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

April 23, 2020

Cita Cisse
CEMEX, Inc.
P.O. Box 529
Lyons, CO 80540

Re: Dowe Flats Mine, Permit No. M-1993-041, Technical Revision No. 4 (TR-04), Adequacy Review No. 3 - Bond Estimate

Mr. Cisse:

The Division of Reclamation, Mining and Safety (Division) has completed its adequacy review of all materials submitted for Technical Revision No. 4 (TR-04). The Division has calculated the required financial warranty for the site based on the proposed reclamation plan (see enclosed bond estimate).

Please review the enclosed bond estimate and submit any comments at your earliest convenience. If the Division receives no comments from you by the TR-04 decision date of **May 10, 2020**, and no extension has been requested by that time, TR-04 will be approved and a notice of surety increase will be issued in the amount of $10,034,774.00. You will have 60 days from the date of the notice of surety increase to post the additional required financial warranty.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129, or by email at amy.eschberger@state.co.us.

Sincerely,

Amy Eschberger
Environmental Protection Specialist

Encl: Division's bond estimate

CC: Uwe Lubjuhn, CEMEX, Inc.
Scott Harcus, CEMEX, Inc.
Robin Bay, Habitat Management, Inc.
Michael Cunningham, DRMS

COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-000
User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolition of structures	DEMOLISH	1	40.00	$77,080
002	Demolition of conveyor supports 6x2x6(457), on-site disposal	NA	1	30.00	$14,214
003	Demolition of conveyor system 9,718x4x4, off-site disposal	NA	1	20.00	$144,781
004	Demolition of conveyor walkways 2,558x3x4, off-site disposal	NA	1	20.00	$28,582
005	Demolition of conveyor structures 6-20(44), off-site disposa	NA	1	20.00	$53,203
006	Demolition of conveyor buried section 160', off-site disposa	NA	1	10.00	$1,663
007	Backfill Hi-Cal/2nd Ridge pit with in-pit stockpiles	SCRAPER1	1	1,018.42	$1,308,442
008	Backfill Hi-Cal/2nd Ridge pit with crusher stockpiles	TRUCK1	1	2,343.94	$4,258,626
009	Backfill Hi-Cal/2nd Ridge pit with Mt. George stockpile	TRUCK1	1	1,059.92	$1,925,743
010	Backfill 3rd Ridge pit with in-pit stockpiles	SCRAPER1	1	89.66	$115,188
011	Backfill 3rd Ridge pit with Mt. George stockpile	TRUCK1	1	445.37	$809,172
012	3rd Ridge pit wetland excavation	SCRAPER1	1	500.17	$642,609
013	Backfill 4th Ridge pit with in-pit stockpiles	DOZER	2	0.25	$132
014	Wetland topsoil stripping	SCRAPER1	1	10.47	$13,450
015	Crusher area topsoil stripping	SCRAPER1	1	8.75	$11,239
016	Hi-Cal/2nd Ridge pit rough grade	GRADER	2	16.27	$6,449
017	Hi-Cal/2nd Ridge pit final grade	GRADER	2	35.25	$13,973
018	3rd Ridge pit rough grade	GRADER	2	4.51	$1,791
019	3rd Ridge pit final grade	GRADER	2	9.79	$3,881
020	4th Ridge pit rough grade	GRADER	1	2.12	$421
021	4th Ridge pit final grade	GRADER	1	4.59	$912
022	Rip office/maintenance/equipment/fuel areas	GRADER	1	1.65	$343
023	Rip roads and other disturbances	GRADER	2	13.83	$5,716
024	Retopsoil Hi-Cal/2nd Ridge pit with NE/N stockpile	SCRAPER1	1	20.55	$26,403
025	Retopsoil Hi-Cal/2nd Ridge pit with NE/middle stockpile	SCRAPER1	1	45.69	$58,706
026	Retopsoil Hi-Cal/2nd Ridge pit with NW stockpile	SCRAPER1	1	4.27	$5,480
027	Retopsoil Hi-Cal/2nd Ridge pit with High-Cal stockpile	SCRAPER1	1	6.46	$8,302
028	Retopsoil 3rd Ridge pit with NE/middle stockpile	SCRAPER1	1	0.64	$817
029	Retopsoil 3rd Ridge pit with NE/S stockpile	SCRAPER1	1	10.46	$13,442

