.67	1	\$106.81	\$88.67	\$250.00

Subtotals: **\$463.48** **\$302.79** **\$750.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	\$87.99	2	\$175.98	\$175.98
Drill/Broadcast Seeder with Tractor	\$30.89	1	\$30.89	\$30.89
Power Mulcher (Bowie LD-90)	\$21.31	1	\$21.31	\$21.31
Light Duty Pickup, 4x4, 3/4 T.	\$12.26	1	\$12.26	\$12.26

Subtotals: **ROHTCF** **RORTCF**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: NCTWPAR
 Total one-way travel distance: TOWTD miles
 Average Travel Speed: ATS mph

Total Non-Roadable Mob/Demob Cost * TNRMDC
 * two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** TRMDC
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	NRHTH	ROHTH
Return Time (Hours):	NRRTH	RORTH
Loading Time (Hours):	NRLTH	NA
Unloading Time (Hours):	NRULTH	NA
Subtotals:	NRTST	ROTST

JOB TIME AND COST

Total job time: CTJT Hours

Total job cost: CTJC