COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 10/20/2020 County: Fremont Filename: M247-000
User: TC1

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill pit w/ Scrapers	SCRAPER1	1	249.85	$738,938
002	Pit Wall Blasting [280,000 tons @ $0.57/ton]	NA	1	40.00	$159,600
003	North Pit Wall (North Side) Removal Contouring	DOZER	2	47.93	$18,471
004	Structure Demolition	DEMOLISH	1	0.00	$71,455
005	North Pit (South Side) Bench Backfill	SCRAPER1	1	14.70	$35,002
006	Rip 5.9 acres of Haul Road & Building sites	RIPPER	1	9.41	$1,937
007	Titanium Hill Pit Bench Backfill	SCRAPER1	1	6.42	$8,268
008	Haul & Spread Growth Media	SCRAPER1	1	21.51	$53,337
009	Contour Overburden Stockpiles	DOZER	1	212.03	$40,857
010	Revegetate 101 Acres	REVEGE	1	202.00	$173,260
012	Mob/Demob from Salida	MOBILIZE	1	3.51	$14,569
		SUBTOTALS:		**807.36**	**$1,315,694**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$26,577
Performance bond:	1.05	Total =	$13,815
Job superintendent:	101.00	Total =	$7,025
Profit:	10.00	Total =	$131,569
		TOTAL O & P =	$178,986
		CONTRACT AMOUNT (direct + O & P) =	$1,494,680

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$0	Total =	$0
Engineering work and/or contract/bid preparation:	4.25	Total =	$63,524
Reclamation management and/or administration:	5.00		$74,734
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$317,244
		TOTAL BOND AMOUNT (direct + indirect) =	**$1,632,938**

SCRAPER TEAM WORK

Task description: **Backfill pit w/ Scrapers**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-001
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 657G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D7R DS Series II LGP
Road Maintenance –Motor Grader:	NA
-Water Truck:	Water Tanker, 2,500 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	100	NA	100
Ownership cost/hour:	$255.26	NA	NA	$76.61	NA	$10.06
Operating cost/hour:	$261.03	NA	NA	$74.78	NA	$18.78
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	$0.00	NA	$0.00
Ripper op. cost/hour:	NA	NA	NA	$0.00	NA	$0.00
Operator cost/hour:	$30.90	NA	NA	$41.30	NA	$0.00
Unit Subtotals:	$547.19	NA	NA	$192.69	NA	$28.84
Number of Units:	5	0	0	1	0	1
Group Subtotals:	Work:	$2,735.95	Support:	$192.69	Maint:	$28.84

Total work team cost/hour: **$2,957.48**

MATERIAL QUANTITIES

Initial volume: 627,907 CCY Swell factor: 1.165
Loose volume: **731,512** LCY

Source of estimated volume: Exhibit L, task 001B
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,900 lbs/LCY
Material description: Decomposed rock - 50% Rock, 50% Earth
Rated Payload: 104,000 pounds
Payload Capacity: 35.86 LCY

Struck Volume: 32.00 LCY
Heaped Volume: 44.00 LCY
Average Volume: 38.00 LCY
Adjusted Capacity: **35.86** LCY

Cycle Time:

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

Job Condition Correction: Site Altitude: 6800 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: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	4.00	4.00	2725	0.86

Haul Time: **0.86** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	4.00	4.00	2920	0.59

Return Time: **0.59** minutes

Total Scraper team cycle time: **3.05** minutes
Adjusted for job conditions: 585.55 LCY/Hour
Selected Number of Scrapers: 5 Scraper(s)
Adjusted single scraper team (unit) hourly production: 2,927.76 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **2,927.76** LCY/Hour

Unadjusted unit production/hour: 705.48 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **249.85** Hours

Unit cost: $1.010 /LCY Total job cost: **$738,938**

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

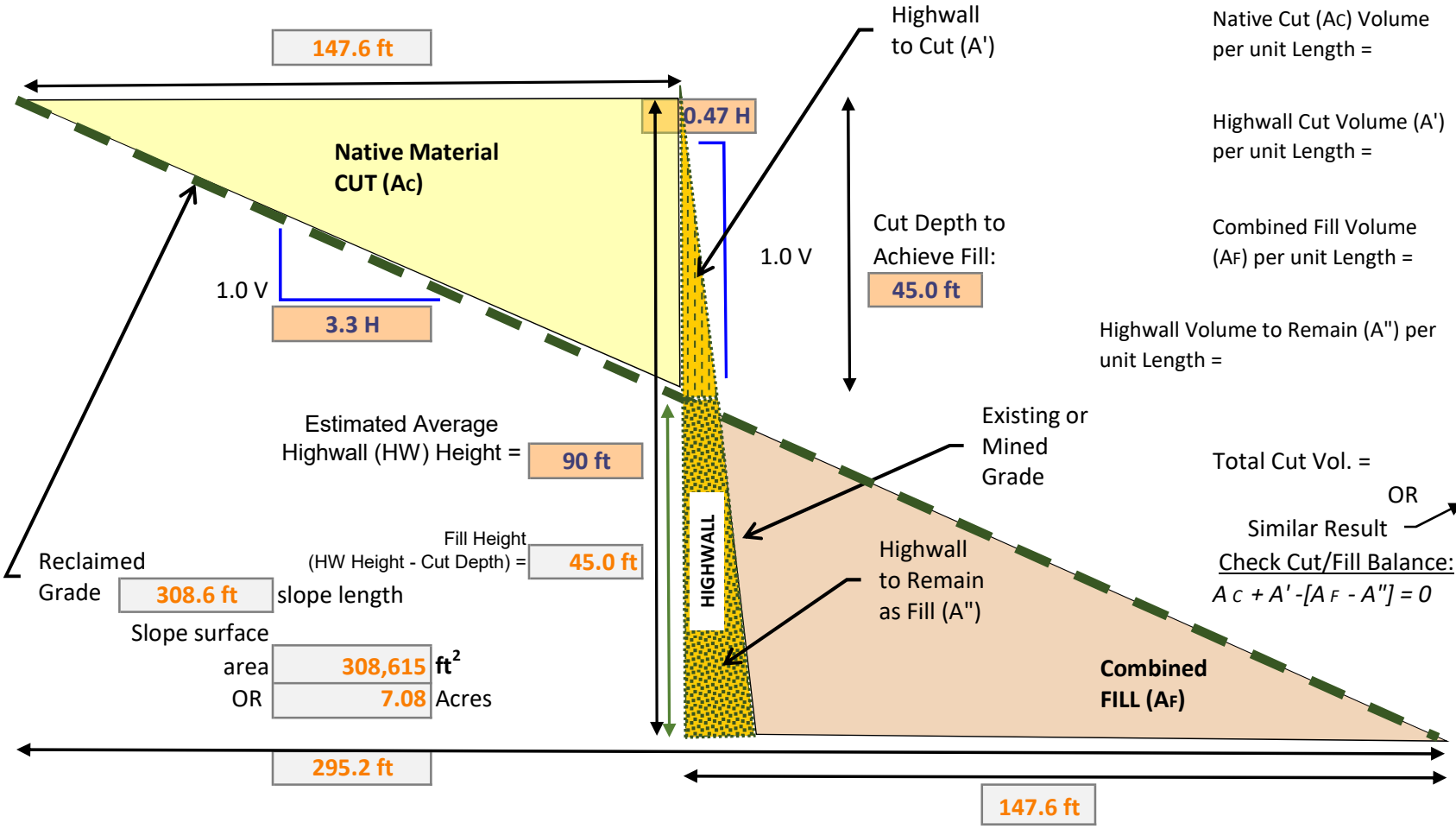
Task # 002.1 Pit Wall Removal Blasting Volume Estimate

PROJECT: Coaldale Main Pit
PERMIT No.: M-1977-247
HIGHWALL LOCATION: North Pit (north side)
SOURCE: Exhibit F-2B, dated 9/21/20

LEGEND
Input
Result

DATE: 11/9/2020

Highwall Length = 1000 ft



Native Cut (Ac) Volume per unit Length =	3,321.0	ft²
Highwall Cut Volume (A') per unit Length =	472.1	ft²
Combined Fill Volume (AF) per unit Length =	3,321.0	ft²
Highwall Volume to Remain (A") per unit Length =	1,416.4	ft²
Total Cut Vol. =	3,793,129	ft³
OR	140,486	CY
Similar Result		
Check Cut/Fill Balance:	1888.5	

$A_C + A' - [A_F - A''] = 0$

HIGHWALL CUT - FILL VOLUME ESTIMATE

BULLDOZER WORK

Task description: **North Pit Wall (North Side) Removal Contouring**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-003
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS Series II LGP
Horsepower: 240
Blade Type: Straight
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $192.69
Total Fleet Cost/Hour: **$385.38**

MATERIAL QUANTITIES

Initial Volume: 31,733
Swell factor: 1.000
Loose volume: **31,733** LCY

Source of estimated volume: Exhibit F-2b [9/21/20]
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 496.4 LCY/hr

Materials consistency description: Rock, well ripped or blasted 0.8

Average push gradient: -30 %
Average site altitude: 6,800 feet

Material weight: 3,300 lbs/LCY

Weight description: Decomposed rock - 75% Rock, 25% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.800	(CAT HB)
Dozing method:	1.200	(S-BY-S)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.697	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6669

Adjusted unit production: 331.05 LCY/hr

Adjusted fleet production: **662.1** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.582/LCY

Total job time: **47.93** Hours
Total job cost: **$18,471**

DEMOLITION WORK

Task description: **Structure Demolition**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 10/20/2020 County: Fremont Filename: M247-004
User: TC1

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 88.00 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Metal shop building	100 x 66 x 15	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 30 mile haul	99,000.00	CF	$0.39	$38,115.00
concrete slab	100 x 66 x 0.5	Floor, concrete, demolition only, average reinforcing - 6 in. thick	6,600.00	SF	$0.80	$5,280.00
Metal Bldg #1	56 x 33 x 15	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 30 mile haul	27,720.00	CF	$0.39	$10,672.20
concrete slab	56 x 33 x 0.5	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,848.00	SF	$0.80	$1,478.40
Metal Bldg #2	52 x 28 x 15	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 30 mile haul	21,840.00	CF	$0.39	$8,408.40
concrete slab	52 x 28 x 0.5	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,456.00	SF	$0.80	$1,164.80
Metal Bldg #3	48 x 33 x 15	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 30 mile haul	23,760.00	CF	$0.39	$9,147.60
concrete slab	48 x 33 x 0.5	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,584.00	SF	$0.80	$1,267.20
Concrete loading (4 slabs above, broken)	5,744 CF	Loading only, open areas (unconfined) - Track loader	213.00	CY	$0.55	$118.00
Concrete hauling (4 slabs above, broken)	14 60-mile round trips	Hauling only, per mile, 12-18 CY truck - 50 mph average speed	850.00	MI	$3.24	$2,754.00
Tank	13 ft x 24 ft	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 30 mile haul	3,185.00	CF	$0.39	$1,226.23
Tanks (2)	12 ft x 18 ft each	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 30 mile haul	4,070.00	CF	$0.39	$1,566.95

Job Hours: 0.00 **Subtotal (unadjusted): $81,198.78** **Total Cost (adjusted for location): $71,454.93**

SCRAPER TEAM WORK

Task description: **North Pit (South Side) Bench Backfill**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-005
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 657G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D7R DS Series II LGP
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	NA	NA	100	NA	NA
Ownership cost/hour:	$255.26	NA	NA	$76.61	NA	NA
Operating cost/hour:	$261.03	NA	NA	$74.78	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	NA	NA	$0.00	NA	NA
Operator cost/hour:	$30.90	NA	NA	$41.30	NA	NA
Unit Subtotals:	$547.19	NA	NA	$192.69	NA	NA
Number of Units:	4	0	0	1	0	0
Group Subtotals:	Work:	$2,188.76	Support:	$192.69	Maint:	$0.00

Total work team cost/hour: **$2,381.45**

MATERIAL QUANTITIES

Initial volume: 22,645 CCY Swell factor: 1.165
Loose volume: **26,381** LCY

Source of estimated volume: Exhibit F-2b [9/21/20], Exhibit E [10/2/20]/Task 005.1
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,900 lbs/LCY
Material description: Decomposed rock - 50% Rock, 50% Earth
Rated Payload: 104,000 pounds
Payload Capacity: 35.86 LCY

Struck Volume: 32.00 LCY
Heaped Volume: 44.00 LCY
Average Volume: 38.00 LCY
Adjusted Capacity: **35.86** LCY

Cycle Time:

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

Job Condition Correction: Site Altitude: 6800 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: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	4.00	4.00	2725	1.34

Haul Time: **1.34** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	4.00	4.00	2920	1.04

Return Time: **1.04** minutes

Total Scraper team cycle time: **3.98** minutes
Adjusted for job conditions: 448.73 LCY/Hour
Selected Number of Scrapers: 4 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,794.91 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,794.91** LCY/Hour

Unadjusted unit production/hour: 540.63 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **14.70** Hours

Unit cost: $1.327 /LCY Total job cost: **$35,002**

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

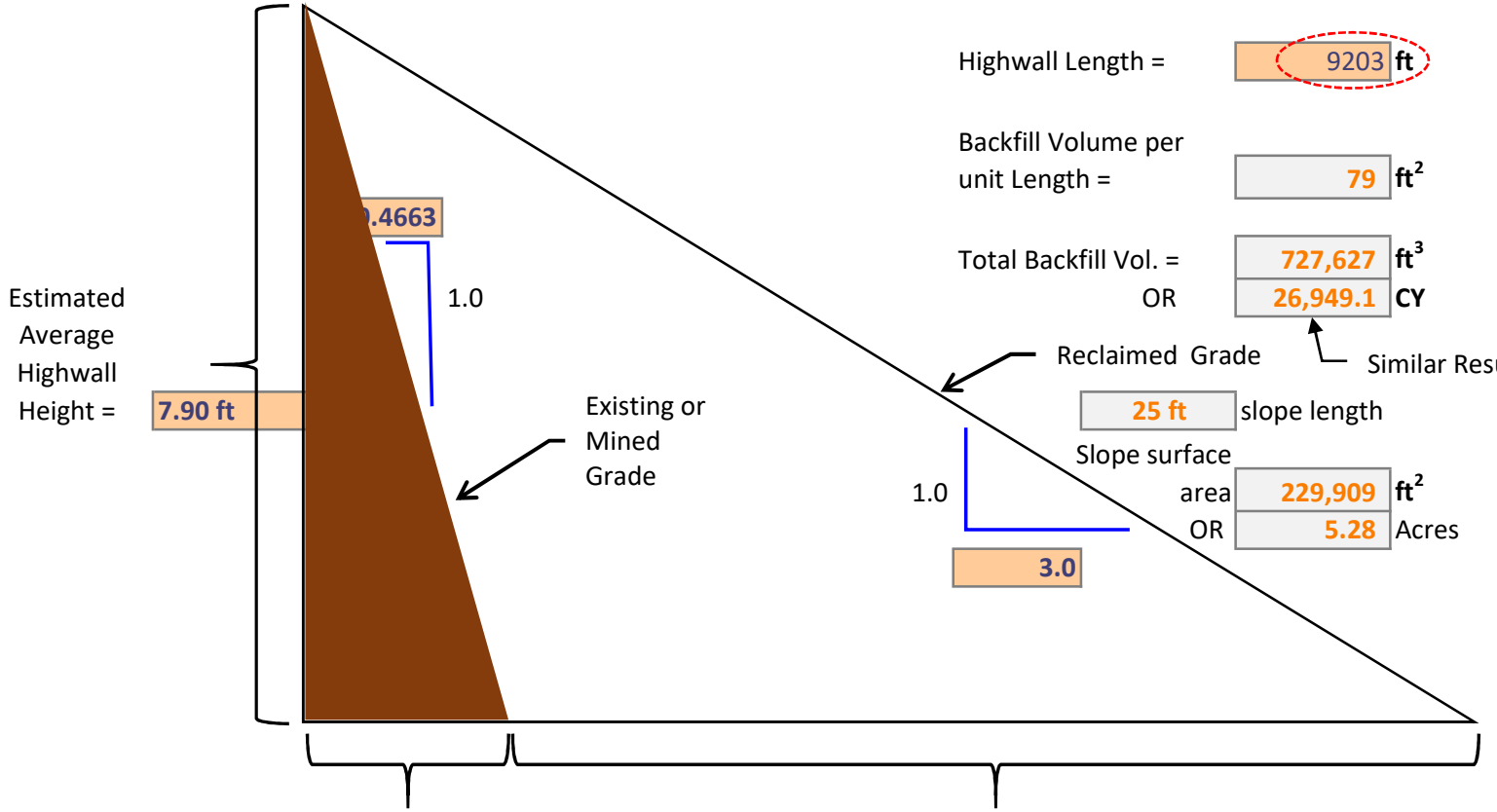
Task # 005.1 North Pit (South Side) Bench Backfill

PROJECT: Coaldale Main Pit
PERMIT No.: M-1977-247
HIGHWALL LOCATION: North Pit (south side)

DATE: 11/6/2020

LEGEND

Input
Result



Highwall Length =	9203	ft
Backfill Volume per unit Length =	79	ft^2
Total Backfill Vol. =	727,627	ft^3
OR	26,949.1	CY
	Similar Result	
	25 ft	slope length
Slope surface area	229,909	ft^2
OR	5.28	Acres

HIGHWALL BACKFILL VOLUME ESTIMATE

BULLDOZER RIPPING WORK

Task description: **Rip 5.9 acres of Haul Road & Building sites**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 11/9/2020 County: Fremont Filename: M247-006
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

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

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	100
Ripper Ownership Cost/Hour:	$7.60	NA
Ripper Operating Cost/Hour:	$5.32	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$205.60	
Total Fleet Cost/Hour:	**$205.60**	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 5.90 acres Rip Depth (ft): 1.00 Volume: 9,519 BCY or CCY

Source of estimated quantity: EXHIBIT F-1, dated 9/21/20

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

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

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.755	Acres/hr
Site Altitude:	6,800	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: **9.42** Hours

Unit cost: $328.236 Per acre Total job cost: **$1,937**

SCRAPER TEAM WORK

Task description: **Titanium Hill Pit Bench Backfill**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-007
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 657G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D7R DS Series II LGP
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	NA	NA	100	NA	NA
Ownership cost/hour:	$255.26	NA	NA	$76.61	NA	NA
Operating cost/hour:	$261.03	NA	NA	$74.78	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	NA	NA	$0.00	NA	NA
Operator cost/hour:	$30.90	NA	NA	$41.30	NA	NA
Unit Subtotals:	$547.19	NA	NA	$192.69	NA	NA
Number of Units:	2	0	0	1	0	0
Group Subtotals:	Work:	$1,094.38	Support:	$192.69	Maint:	$0.00

Total work team cost/hour: **$1,287.07**

MATERIAL QUANTITIES

Initial volume: 6,005 CCY Swell factor: 1.165
Loose volume: **6,996** LCY

Source of estimated volume: Exhibit F-2b [9/21/20], Exhibit E [10/2/20]/Task 007.1
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,900 lbs/LCY
Material description: Decomposed rock - 50% Rock, 50% Earth
Rated Payload: 104,000 pounds
Payload Capacity: 35.86 LCY

Struck Volume: 32.00 LCY
Heaped Volume: 44.00 LCY
Average Volume: 38.00 LCY
Adjusted Capacity: **35.86** LCY

Cycle Time:

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

Job Condition Correction: Site Altitude: 6800 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: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	4.00	4.00	2725	0.98

Haul Time: **0.98** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	4.00	4.00	2920	0.70

Return Time: **0.70** minutes

Total Scraper team cycle time: **3.28** minutes
Adjusted for job conditions: 544.49 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,088.98 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,088.98** LCY/Hour

Unadjusted unit production/hour: 656.01 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **6.42** Hours

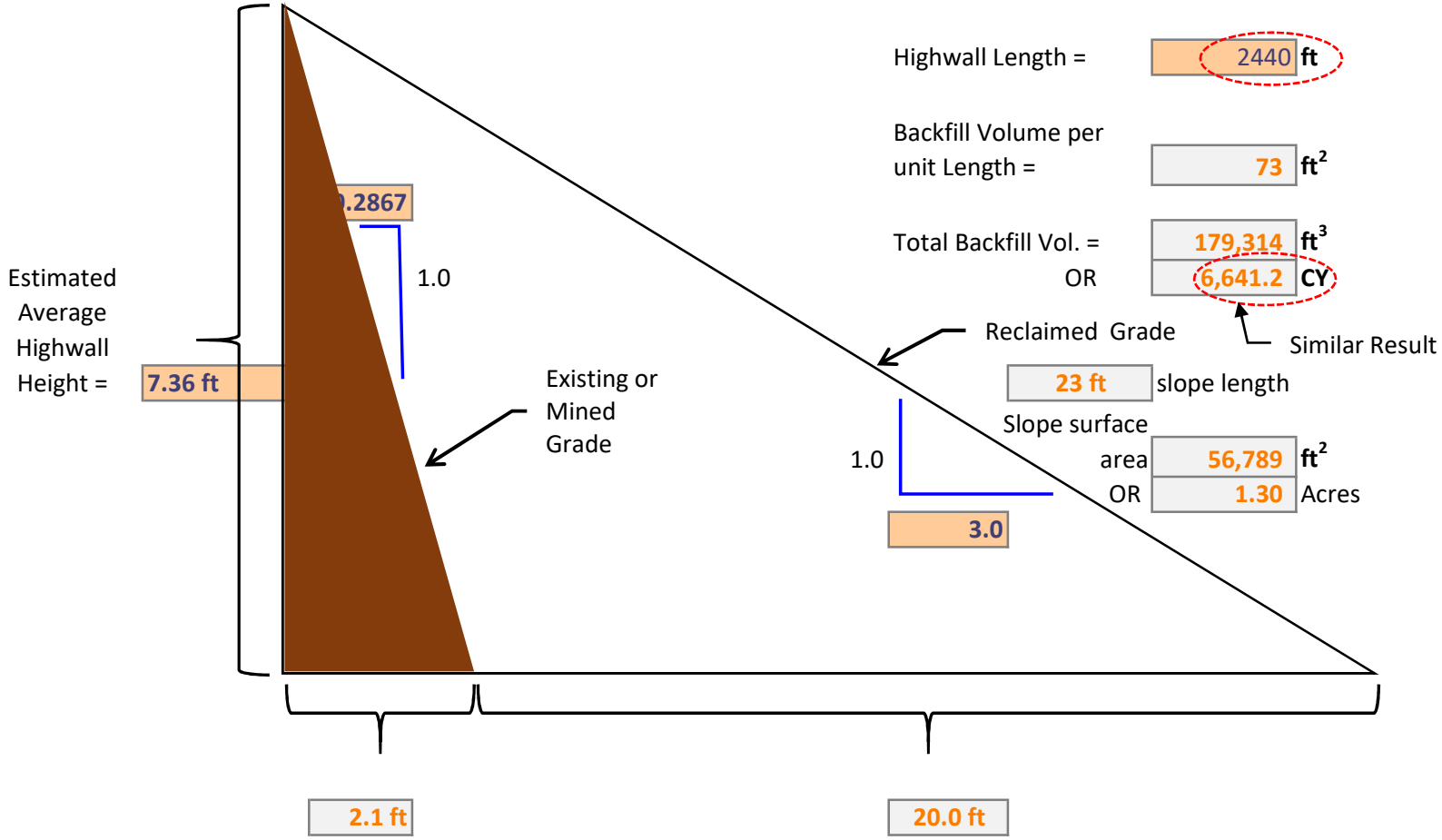
Unit cost: $1.182 /LCY Total job cost: **$8,268**

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Task # 007.1 Titanium Hill Pit Bench Backfill

PROJECT: Coaldale Titanium Hill Pit
PERMIT No.: M-1977-247
HIGHWALL LOCATION: All
DATE: 11/9/2020

LEGEND
Input
Result



Highwall Length = 2440 ft

Backfill Volume per unit Length = 73 ft^2

Total Backfill Vol. = 179,314 ft^3
OR 6,641.2 CY

Similar Result

Slope surface area 56,789 ft^2
OR 1.30 Acres

HIGHWALL BACKFILL VOLUME ESTIMATE

SCRAPER TEAM WORK

Task description: **Haul & Spread Growth Media**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 008 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-008
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 657G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D7R DS Series II LGP
Road Maintenance –Motor Grader:	CAT 12M
-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	NA	NA	100	100	NA
Ownership cost/hour:	$255.26	NA	NA	$76.61	$34.52	NA
Operating cost/hour:	$261.03	NA	NA	$74.78	$35.50	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	$0.00	$0.00	NA
Ripper op. cost/hour:	NA	NA	NA	$0.00	$0.00	NA
Operator cost/hour:	$30.90	NA	NA	$41.30	$28.56	NA
Unit Subtotals:	$547.19	NA	NA	$192.69	$98.57	NA
Number of Units:	4	0	0	1	1	0
Group Subtotals:	Work:	$2,188.76	Support:	$192.69	Maint:	$98.57

Total work team cost/hour: **$2,480.02**

MATERIAL QUANTITIES

Initial volume: 44,367 CCY Swell factor: 1.215
Loose volume: **53,906** LCY

Source of estimated volume: Exhibit L [55 acres @ 6-inch depth]
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 104,000 pounds
Payload Capacity: 65.00 LCY

Scraper Bowl (volume) Basis:

Struck Volume: 32.00 LCY
Heaped Volume: 44.00 LCY
Average Volume: 38.00 LCY
Adjusted Capacity: **38.00** LCY

Cycle Time:

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

Job Condition Correction: Site Altitude: 6800 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: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	4.00	4.00	2725	0.72

Haul Time: **0.72** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	4.00	4.00	2920	0.70

Return Time: **0.70** minutes

Total Scraper team cycle time: **3.02** minutes
Adjusted for job conditions: 626.62 LCY/Hour
Selected Number of Scrapers: 4 Scraper(s)
Adjusted single scraper team (unit) hourly production: 2,506.49 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **2,506.49** LCY/Hour

Unadjusted unit production/hour: 754.97 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **21.51** Hours

Unit cost: $0.989 /LCY Total job cost: **$53,337**

BULLDOZER WORK

Task description: **Contour Overburden Stockpiles**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-009
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS Series II LGP
Horsepower: 240
Blade Type: Straight
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $192.69
Total Fleet Cost/Hour: **$192.69**

MATERIAL QUANTITIES

Initial Volume: 59,814
Swell factor: 1.000
Loose volume: **59,814** LCY

Source of estimated volume: Exhibit L task 003
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 496.4 LCY/hr

Materials consistency description: Rock, well ripped or blasted 0.8

Average push gradient: -25 %
Average site altitude: 6,800 feet

Material weight: 3,300 lbs/LCY

Weight description: Decomposed rock - 75% Rock, 25% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.800	(CAT HB)
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.516	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.697	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5683

Adjusted unit production: 282.10 LCY/hr

Adjusted fleet production: **282.1** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.683/LCY

Total job time: **212.03** Hours
Total job cost: **$40,857**

REVEGETATION WORK

Task description: **Revegetate 101 Acres**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 010 State: Colorado Abbreviation: None
Date: 10/20/2020 County: Fremont Filename: M247-010
User: TC1

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)	$107.16
Total Tilling Cost/Acre	**$107.16**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.38	6.20	$6.07
Indiangrass - Cheyenne	1.39	4.24	$15.71
Sideoats Grama - Vaughn	2.28	7.48	$19.10
Streambank Wheatgrass - Sodar	1.12	3.65	$6.38
Western Wheatgrass - Arriba	3.20	8.08	$20.80
Needlegrass, Green - Lodorm	0.96	3.99	$11.30
Daisy or Sunflower, Maximillians	3.72	21.08	$208.32
Flax, Lewis Blue	0.61	4.05	$10.07
Totals Seed Mix	13.66	58.77	**$297.75**

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
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$301.00	$602.00
Total Mulch Materials Cost/Acre				**$602.00**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$70.17
Total Mulch Application Cost/Acre	**$70.17**

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: 101
Estimated Failure Rate: 30%
*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: $1,344.30
Cost /Acre*: $1,237.14

Initial Job Cost: **$135,774.30**
Reseeding Job Cost: **$37,485.34**
Total Job Cost: **$173,260**
Job Hours: **202.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mob/Demob from Salida**

Site: **Coaldale Quarry** Permit Action: AM03 Permit/Job#: M1977247

PROJECT IDENTIFICATION

Task #: 012 State: Colorado Abbreviation: None
Date: 11/10/2020 County: Fremont Filename: M247-012
User: TC1

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:	$17.20	$29.63	$38.69
Operating Cost/Hour:	$26.56	$47.02	$55.69
Operator Cost/Hour:	$23.63	$23.63	$23.63
Helper Cost/Hour:	$0.00	$23.53	$23.53
Total Unit Cost/Hour:	$67.39	$123.81	$141.54

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 657G	78.88	$255.26	$141.54	5	$1,984.00	$707.70	$1,250.00
Cat D7R DS Series II LGP	38.49	$84.21	$123.81	2	$416.04	$247.62	$500.00
ATLAS COPCO ROC D7-11,4.0 in.	0.00	$71.15	$67.39	1	$138.54	$67.39	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$6.72	$67.39	1	$74.11	$67.39	$250.00
CAT 12M	16.01	$34.52	$67.39	1	$101.91	$67.39	$250.00
CAT 924H	12.69	$20.95	$67.39	1	$88.34	$67.39	$250.00
Cat 312D L 9'-2" Stick	14.83	$30.60	$67.39	1	$97.99	$67.39	$250.00
Subtotals:					**$2,900.93**	**$1,292.27**	**$3,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	$28.84	1	$28.84	$28.84
ANFO Bulk Delivery Truck	$223.71	1	$223.71	$223.71
Fuel Tanker, 4x2, 170 HP	$28.84	1	$28.84	$28.84
Lube Truck, 4x2, 190 HP	$34.47	1	$34.47	$34.47
Subtotals:			**$315.86**	**$315.86**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	SALIDA	
Total one-way travel distance:	22.00	miles
Average Travel Speed:	35.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$14,172.38	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$397.08	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.63	0.63
Return Time (Hours):	0.63	0.63
Loading Time (Hours):	0.25	NA
Unloading Time (Hours):	0.25	NA
Subtotals:	1.76	1.26

JOB TIME AND COST

Total job time:	**3.51**	Hours
Total job cost:	**$14,569**	

STATE OF COLORADO

Cazier - DNR, Tim <tim.cazier@state.co.us>

Re: M-1977-247 Response to 3rd Adequacy

1 message

Cazier - DNR, Tim <tim.cazier@state.co.us> Tue, Nov 10, 2020 at 1:35 PM
To: Angela Bellantoni <angela@envalternatives.com>
Cc: Julio Villon Durand <julio.villon@lafargeholcim.com>

Julio, Angela:

Attached is the complete reclamation cost estimate for AM-03. Please let me know if you have any questions or concerns.

Tim Cazier, P.E.
Environmental Protection Specialist III - Engineering

[I am working remotely - please call me at 303-328-5229]

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

P 303.866.3567 x8169 | F 303.832.8106 | C 303.328.5229
1313 Sherman St., Room 215, Denver, CO 80203
tim.cazier@state.co.us | https://www.colorado.gov/drms

On Tue, Nov 10, 2020 at 12:23 PM Cazier - DNR, Tim <tim.cazier@state.co.us> wrote:

> Angela, Julio:
>
> Attached is the cost summary sheet. My internet slowed down about an hour and a half ago, so I'm still generating the backup supporting calculation sheets, but all the summary rows have been checked with the software - so there shouldn't be any changes. I will send the pdf binder as soon as I can.
>
> **Tim Cazier, P.E.**
> **Environmental Protection Specialist III - Engineering**
>
> *[I am working remotely - please call me at 303-328-5229]*
>
> COLORADO
> Division of Reclamation, Mining and Safety
> Department of Natural Resources
>
> P 303.866.3567 x8169 | F 303.832.8106 | C 303.328.5229
> 1313 Sherman St., Room 215, Denver, CO 80203
> tim.cazier@state.co.us | https://www.colorado.gov/drms
>
> On Tue, Nov 10, 2020 at 10:23 AM Cazier - DNR, Tim <tim.cazier@state.co.us> wrote:
>
> > Angela,
> >
> > I hope to have the bond estimate by noon today. Yes, today is the decision date.
> >
> > I will email it to both of you as soon as I complete it.