030	3rd Ridge wetland area excavation	SCRAPER1	1	8.18	$10,513
031	Retopsoil 4th Ridge pit wetland area excavation	SCRAPER1	1	3.66	$4,699
032	Retopsoil wetland area excavation	SCRAPER1	1	5.49	$7,050
033	Retopsoil crusher area with reclaimed area stripping	SCRAPER1	1	9.17	$11,781
034	Retopsoil crusher area with SE stockpile	SCRAPER1	1	24.92	$32,015
035	Retopsoil office/maint/equip/fuel areas with SE stockpile	SCRAPER1	1	4.68	$6,009
036	Retopsoil roads and other disturbances with NE/S stockpile	SCRAPER1	1	25.51	$32,771
037	Retopsoil roads and other disturbances with SE stockpile	SCRAPER1	1	27.11	$34,831
038	Retopsoil roads and other disturbances with wetland excav	SCRAPER1	1	0.34	$431
039	Revegetate Hi-Cal/2nd Ridge pit (107.3 ac)	REVEGE	1	107.30	$210,869
040	Revegetate 3rd Ridge pit minus wetland (25 ac)	REVEGE	1	25.00	$49,131
041	Revegetate 4th Ridge pit (2.3 ac)	REVEGE	1	2.30	$4,520
042	Revegetate wetland area (20 ac)	REVEGE	1	20.00	$160,810
043	Revegetate crusher area (47.4 ac)	REVEGE	1	47.40	$93,152
044	Revegetate Mt. George stockpile area (22.9 ac)	REVEGE	1	22.90	$45,004
045	Revegetate topsoil stockpile areas (27.7 ac)	REVEGE	1	27.70	$54,437
046	Revegetate office/maint/equip/fuel areas (3.8 ac)	REVEGE	1	3.80	$7,468
047	Revegetate conveyor corridor (4.6 ac)	REVEGE	1	4.60	$9,040
048	Revegetate roads and other disturbances (63.4 ac)	REVEGE	1	63.40	$124,596
049	Mobilization/Demobilization	MOBILIZE	1	47.00	$398,572
		SUBTOTALS:		**6273.49**	**$10,848,460**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$219,139
Performance bond:	1.05	Total =	$113,909
Job superintendent:	300.00	Total =	$20,817
Profit:	10.00	Total =	$1,084,846
		TOTAL O & P =	$1,438,711
		CONTRACT AMOUNT (direct + O & P) =	$12,287,171

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$500	Total =	$500
Engineering work and/or contract/bid preparation:	4.25	Total =	$522,205
Reclamation management and/or administration:	5.00		$614,359
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$2,575,774
		TOTAL BOND AMOUNT (direct + indirect) =	**$13,424,234**

DEMOLITION WORK

Task description: **Demolition of structures**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-001
User: AME

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 103.60 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Demolish Crusher Slab	35 x 31 x 1	Demo. and on-site disposal in existing pit, 12 in. thick - Max. 200 ft. push	1,085.00	SF	$1.79	$1,936.83
Demolish Crusher Metal Roof	23 x 35 x 30	Bldg. (MC) demo./off-site disposal in approved landfill - Max. 5 mile haul	24,150.00	CF	$0.59	$14,190.54
Demolish Office Trailer	50 x 12 x 9	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 5 mile haul	5,400.00	CF	$0.30	$1,625.40
Demolish Break Room Trailer	50 x 12 x 9	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 5 mile haul	5,400.00	CF	$0.30	$1,625.40
Demolish Trailer Steps (2)	10 x 14 x 1 (2x)	Demo. and on-site disposal in existing pit, 12 in. thick - Max. 200 ft. push	280.00	SF	$1.79	$499.83
Demolish Office & Breakroom Slabs (2)	51 x 13 x 1 (2x)	Demo. and on-site disposal in existing pit, 12 in. thick - Max. 200 ft. push	1,326.00	SF	$1.79	$2,367.04
Demolish Maintenance Buildings (2)	40 x 68 / 25 x 13	Bldg. (MC) demo./off-site disposal in approved landfill - Max. 5 mile haul	84,850.00	CF	$0.59	$49,857.86
Demolish Maintenance Building Slab	25 x 13	Demo. and on-site disposal in existing pit, 12 in. thick - Max. 200 ft. push	325.00	SF	$1.79	$580.16
Demolish/Remove Fuel Island (2)	40 x 52 / 20 x 30	Bldg. (SC) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	2,680.00	CF	$0.25	$668.66
Remove Fuel Tank	28 x 16 x 16	Haul tank to certified salvage dump - 9,000 to 12,000 gal. tank	1.00	EA	$1,050.00	$1,050.00

Job Hours: 40.00 **Subtotal (unadjusted): $74,401.72** **Total Cost (adjusted for $77,080.18**

SCRAPER TEAM WORK

Task description: **Backfill Hi-Cal/2nd Ridge pit with in-pit stockpiles**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-007
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 894,130 CCY Swell factor: 1.165
Loose volume: **1,041,661** LCY

Source of estimated volume: Operator bond estimate
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: 81,600 pounds
Payload Capacity: 28.14 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **28.14** LCY

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2800	0.65

Haul Time: **0.65** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2949	0.49

Return Time: **0.49** minutes

Total Scraper team cycle time: **2.74** minutes
Adjusted for job conditions: 1,022.82 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,022.82 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,022.82** LCY/Hour

Unadjusted unit production/hour: 1,232.32 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **1,018.42** Hours

Unit cost: $1.256 /LCY Total job cost: **$1,308,442**

TRUCK/LOADER TEAM WORK

Task description: **Backfill Hi-Cal/2nd Ridge pit with crusher stockpiles**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 008 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-008
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 777F
-Loader:	CAT 992K
Support Equipment -Load Area:	Cat D9T - 9SU
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	100	NA	50	50
Ownership cost/hour:	$159.52	$207.81	$121.49	NA	$82.71	$13.51
Operating cost/hour:	$130.41	$170.58	$105.84	NA	$35.04	$14.47
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$0.00	NA	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	$0.00	NA	$0.00	$0.00
Operator cost/hour:	$24.79	$35.93	$39.98	NA	$45.39	$0.00
Unit Subtotals:	$314.71	$414.31	$267.31	NA	$163.14	$27.98
Number of Units:	3	1	1	0	1	1
Group Subtotals:	Work:	$1,358.44	Support:	$267.31	Maint:	$191.12

Total work team cost/hour: **$1,816.87**

MATERIAL QUANTITIES

Initial volume: 2,444,646 CCY Swell factor: 1.165
Loose volume: **2,848,013** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,900 Pounds/LCY
Description: Decomposed rock - 50% Rock, 50% Earth
Rated Payload: 200,000 Pounds
Payload Capacity: 68.97 LCY

Truck Bed (volume) Basis:

Struck Volume:	60.60	LCY
Heaped Volume:	78.80	LCY
Average Volume:	69.70	LCY
Adjusted Volume:	68.97	LCY

Final Truck Volume Based on Number of Loader Passes: **65.60** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	16.000	LCY (heaped)
Bucket Fill Factor:	1.025	Rock - Earth Mixture (100%-105%) 1.025
Adjusted Capacity:	**16.400**	LCY

Job Condition Corrections: Site Altitude (ft.): 5350 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: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.625 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:	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:	-0.040	minutes
	Adjusted Loader Cycle Time:	**0.585**	minutes
	Net Load Time per Truck:	**1.855**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.80	Minutes	Adjusted for site altitude:	0.800	Minutes
Truck Load Time:	1.855	Minutes	Adjusted for site altitude:	1.855	Minutes
Truck Maneuver and Dump Time:	1.20	Minutes	Adjusted for site altitude:	1.200	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5000.00	0.00	3.00	3.00	2409	2.512

Haul Time: **2.512** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5000.00	0.00	3.00	3.00	3503	1.699

Return Time: **1.699** minutes
Total Truck Cycle Time: **8.066** minutes

Loading Tool unit Production 1,482.49 LCY/Hour Adjusted for job efficiency: 1,230.46 LCY/Hour

Truck Unit Production 487.97 LCY/Hour Adjusted for job efficiency: 405.02 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 1,215.06 LCY/Hour
Adjusted single truck/loader team production: 1,215.06 LCY/Hour
Adjusted multiple truck/loader team production: **1,215.06** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **2,343.94** Hours

Unit cost: $1.495 /LCY Total job cost: **$4,258,626**

TRUCK/LOADER TEAM WORK

Task description: **Backfill Hi-Cal/2nd Ridge pit with Mt. George stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-009
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 777F
-Loader:	CAT 992K
Support Equipment -Load Area:	Cat D9T - 9SU
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	100	NA	50	50
Ownership cost/hour:	$159.52	$207.81	$121.49	NA	$82.71	$13.51
Operating cost/hour:	$130.41	$170.58	$105.84	NA	$35.04	$14.47
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$0.00	NA	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	$0.00	NA	$0.00	$0.00
Operator cost/hour:	$24.79	$35.93	$39.98	NA	$45.39	$0.00
Unit Subtotals:	$314.71	$414.31	$267.31	NA	$163.14	$27.98
Number of Units:	3	1	1	0	1	1
Group Subtotals:	Work:	$1,358.44	Support:	$267.31	Maint:	$191.12

Total work team cost/hour: **$1,816.87**

MATERIAL QUANTITIES

Initial volume: 1,059,491 CCY Swell factor: 1.165
Loose volume: **1,234,307** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,900 Pounds/LCY
Description: Decomposed rock - 50% Rock, 50% Earth
Rated Payload: 200,000 Pounds
Payload Capacity: 68.97 LCY

Truck Bed (volume) Basis:

Struck Volume:	60.60	LCY
Heaped Volume:	78.80	LCY
Average Volume:	69.70	LCY
Adjusted Volume:	68.97	LCY

Final Truck Volume Based on Number of Loader Passes: **65.60** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	16.000	LCY (heaped)
Bucket Fill Factor:	1.025	Rock - Earth Mixture (100%-105%) 1.025
Adjusted Capacity:	**16.400**	LCY

Job Condition Corrections: Site Altitude (ft.): 5350 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: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.625 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:	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:	-0.040	minutes
	Adjusted Loader Cycle Time:	**0.585**	minutes
	Net Load Time per Truck:	**1.855**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.80	Minutes	Adjusted for site altitude:	0.800	Minutes
Truck Load Time:	1.855	Minutes	Adjusted for site altitude:	1.855	Minutes
Truck Maneuver and Dump Time:	1.20	Minutes	Adjusted for site altitude:	1.200	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5500.00	0.00	3.00	3.00	2409	2.719

Haul Time: **2.719** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5500.00	0.00	3.00	3.00	3503	1.842

Return Time: **1.842** minutes
Total Truck Cycle Time: **8.416** minutes

Loading Tool unit Production 1,482.49 LCY/Hour Adjusted for job efficiency: 1,230.46 LCY/Hour

Truck Unit Production 467.68 LCY/Hour Adjusted for job efficiency: 388.17 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 1,164.52 LCY/Hour
Adjusted single truck/loader team production: 1,164.52 LCY/Hour
Adjusted multiple truck/loader team production: **1,164.52** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **1,059.92** Hours

Unit cost: $1.560 /LCY Total job cost: **$1,925,743**

SCRAPER TEAM WORK

Task description: **Backfill 3rd Ridge pit with in-pit stockpiles**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 010 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-010
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 78,714 CCY Swell factor: 1.165
Loose volume: **91,702** LCY

Source of estimated volume: Operator bond estimate
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: 81,600 pounds
Payload Capacity: 28.14 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **28.14** LCY

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2800	0.65

Haul Time: **0.65** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2949	0.49

Return Time: **0.49** minutes

Total Scraper team cycle time: **2.74** minutes
Adjusted for job conditions: 1,022.82 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,022.82 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,022.82** LCY/Hour

Unadjusted unit production/hour: 1,232.32 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **89.66** Hours

Unit cost: $1.256 /LCY Total job cost: **$115,188**

TRUCK/LOADER TEAM WORK

Task description: **Backfill 3rd Ridge pit with Mt. George stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 011 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-011
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 777F
-Loader:	CAT 992K
Support Equipment -Load Area:	Cat D9T - 9SU
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	100	NA	50	50
Ownership cost/hour:	$159.52	$207.81	$121.49	NA	$82.71	$13.51
Operating cost/hour:	$130.41	$170.58	$105.84	NA	$35.04	$14.47
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$0.00	NA	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	$0.00	NA	$0.00	$0.00
Operator cost/hour:	$24.79	$35.93	$39.98	NA	$45.39	$0.00
Unit Subtotals:	$314.71	$414.31	$267.31	NA	$163.14	$27.98
Number of Units:	3	1	1	0	1	1
Group Subtotals:	Work:	$1,358.44	Support:	$267.31	Maint:	$191.12

Total work team cost/hour: **$1,816.87**

MATERIAL QUANTITIES

Initial volume: 470,392 CCY Swell factor: 1.165
Loose volume: **548,007** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,900 Pounds/LCY
Description: Decomposed rock - 50% Rock, 50% Earth
Rated Payload: 200,000 Pounds
Payload Capacity: 68.97 LCY

Truck Bed (volume) Basis:

Struck Volume:	60.60	LCY
Heaped Volume:	78.80	LCY
Average Volume:	69.70	LCY
Adjusted Volume:	68.97	LCY

Final Truck Volume Based on Number of Loader Passes: **65.60** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	16.000	LCY (heaped)
Bucket Fill Factor:	1.025	Rock - Earth Mixture (100%-105%) 1.025
Adjusted Capacity:	**16.400**	LCY

Job Condition Corrections: Site Altitude (ft.): 5350 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: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.625 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:	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:	-0.040	minutes
	Adjusted Loader Cycle Time:	**0.585**	minutes
	Net Load Time per Truck:	**1.855**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.80	Minutes	Adjusted for site altitude:	0.800	Minutes
Truck Load Time:	1.855	Minutes	Adjusted for site altitude:	1.855	Minutes
Truck Maneuver and Dump Time:	1.20	Minutes	Adjusted for site altitude:	1.200	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	0.00	3.00	3.00	2409	2.096

Haul Time: **2.096** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	0.00	3.00	3.00	3503	1.414

Return Time: **1.414** minutes
Total Truck Cycle Time: **7.365** minutes

Loading Tool unit Production 1,482.49 LCY/Hour Adjusted for job efficiency: 1,230.46 LCY/Hour

Truck Unit Production 534.42 LCY/Hour Adjusted for job efficiency: 443.57 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 1,330.70 LCY/Hour
Adjusted single truck/loader team production: 1,230.46 LCY/Hour
Adjusted multiple truck/loader team production: **1,230.46** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **445.37** Hours

Unit cost: $1.477 /LCY Total job cost: **$809,172**

SCRAPER TEAM WORK

Task description: **3rd Ridge pit wetland excavation**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 012 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-012
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 470,392 CCY Swell factor: 1.125
Loose volume: **529,191** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

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

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2800	0.64

Haul Time: **0.64** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2949	0.49

Return Time: **0.49** minutes

Total Scraper team cycle time: **2.73** minutes
Adjusted for job conditions: 1,058.02 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,058.02 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,058.02** LCY/Hour

Unadjusted unit production/hour: 1,274.73 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **500.17** Hours

Unit cost: $1.214 /LCY Total job cost: **$642,609**

BULLDOZER WORK

Task description: **Backfill 4th Ridge pit with in-pit stockpiles**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 013 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-013
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

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

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$121.49	NA
Operating Cost/Hour:	$105.84	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$39.98	NA

Total unit Cost/Hour: $267.31
Total Fleet Cost/Hour: **$534.61**

MATERIAL QUANTITIES

Initial Volume: 185
Swell factor: 1.125
Loose volume: **208** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 300 feet
Unadjusted hourly production: 437.8 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: -5 %
Average site altitude: 5,350 feet

Material weight: 2,650 lbs/LCY

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

Job Condition Correction Factor		Source
Operator Skill:	1.000	(EXCL.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.9639

Adjusted unit production: 422.00 LCY/hr
Adjusted fleet production: **844** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.633/LCY

Total job time: **0.25** Hours
Total job cost: **$132**

SCRAPER TEAM WORK

Task description: **Wetland topsoil stripping**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 014 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-014
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 11,293 CCY Swell factor: 1.125
Loose volume: **12,705** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

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

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2800	0.46

Haul Time: **0.46** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2949	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.38** minutes
Adjusted for job conditions: 1,213.61 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,213.61 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,213.61** LCY/Hour

Unadjusted unit production/hour: 1,462.18 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **10.47** Hours

Unit cost: $1.059 /LCY Total job cost: **$13,450**

SCRAPER TEAM WORK

Task description: **Crusher area topsoil stripping**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 015 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-015
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 9,437 CCY Swell factor: 1.125
Loose volume: **10,617** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2800	0.46

Haul Time: **0.46** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2949	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.38** minutes
Adjusted for job conditions: 1,213.61 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,213.61 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,213.61** LCY/Hour

Unadjusted unit production/hour: 1,462.18 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **8.75** Hours

Unit cost: $1.059 /LCY Total job cost: **$11,239**

MOTOR GRADER WORK

Task description: **Hi-Cal/2nd Ridge pit rough grade**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 016 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-016
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$198.18	
Total Fleet Cost/Hour:	**$396.36**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 107.30 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed: 3.25 mph
Selected Application: Heavy blading (0-6 mph) - 3.25
Selected Blade Angle: 45 degrees
Effective Blade Length: 11.30 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 9.30 feet
Unadjusted Hourly Unit Production: 3.6636 acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 3.2973 acres/Hour
Adjusted Hourly Fleet Production: **6.5945** acres/Hour

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **16.27** Hours

Unit cost: $60.10 per acre Total job cost: **$6,449**

MOTOR GRADER WORK

Task description: **Hi-Cal/2nd Ridge pit final grade**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 017 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-017
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$198.18	
Total Fleet Cost/Hour:	**$396.36**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 107.30 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed:	1.50	mph
Selected Application:	Finish grading (0-2.5 mph) - 1.5	
Selected Blade Angle:	45	degrees
Effective Blade Length:	11.30	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	9.30	feet
Unadjusted Hourly Unit Production:	1.6909	acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 1.5218 acres/Hour
Adjusted Hourly Fleet Production: **3.0436** acres/Hour

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **35.25** Hours

Unit cost: $130.23 per acre Total job cost: **$13,973**

MOTOR GRADER WORK

Task description: **3rd Ridge pit rough grade**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 018 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-018
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$198.18	
Total Fleet Cost/Hour:	**$396.36**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 29.80 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed: 3.25 mph
Selected Application: Heavy blading (0-6 mph) - 3.25
Selected Blade Angle: 45 degrees
Effective Blade Length: 11.30 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 9.30 feet
Unadjusted Hourly Unit Production: 3.6636 acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 3.2973 acres/Hour
Adjusted Hourly Fleet Production: **6.5945** acres/Hour

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **4.52** Hours

Unit cost: $60.10 per acre Total job cost: **$1,791**

MOTOR GRADER WORK

Task description: **3rd Ridge pit final grade**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 019 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-019
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$198.18	
Total Fleet Cost/Hour:	**$396.36**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 29.80 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed:	1.50	mph
Selected Application:	Finish grading (0-2.5 mph) - 1.5	
Selected Blade Angle:	45	degrees
Effective Blade Length:	11.30	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	9.30	feet
Unadjusted Hourly Unit Production:	1.6909	acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 1.5218 acres/Hour
Adjusted Hourly Fleet Production: **3.0436** acres/Hour

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **9.79** Hours

Unit cost: $130.23 per acre Total job cost: **$3,881**

MOTOR GRADER WORK

Task description: **4th Ridge pit rough grade**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 020 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-020
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$198.18	

Total Fleet Cost/Hour: **$198.18**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 7.00 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed: 3.25 mph
Selected Application: Heavy blading (0-6 mph) - 3.25
Selected Blade Angle: 45 degrees
Effective Blade Length: 11.30 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 9.30 feet
Unadjusted Hourly Unit Production: 3.6636 acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 3.2973 acres/Hour
Adjusted Hourly Fleet Production: **3.2973** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **2.12** Hours

Unit cost: $60.10 per acre Total job cost: **$421**

MOTOR GRADER WORK

Task description: **4th Ridge pit final grade**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 021 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-021
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$198.18	

Total Fleet Cost/Hour: **$198.18**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 7.00 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 45 degrees
Effective Blade Length: 11.30 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 9.30 feet
Unadjusted Hourly Unit Production: 1.6909 acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 1.5218 acres/Hour
Adjusted Hourly Fleet Production: **1.5218** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **4.60** Hours

Unit cost: $130.23 per acre Total job cost: **$912**

MOTOR GRADER WORK

Task description: **Rip office/maintenance/equipment/fuel areas**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 022 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-022
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$4.44	NA
Ripper Operating Cost/Hour:	$3.92	100
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$206.54	

Total Fleet Cost/Hour: **$206.54**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 3.80 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Ripping (0-3 mph) - 1.50
Selected Blade Angle: 0 degrees
Effective Blade Length: 16.00 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 14.00 feet
Unadjusted Hourly Unit Production: 2.5455 acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 2.2909 acres/Hour
Adjusted Hourly Fleet Production: **2.2909** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.66** Hours

Unit cost: $90.16 per acre Total job cost: **$343**

MOTOR GRADER WORK

Task description: **Rip roads and other disturbances**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 023 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-023
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$82.71	NA
Operating Cost/Hour:	$70.09	100
Ripper Ownership Cost/Hour:	$4.44	NA
Ripper Operating Cost/Hour:	$3.92	100
Operator Cost/Hour:	$45.39	NA
Total Unit Cost/Hour:	$206.54	
Total Fleet Cost/Hour:	**$413.08**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 63.40 acres

Source of estimated acreage: Operator bond estimate

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Ripping (0-3 mph) - 1.50
Selected Blade Angle: 0 degrees
Effective Blade Length: 16.00 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 14.00 feet
Unadjusted Hourly Unit Production: 2.5455 acres/hour

Job Condition Correction Factors Site Altitude: 5350 feet

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

Adjusted Hourly Unit Production: 2.2909 acres/Hour
Adjusted Hourly Fleet Production: **4.5818** acres/Hour

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **13.84** Hours

Unit cost: $90.16 per acre Total job cost: **$5,716**

SCRAPER TEAM WORK

Task description: **Retopsoil Hi-Cal/2nd Ridge pit with NE/N stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 024 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-024
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 16,231 CCY Swell factor: 1.215
Loose volume: **19,721** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	3.00	3.00	2800	0.75

Haul Time: **0.75** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	3.00	3.00	2949	0.66

Return Time: **0.66** minutes

Total Scraper team cycle time: **3.01** minutes
Adjusted for job conditions: 959.60 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 959.60 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **959.60** LCY/Hour

Unadjusted unit production/hour: 1,156.15 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **20.55** Hours

Unit cost: $1.339 /LCY Total job cost: **$26,403**

SCRAPER TEAM WORK

Task description: **Retopsoil Hi-Cal/2nd Ridge pit with NE/middle stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 025 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-025
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 32,329 CCY Swell factor: 1.215
Loose volume: **39,280** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	0.00	3.00	3.00	2800	0.93

Haul Time: **0.93** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	0.00	3.00	3.00	2949	0.83

Return Time: **0.83** minutes

Total Scraper team cycle time: **3.36** minutes
Adjusted for job conditions: 859.64 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 859.64 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **859.64** LCY/Hour

Unadjusted unit production/hour: 1,035.71 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **45.69** Hours

Unit cost: $1.495 /LCY Total job cost: **$58,706**

SCRAPER TEAM WORK

Task description: **Retopsoil Hi-Cal/2nd Ridge pit with NW stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 026 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-026
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 3,369 CCY Swell factor: 1.215
Loose volume: **4,093** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	3.00	3.00	2800	0.75

Haul Time: **0.75** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	3.00	3.00	2949	0.66

Return Time: **0.66** minutes

Total Scraper team cycle time: **3.01** minutes
Adjusted for job conditions: 959.60 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 959.60 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **959.60** LCY/Hour

Unadjusted unit production/hour: 1,156.15 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **4.27** Hours

Unit cost: $1.339 /LCY Total job cost: **$5,480**

SCRAPER TEAM WORK

Task description: **Retopsoil Hi-Cal/2nd Ridge pit with High-Cal stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 027 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-027
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 5,775 CCY Swell factor: 1.215
Loose volume: **7,017** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2800	0.57

Haul Time: **0.57** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2949	0.49

Return Time: **0.49** minutes

Total Scraper team cycle time: **2.66** minutes
Adjusted for job conditions: 1,085.86 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,085.86 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,085.86** LCY/Hour

Unadjusted unit production/hour: 1,308.27 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **6.46** Hours

Unit cost: $1.183 /LCY Total job cost: **$8,302**

SCRAPER TEAM WORK

Task description: **Retopsoil 3rd Ridge pit with NE/middle stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 028 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-028
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 450 CCY Swell factor: 1.215
Loose volume: **547** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	0.00	3.00	3.00	2800	0.93

Haul Time: **0.93** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	0.00	3.00	3.00	2949	0.83

Return Time: **0.83** minutes

Total Scraper team cycle time: **3.36** minutes
Adjusted for job conditions: 859.64 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 859.64 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **859.64** LCY/Hour

Unadjusted unit production/hour: 1,035.71 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **0.64** Hours

Unit cost: $1.495 /LCY Total job cost: **$817**

SCRAPER TEAM WORK

Task description: **Retopsoil 3rd Ridge pit with NE/S stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 029 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-029
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 8,263 CCY Swell factor: 1.215
Loose volume: **10,040** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	3.00	3.00	2800	0.75

Haul Time: **0.75** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	0.00	3.00	3.00	2949	0.66

Return Time: **0.66** minutes

Total Scraper team cycle time: **3.01** minutes
Adjusted for job conditions: 959.60 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 959.60 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **959.60** LCY/Hour

Unadjusted unit production/hour: 1,156.15 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **10.46** Hours

Unit cost: $1.339 /LCY Total job cost: **$13,442**

SCRAPER TEAM WORK

Task description: **3rd Ridge wetland area excavation**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 030 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-030
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 7,313 CCY Swell factor: 1.215
Loose volume: **8,885** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2800	0.57

Haul Time: **0.57** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	0.00	3.00	3.00	2949	0.49

Return Time: **0.49** minutes

Total Scraper team cycle time: **2.66** minutes
Adjusted for job conditions: 1,085.86 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,085.86 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,085.86** LCY/Hour

Unadjusted unit production/hour: 1,308.27 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **8.18** Hours

Unit cost: $1.183 /LCY Total job cost: **$10,513**

SCRAPER TEAM WORK

Task description: **Retopsoil 4th Ridge pit wetland area excavation**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 031 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-031
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 3,764 CCY Swell factor: 1.215
Loose volume: **4,573** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2800	0.39

Haul Time: **0.39** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2949	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.31** minutes
Adjusted for job conditions: 1,250.39 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,250.39 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,250.39** LCY/Hour

Unadjusted unit production/hour: 1,506.49 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **3.66** Hours

Unit cost: $1.028 /LCY Total job cost: **$4,699**

SCRAPER TEAM WORK

Task description: **Retopsoil wetland area excavation**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 032 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-032
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 5,647 CCY Swell factor: 1.215
Loose volume: **6,861** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2800	0.39

Haul Time: **0.39** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2949	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.31** minutes
Adjusted for job conditions: 1,250.39 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,250.39 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,250.39** LCY/Hour

Unadjusted unit production/hour: 1,506.49 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **5.49** Hours

Unit cost: $1.028 /LCY Total job cost: **$7,050**

SCRAPER TEAM WORK

Task description: **Retopsoil crusher area with reclaimed area stripping**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 033 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-033
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 9,437 CCY Swell factor: 1.215
Loose volume: **11,466** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2800	0.39

Haul Time: **0.39** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	2949	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.31** minutes
Adjusted for job conditions: 1,250.39 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,250.39 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,250.39** LCY/Hour

Unadjusted unit production/hour: 1,506.49 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **9.17** Hours

Unit cost: $1.028 /LCY Total job cost: **$11,781**

SCRAPER TEAM WORK

Task description: **Retopsoil crusher area with SE stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 034 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-034
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 16,054 CCY Swell factor: 1.215
Loose volume: **19,506** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2800	1.10

Haul Time: **1.10** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2949	0.99

Return Time: **0.99** minutes

Total Scraper team cycle time: **3.69** minutes
Adjusted for job conditions: 782.76 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 782.76 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **782.76** LCY/Hour

Unadjusted unit production/hour: 943.09 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **24.92** Hours

Unit cost: $1.641 /LCY Total job cost: **$32,015**

SCRAPER TEAM WORK

Task description: **Retopsoil office/maint/equip/fuel areas with SE stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 035 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-035
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 2,044 CCY Swell factor: 1.215
Loose volume: **2,483** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5000.00	0.00	3.00	3.00	2800	2.00

Haul Time: **2.00** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5000.00	0.00	3.00	3.00	2949	1.84

Return Time: **1.84** minutes

Total Scraper team cycle time: **5.44** minutes
Adjusted for job conditions: 530.96 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 530.96 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **530.96** LCY/Hour

Unadjusted unit production/hour: 639.71 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **4.68** Hours

Unit cost: $2.420 /LCY Total job cost: **$6,009**

SCRAPER TEAM WORK

Task description: **Retopsoil roads and other disturbances with NE/S stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 036 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-036
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 16,433 CCY Swell factor: 1.215
Loose volume: **19,966** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2800	1.10

Haul Time: **1.10** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2949	0.99

Return Time: **0.99** minutes

Total Scraper team cycle time: **3.69** minutes
Adjusted for job conditions: 782.76 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 782.76 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **782.76** LCY/Hour

Unadjusted unit production/hour: 943.09 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **25.51** Hours

Unit cost: $1.641 /LCY Total job cost: **$32,771**

SCRAPER TEAM WORK

Task description: **Retopsoil roads and other disturbances with SE stockpile**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 037 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-037
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 17,466 CCY Swell factor: 1.215
Loose volume: **21,221** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2800	1.10

Haul Time: **1.10** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2949	0.99

Return Time: **0.99** minutes

Total Scraper team cycle time: **3.69** minutes
Adjusted for job conditions: 782.76 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 782.76 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **782.76** LCY/Hour

Unadjusted unit production/hour: 943.09 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **27.11** Hours

Unit cost: $1.641 /LCY Total job cost: **$34,831**

SCRAPER TEAM WORK

Task description: **Retopsoil roads and other disturbances with wetland excav**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 038 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-038
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	50	50
Ownership cost/hour:	$174.06	$121.49	NA	NA	$82.71	$13.51
Operating cost/hour:	$190.35	$105.84	NA	NA	$35.04	$14.47
%Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$4.44	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$1.96	$0.00
Operator cost/hour:	$45.58	$39.98	NA	NA	$45.39	$0.00
Unit Subtotals:	$409.98	$267.31	NA	NA	$169.53	$27.98
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	$1,087.27	Support:	$0.00	Maint:	$197.51

Total work team cost/hour: **$1,284.78**

MATERIAL QUANTITIES

Initial volume: 216 CCY Swell factor: 1.215
Loose volume: **262** LCY

Source of estimated volume: Operator bond estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 81,600 pounds
Payload Capacity: 51.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 5350 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2800	1.10

Haul Time: **1.10** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2500.00	0.00	3.00	3.00	2949	0.99

Return Time: **0.99** minutes

Total Scraper team cycle time: **3.69** minutes
Adjusted for job conditions: 782.76 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 782.76 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **782.76** LCY/Hour

Unadjusted unit production/hour: 943.09 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **0.34** Hours

Unit cost: $1.641 /LCY Total job cost: **$431**

REVEGETATION WORK

Task description: **Revegetate Hi-Cal/2nd Ridge pit (107.3 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 039 State: Colorado Abbreviation: None
Date: 4/21/2020 County: Boulder Filename: M041-039
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 107.3 Cost /Acre: $1,702.50

Estimated Failure Rate: 30% Cost /Acre*: $875.77

*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$182,678.25**

Reseeding Job Cost:	**$28,191.04**
Total Job Cost:	**$210,869**
Job Hours:	**107.30**

REVEGETATION WORK

Task description: **Revegetate 3rd Ridge pit minus wetland (25 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 040 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-040
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 25 Cost /Acre: $1,702.50
Estimated Failure Rate: 30% Cost /Acre*: $875.77
*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$42,562.50**

Reseeding Job Cost:	**$6,568.28**
Total Job Cost:	**$49,131**
Job Hours:	**25.00**

REVEGETATION WORK

Task description: **Revegetate 4th Ridge pit (2.3 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 041 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-041
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 2.3 Cost /Acre: $1,702.50

Estimated Failure Rate: 30% Cost /Acre*: $875.77

*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$3,915.75**

Reseeding Job Cost:	**$604.28**
Total Job Cost:	**$4,520**
Job Hours:	**2.30**

REVEGETATION WORK

Task description: **Revegetate wetland area (20 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 042 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-042
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Baltic Rush	2.00	562.00	$562.00
Alkali Bulrush	2.00	19.74	$81.00
Common Rush	2.00	336.34	$336.34
Softstem Bulrush	8.00	101.01	$1,048.40
Hardstem Bulrush	10.00	92.98	$1,497.00
Three Square Bulrush	10.00	68.87	$1,717.50
Milkweed, Swamp	0.25	0.39	$74.80
Totals Seed Mix	34.25	1,181.32	**$5,317.04**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 20
Estimated Failure Rate: 30%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $6,375.77
Cost /Acre*: $5,549.04

Initial Job Cost: **$127,515.40**
Reseeding Job Cost: **$33,294.24**
Total Job Cost: **$160,810**
Job Hours: **20.00**

REVEGETATION WORK

Task description: **Revegetate crusher area (47.4 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 043 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-043
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 47.4
Estimated Failure Rate: 30%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $1,702.50
Cost /Acre*: $875.77

Initial Job Cost: **$80,698.50**

Reseeding Job Cost:	**$12,453.45**
Total Job Cost:	**$93,152**
Job Hours:	**47.40**

REVEGETATION WORK

Task description: **Revegetate Mt. George stockpile area (22.9 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 044 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-044
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 22.9 Cost /Acre: $1,702.50

Estimated Failure Rate: 30% Cost /Acre*: $875.77

*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$38,987.25**

Reseeding Job Cost:	**$6,016.54**
Total Job Cost:	**$45,004**
Job Hours:	**22.90**

REVEGETATION WORK

Task description: **Revegetate topsoil stockpile areas (27.7 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 045 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-045
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 27.7 Cost /Acre: $1,702.50

Estimated Failure Rate: 30% Cost /Acre*: $875.77

*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$47,159.25**

Reseeding Job Cost:	**$7,277.65**
Total Job Cost:	**$54,437**
Job Hours:	**27.70**

REVEGETATION WORK

Task description: **Revegetate office/maint/equip/fuel areas (3.8 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 046 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-046
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 3.8 Cost /Acre: $1,702.50

Estimated Failure Rate: 30% Cost /Acre*: $875.77

*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$6,469.50**

Reseeding Job Cost:	**$998.38**
Total Job Cost:	**$7,468**
Job Hours:	**3.80**

REVEGETATION WORK

Task description: **Revegetate conveyor corridor (4.6 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 047 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-047
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 4.6
Estimated Failure Rate: 30%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $1,702.50
Cost /Acre*: $875.77

Initial Job Cost: **$7,831.50**

Reseeding Job Cost:	**$1,208.56**
Total Job Cost:	**$9,040**
Job Hours:	**4.60**

REVEGETATION WORK

Task description: **Revegetate roads and other disturbances (63.4 ac)**

Site: **Dowe Flats Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 048 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-048
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Triple superphosphate, 0-46-0	67.00	pound	$0.43	$28.48
			Total Fertilizer Materials Cost/Acre	**$28.48**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$36.15
Total Fertilizer Application Cost/Acre	**$36.15**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	5.50	17.93	$64.49
Arizona Fescue - Redondo	1.50	17.22	$13.88
Indian Ricegrass - Paloma	4.80	15.54	$53.40
Bluebunch Wheatgrass - Secar	4.80	15.43	$52.20
Blue Grama - Native	0.50	8.16	$6.86
Canby Bluegrass - Canbar	0.50	10.63	$5.13
Buffalograss - Native/Plains	7.30	7.04	$88.09
Prairie Clover, Purple - Kaneb	0.28	1.91	$15.83
Aster, Smooth	0.15	2.61	$21.98
Little Bluestem - Pastura	2.50	14.92	$33.71
Alfalfa - Ladak (inoculated)	0.40	1.93	$1.02

Sideoats Grama - Vaughn	2.30	7.55	$19.26
Coneflower, Prairie	0.08	2.17	$2.64
Streambank Wheatgrass - Sodar	1.50	4.89	$8.55
Thickspike Wheatgrass - Critana	1.00	3.54	$6.88
Coreopsis, Plains	0.08	2.54	$11.46
Western Wheatgrass - Arriba	3.80	9.60	$24.70
Needle and Thread	3.50	9.24	$146.48
Needlegrass, Green - Lodorm	2.30	9.56	$27.08
Prairie Junegrass	0.08	4.25	$2.08
Flax, Lewis Blue	0.28	1.86	$4.62
Globemallow, Scarlet (or copper)	0.15	1.70	$20.33
Penstemon, Palmer	0.13	2.87	$7.09
Yarrow, Western	0.03	1.82	$1.25
Goldeneye - Showy	0.08	0.92	$4.80
Totals Seed Mix	43.54	175.82	**$643.77**

Application

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

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$295.00	$590.00
Total Mulch Materials Cost/Acre				**$590.00**

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: 63.4 Cost /Acre: $1,702.50

Estimated Failure Rate: 30% Cost /Acre*: $875.77

*Selected Replanting Work Items: SEEDING

Initial Job Cost: **$107,938.50**

Reseeding Job Cost:	**$16,657.15**
Total Job Cost:	**$124,596**
Job Hours:	**63.40**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization/