STATE OF COLORADO

Gagnon - DNR, Nikie <nikie.gagnon@state.co.us>

Walstrum Quarry M1983033 Inspection Report and Cost Estimate

1 message

Gagnon - DNR, Nikie <nikie.gagnon@state.co.us> Sun, Jan 12, 2025 at 8:21 PM
To: phillip.courtney@martinmarietta.com
Cc: julie.mikulas@martinmarietta.com

Hi Phil.
Please see the attached inspection report for the November 2024 inspection of the Walstrum Quarry. No problems requiring abatement were observed during the inspection.

As part of our routine monitoring and review of permits, the Division recalculated the bond for the site. Please see the attached bond estimate which shows the estimated reclamation liability for the site is $1,533,035.00, which is an increase of $433,035.00. Please review the estimate and reach out to me if you have any questions or concerns on the new amount. A notice of surety increase will be sent after January 27, 2025.

Kind regards,

Nikie Gagnon
Environmental Protection Specialist

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

Cell: 720.527.1640
Physical: 1313 Sherman Street, Room 215, Denver, CO 80203
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2 attachments

Walstrum Quarry_M1983033_2024 Insp Rpt.pdf
8313K

M1983033_Walstrum Quarry_2024 Cost Estimate.pdf
393K

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

MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Walstrum Quarry	**MINE/PROSPECTING ID#:** M-1983-033	**MINERAL:** Granite, granite gneis	**COUNTY:** Clear Creek
INSPECTION TYPE: Monitoring	**WEATHER:** Clear	**INSP. DATE:** November 14, 2024	**INSP. TIME:** 09:00
OPERATOR: Albert Frei & Sons Inc.	**OPERATOR REPRESENTATIVE:** Phil Courtney, Brian Scott	**TYPE OF OPERATION:** 112c - Construction Regular Operation	
REASON FOR INSPECTION: Normal I&E Program	**BOND CALCULATION TYPE:** Complete Bond	**BOND AMOUNT:** $1,100,000.00	
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** None	**JOINT INSP. AGENCY:** None	
INSPECTOR(S): Nikie Gagnon Jared Ebert	**INSPECTOR'S SIGNATURE:** Nikie Gagnon	**SIGNATURE DATE:** January 12, 2025	

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

(AR) RECORDS---------- Y	(FN) FINANCIAL WARRANTY-------- Y	(RD) ROADS---------- N
(HB) HYDROLOGIC BALANCE---------- Y	(BG) BACKFILL & GRADING---------- Y	(EX) EXPLOSIVES--------- N
(PW) PROCESSING WASTE/TAILING---- N	(SF) PROCESSING FACILITIES------- N	(TS) TOPSOIL---------- Y
(MP) GENL MINE PLAN COMPLIANCE- Y	(FW) FISH & WILDLIFE---------- Y	(RV) REVEGETATION---- N
(SM) SIGNS AND MARKERS---------- Y	(SP) STORM WATER MGT PLAN---- Y	(RS) RECL PLAN/COMP-- Y
(ES) OVERBURDEN/DEV. WASTE--------- N	(SC) EROSION/SEDIMENTATION--- N	(ST) STIPULATIONS------- N
(AT) ACID OR TOXIC MATERIALS------- N	(OD) OFF-SITE DAMAGE----------N	

Y = Inspected / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

OBSERVATIONS

The Walstrum Quarry was inspected by Nikie Gagnon and Jared Ebert, representing the Division of Reclamation, Mining and Safety (Division/DRMS) as part of the Division's normal monitoring inspection program. Brian Scott and Phil Courtney, representing Martin Marietta (Operator), accompanied the Division during the inspection. Martin Marietta acquired Albert Frei and Sons, the permittee, in January 2024.

The site accessed from US Hwy 6 near the intersection with I-70 about five miles east of Idaho Springs. The operation is a 112c granite/aggregate mine permitted for 749.30 acres with an affected area of 493.80 acres. The approved post-mining land uses include four reclamation types; wildlife habitat (undisturbed area), privately-owned natural resource area, industrial/commercial and developed water resources. The mine was operating during the inspection. A mine sign was posted on the mine office on the south side of Hwy 6.

General Compliance with the Mine Plan:
The Division observed the process area and wash plant. A new truck scale was recently installed in this area. The Operator stated that they perform daily inspection of the stormwater channels around the plant (Photo 3). During the inspection, the Division observed the stormwater detention basin near the entrance to the site which had small amount of water in it (Photo 4).

The Division observed active processing on the first level of the east side of the quarry. The crusher was operating during the inspection and conveyors moved material to stockpiles around the processing area. Numerous haul trucks were observed taking material out of the mine site. The Division observed appropriate containment of fuels in double walled tanks and lubricants and other hazardous materials are stored in Conex boxes.

Active mining was occurring during the inspection in the northern end of the quarry. Haul trucks were observed moving mined material from a bench.

Revegetation: The top benches around the quarry have reached final configuration and the Operator is conducting concurrent reclamation on the upper most of these benches. According to the 2024 annual report, reclamation work is complete on approximately 35 acres and the operator reclaimed 7.57 acres over the last year. The Division observed established vegetation on the top benches around the active quarry (Photos 11-13).

During the inspection, the Operator informed the Division that development in the Spur Amendment is underway. The Spur Amendment was approved under Amendment 9 in 2022 and added 464.17 acres to the permit area, east of the existing quarry. The Division observed new roads, a large topsoil storage area, and machinery moving material around the spur area. (Photos 14-16). The original quarry was mined from the bottom up, but the Spur will be mined from the top down.

Blasting: Mr. Scott stated that the blasting is contracted out to a contractor. The blasts are small and designed to minimize vibration and overbreak. The blasting events are monitored electronically with two seismographs on site. Alerts are sent out when there is an event above the internal limit set by the Operator. Strong winds occasionally trigger alerts at the monitors when blasting is not occurring. During the inspection, the Division observed equipment drilling holes on the top level of the Spur area (Photo 17). A seismograph was observed adjacent to the mining area (Photo 18).

Fish and Wildlife: No impact to wildlife was observed. A bighorn sheep was observed on the 4th level on a slope above the new employee building (Photo 9)

Hydrologic Balance: Water used for dust suppressant and the aggregate plant is pumped from Clear Creek under a court decree and augmentation plan. The Division observed the inlet and pipeline adjacent to the mine office on the south side of Hwy 6.

Storm Water MGT Plan: No oil or fuel spills observed. The operator is properly storing lubricants and chemicals in Conex boxes around the mine. Six five-gallon buckets containing fluids were noted in the equipment storage area at the top of the quarry (Photo 18). The Operator stated they would move the buckets to the adjacent storage box.

Financial Warranty:
The Division currently holds a financial warranty in the amount of $1,100,000.00 for reclamation. The reclamation cost was last calculated in September 2019 for Amendment 9. After this inspection, the Division estimated the reclamation liability at the site to be $1,533,035.00 which is $433,035.00 more than the currently held financial warranty. The Division's reclamation cost estimate is enclosed with this report for the Operator's review. The Division requests that any questions or concerns regarding the estimated liability level be forwarded to the Division by January 27, 2025. The Division may issue a surety increase revision after January 27, 2025. In accordance with Rule 4.2.1(2), Martin Marietta will have sixty (60) days from the date of the notice of surety increase to provide the additional financial warranty.

This concludes the Division's Inspection Report; a subset of photographs taken during the time of the inspection are included below. If you need additional information or have any questions, please contact me at Division of Reclamation, Mining and Safety, 1313 Sherman Street, Room 215, Denver, CO 80203, by telephone at 720-527-1640, or by email at nikie.gagnon@state.co.us.

PHOTOGRAPHS

Photo 1: Looking north at the processing facility from the mine office.

Photo 2: Looking at the newly installed truck scale in the loading area.

Photo 3: Stormwater channels adjacent to the processing plant.

Photo 4: Stormwater rentention pond near the entrance to the mine, adjacent to the processing plant.

Photo 5: Pipeline and inlet on Clear Creek adjacent to the mine office.

Photo 6: Mine office on the south side of Hwy 6, across from the entrance to the quarry.

Photo 7: Processing equipment on the floor of the quarry.

Photo 8: Diesel containment and lubricant storage adjacent to the employee building on level 4 of the quarry.

Photo 9: New employee building on level 4 of the quarry.

Photo 10: Active mining area on the north side of the original quarry.

Photo 11: Looking at the reclaimed benches on the northwest end of the permit area. Vegetation is establishing on the slopes.

Photo 12: Mining in the northwest side of the permit area. Active mining is ongoing on this level. Slopes above have been reclaimed and an armored stormwater channel is noted by the arrow.

Photo 13: Looking at established vegetation on a reclaimed sloped above the quarry.

Photo 14: Looking at recently constructed haul road and topsoil storage area in the Spur Amendment Area, on the east side of the permit area.

Photo 15: Equipment moving topsoil and overburden within the Spur Amendment Area.


Photo 16: Looking at recent earthwork in the Spur Amendment Area, east of the existing quarry.

Photo 17: Equipment drilling holes for blasting.

Photo 18: Seismograph adjacent to the Spur Amendment area.


Photo 18: Storage area at the top of the quarry. Buckets containing fluids were observed here.


Photo 19: Equipment storage area at the top of the quarry.

Photo 20:

Inspection Contact Address

Phillip Courtney
Albert Frei & Sons Inc.
1627 Cole Boulevard, Suite 200
Lakewood, CO 80401

Enclosure: 2024 Reclamation Cost Estimate

CC: Jared Ebert, Senior EPS, DRMS

COST SUMMARY WORK

Task description: **2024 Bond Estimate**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-000
User: NCG

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
IY1	Stages I & Y Revegetation	REVEGE	1	80.00	$755,516
IY2	Stages I & Y Replace Topsoil	LOADER	1	368.08	$98,730
IY3	Stages I & Y Bench Construction	DOZER	2	77.01	$74,607
IY4	Stages I & Y Talus Sloping	DOZER	2	176.62	$171,095
IY5	Stages I & Y Grading and Shaping	GRADER	1	81.55	$13,205
JM1	Stage J & Misc. Revegetation	REVEGE	1	80.00	$43,826
JM2	Stage J & Misc. Replace Topsoil	LOADER	1	43.86	$11,766
JM5	Stage J & Misc. Grading and Shaping	GRADER	1	50.63	$8,199
JM6	Concrete Demo	SITEMAINTENANCE	1	40.00	$29,145
JM7	Scrap Removal	SITEMAINTENANCE	1	40.00	$9,450
	SUBTOTALS:			**1037.75**	**$1,215,539**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$24,554
Performance bond:	0.00	Total =	$0
Job superintendent:	518.87	Total =	$41,131
Profit:	10.00	Total =	$121,554
		TOTAL O & P =	$187,239
		CONTRACT AMOUNT (direct + O & P) =	$1,402,778

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$500	Total =	$500
Engineering work and/or contract/bid preparation:	4.25	Total =	$59,618
Reclamation management and/or administration:	5.00		$70,139
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$317,496
		TOTAL BOND AMOUNT (direct + indirect) =	**$1,533,035**

REVEGETATION WORK

Task description: **Stages I & Y Revegetation**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: IY1 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-IY1
User: NCG

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
0-20-20, 4-8-12, 10-10-10	1.00	pound	$0.64	$0.64
			Total Fertilizer Materials Cost/Acre	**$0.64**

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	$278.78
Total Fertilizer Application Cost/Acre	**$278.78**

TILLING

Description	Cost /Acre
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Native	11.90	194.24	$253.77
Indian Ricegrass - Native	4.08	13.21	$70.55
Sand Dropseed	6.60	787.88	$85.86
Canada Wildrye	3.30	8.71	$33.76
Sandberg Bluegrass - VNS	9.90	210.23	$143.02
Currant, Wax	1.30	4.48	$90.17
Slender Wheatgrass - Native	6.60	24.09	$46.63
Mahogany, Mountain	1.30	1.76	$131.23
Western Wheatgrass - Barton	9.90	25.00	$93.02
Rose, Wood's	1.30	0.00	$69.39
Sage, Fringed	0.70	58.50	$69.46

Prairie Junegrass	3.30	175.41	$160.85
Flax, Lewis Blue	1.30	8.62	$54.99
Penstemon, Rocky Mountain	1.30	20.38	$79.84
Yarrow, Western	0.70	42.56	$33.77
Totals Seed Mix	63.48	1,575.06	**$1,416.29**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$1,359.07
Total Seed Application Cost/Acre	**$1,359.07**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Herbicide - Tordon 22K @ 1.0 pt/ac	1.00	ACRE	$11.80	$11.80
Jute mesh #2, stapled (MEANS 31 25 14.16 0300)	1.00	ACRE	$2,758.80	$2,758.80
Total Mulch Materials Cost/Acre				**$2,770.60**

Application

Description	**Cost /Acre**
Jute mesh #2 (MEANS 31 25 14.16 0300)	$2,323.20
Weed spray, hand, non-aquatic area, nox. [DMG]	$209.61
Weed spray, hand, non-aquatic areas, ann. [DMG]	$136.48
Total Mulch Application Cost/Acre	**$2,669.29**

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: 79.3
Estimated Failure Rate: 25%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $8,833.47
Cost /Acre*: $2,775.36

Initial Job Cost: **$700,494.17**
Reseeding Job Cost: **$55,021.51**
Total Job Cost: **$755,516**
Job Hours: **80.00**

REVEGETATION WORK

Task description: **Stage J & Misc. Revegetation**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: JM1 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-JM1
User: NCG

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
0-20-20, 4-8-12, 10-10-10	1.00	pound	$0.64	$0.64
			Total Fertilizer Materials Cost/Acre	**$0.64**

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	$278.78
Total Fertilizer Application Cost/Acre	**$278.78**

TILLING

Description	Cost /Acre
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
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Indian Ricegrass - Native	4.08	13.21	$70.55
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Slender Wheatgrass - Native	6.60	24.09	$46.63
Mahogany, Mountain	1.30	1.76	$131.23
Western Wheatgrass - Barton	9.90	25.00	$93.02
Rose, Wood's	1.30	0.00	$69.39
Sage, Fringed	0.70	58.50	$69.46

Prairie Junegrass	3.30	175.41	$160.85
Flax, Lewis Blue	1.30	8.62	$54.99
Penstemon, Rocky Mountain	1.30	20.38	$79.84
Yarrow, Western	0.70	42.56	$33.77
Totals Seed Mix	63.48	1,575.06	**$1,416.29**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$1,359.07
Total Seed Application Cost/Acre	**$1,359.07**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Herbicide - Tordon 22K @ 1.0 pt/ac	1.00	ACRE	$11.80	$11.80
Jute mesh #2, stapled (MEANS 31 25 14.16 0300)	1.00	ACRE	$2,758.80	$2,758.80
Total Mulch Materials Cost/Acre				**$2,770.60**

Application

Description	**Cost /Acre**
Jute mesh #2 (MEANS 31 25 14.16 0300)	$2,323.20
Weed spray, hand, non-aquatic area, nox. [DMG]	$209.61
Weed spray, hand, non-aquatic areas, ann. [DMG]	$136.48
Total Mulch Application Cost/Acre	**$2,669.29**

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: 4.6
Estimated Failure Rate: 25%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $8,833.47
Cost /Acre*: $2,775.36

Initial Job Cost: **$40,633.96**
Reseeding Job Cost: **$3,191.66**
Total Job Cost: **$43,826**
Job Hours: **80.00**

WHEEL LOADER – LOAD AND CARRY WORK

Task description: **Stages I & Y Replace Topsoil**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: IY2 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-IY2
User: NCG

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 988H Horsepower: 475
Attachment 1: ROPS Cab Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$131.26	NA
Operating Cost/Hour:	$100.12	100
Operator Cost/Hour:	$36.85	NA
Total Unit Cost/Hour:	$268.23	

Total Fleet Cost/Hour: $268.23

MATERIAL QUANTITIES

Initial volume: 93,412 CCY Swell factor: 1.000
Loose volume: **93,412** LCY

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

HOURLY PRODUCTION

Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.575 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 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:	-0.060	minutes
	Adjusted Basic Cycle Time:	0.515	minutes

Rolling Resistance – Road Conditions

Haul: Hard, smooth, stabilized, surfaced, watered, maintained 2.0
Return: Hard, smooth, stabilized, surfaced, watered, maintained 2.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	900	5.00	2.00	7.00	0.9002	(Cat HB)
Return Route:	900	-5.00	2.00	-3.00	0.4804	(Cat HB)

Total Travel Time:	1.3806	minutes
Total Cycle Time:	**1.8956**	minutes

Load Bucket Capacity

Rated Capacity:	9.20	LCY (heaped)	
Bucket Fill Factor:	1.050	Other - moist loam	(100-110%) 1.050
Adjusted Capacity:	**9.66**	LCY	

Job Condition Correction Factors
Site Altitude: 7220 feet

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

Unadjusted Hourly Unit Production:	305.76	LCY/Hour
Adjusted Hourly Unit Production:	253.78	LCY/Hour
Adjusted Hourly Fleet Production:	**253.78**	LCY/Hour

JOB TIME AND COST

Fleet size:	1	Loader(s)	Total job time:	**368.08**	Hours
Unit cost:	$1.057	/LCY	Total job cost:	**$98,730**	

WHEEL LOADER – LOAD AND CARRY WORK

Task description: **Stage J & Misc. Replace Topsoil**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: JM2 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-JM2
User: NCG

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 988H Horsepower: 475
Attachment 1: ROPS Cab Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$131.26	NA
Operating Cost/Hour:	$100.12	100
Operator Cost/Hour:	$36.85	NA
Total Unit Cost/Hour:	$268.23	

Total Fleet Cost/Hour: $268.23

MATERIAL QUANTITIES

Initial volume: 11,132 CCY Swell factor: 1.000
Loose volume: **11,132** LCY

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

HOURLY PRODUCTION

Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.575 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 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:	-0.060	minutes
	Adjusted Basic Cycle Time:	0.515	minutes

Rolling Resistance – Road Conditions

Haul: Hard, smooth, stabilized, surfaced, watered, maintained 2.0
Return: Hard, smooth, stabilized, surfaced, watered, maintained 2.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	900	5.00	2.00	7.00	0.9002	(Cat HB)
Return Route:	900	-5.00	2.00	-3.00	0.4804	(Cat HB)

Total Travel Time:	1.3806	minutes
Total Cycle Time:	**1.8956**	minutes

Load Bucket Capacity

Rated Capacity:	9.20	LCY (heaped)	
Bucket Fill Factor:	1.050	Other - moist loam	(100-110%) 1.050
Adjusted Capacity:	**9.66**	LCY	

Job Condition Correction Factors
Site Altitude: 7220 feet

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

Unadjusted Hourly Unit Production:	305.76	LCY/Hour
Adjusted Hourly Unit Production:	253.78	LCY/Hour
Adjusted Hourly Fleet Production:	**253.78**	LCY/Hour

JOB TIME AND COST

Fleet size:	1	Loader(s)	Total job time:	**43.86**	Hours
Unit cost:	$1.057	/LCY	Total job cost:	**$11,766**	

BULLDOZER WORK

Task description: **Stages I & Y Bench Construction**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: IY3 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-IY3
User: NCG

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU
Horsepower: 405
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$253.16	NA
Operating Cost/Hour:	$164.35	100
Ripper own. Cost/Hour:	$18.79	NA
Ripper op. Cost/Hour:	$9.48	100
Operator Cost/Hour:	$38.59	NA

Total unit Cost/Hour: $484.37
Total Fleet Cost/Hour: **$968.73**

MATERIAL QUANTITIES

Initial Volume: 155,063
Swell factor: 1.000
Loose volume: **155,063** LCY

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

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 2,110.5 LCY/hr

Materials consistency description: Rock, avg. ripped or blasted 0.7

Average push gradient: 0 %
Average site altitude: 7,220 feet

Material weight: 2,800 lbs/LCY

Weight description: Granite - Broken

Job Condition Correction Factor		Source
Operator Skill:	1.000	(EXCL.)
Material consistency:	0.700	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4770

Adjusted unit production: 1,006.71 LCY/hr
Adjusted fleet production: **2013.42** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.481/LCY

Total job time: **77.01** Hours
Total job cost: **$74,607**

BULLDOZER WORK

Task description: **Stages I & Y Talus Sloping**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #:	IY4	State:	Colorado	Abbreviation:	None
Date:	1/12/2025	County:	Clear Creek	Filename:	M033-IY4
User:	NCG				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D9T - 9SU
Horsepower:	405
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$253.16	NA
Operating Cost/Hour:	$164.35	100
Ripper own. Cost/Hour:	$18.79	NA
Ripper op. Cost/Hour:	$9.48	100
Operator Cost/Hour:	$38.59	NA

Total unit Cost/Hour: $484.37
Total Fleet Cost/Hour: **$968.73**

MATERIAL QUANTITIES

Initial Volume: 155,063
Swell factor: 1.000
Loose volume: **155,063** LCY

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

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 2,110.5 LCY/hr

Materials consistency description: Rock, avg. ripped or blasted 0.7

Average push gradient: 20 %
Average site altitude: 7,220 feet

Material weight: 2,800 lbs/LCY

Weight description: Granite - Broken

Job Condition Correction Factor		Source
Operator Skill:	1.000	(EXCL.)
Material consistency:	0.700	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	0.800	(POOR)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	0.545	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2080

Adjusted unit production: 438.98 LCY/hr
Adjusted fleet production: **877.96** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $1.103/LCY

Total job time: **176.62** Hours
Total job cost: **$171,095**

SITE MAINTENANCE

Task description: **Concrete Demo**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: JM6 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-JM6
User: NCG

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Concrete Footer Demolition	40.00	Demo. and on-site disposal in existing pit, 1.5 ft. x 3 ft. - Max. 10,000 ft. haul	2,800.00	LF	$10.41	$29,144.64

Job Hours: 40.00 **Total Cost: $29,144.64**

SITE MAINTENANCE

Task description: **Scrap Removal**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: JM7 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-JM7
User: NCG

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Scrap Removal	40.00	USER PROVIDED ITEM	35.00		$270.00	$9,450.00

Job Hours: 40.00 **Total Cost: $9,450.00**

MOTOR GRADER WORK

Task description: **Stages I & Y Grading and Shaping**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: IY5 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-IY5
User: NCG

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 140M Horsepower: 183
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$77.29	NA
Operating Cost/Hour:	$56.87	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$27.76	NA
Total Unit Cost/Hour:	$161.92	
Total Fleet Cost/Hour:	**$161.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 112.10 acres

Source of estimated acreage: Permit Application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 7220 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **81.55** Hours

Unit cost: $117.80 per acre Total job cost: **$13,205**

MOTOR GRADER WORK

Task description: **Stage J & Misc. Grading and Shaping**

Site: **Walstrum Quarry** Permit Action: 2024 Inspection Permit/Job#: M1983033

PROJECT IDENTIFICATION

Task #: JM5 State: Colorado Abbreviation: None
Date: 1/12/2025 County: Clear Creek Filename: M033-JM5
User: NCG

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 140M Horsepower: 183
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$77.29	NA
Operating Cost/Hour:	$56.87	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$27.76	NA
Total Unit Cost/Hour:	$161.92	
Total Fleet Cost/Hour:	**$161.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 69.60 acres

Source of estimated acreage: Permit Application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 7220 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **50.63** Hours

Unit cost: $117.80 per acre Total job cost: **$8,199**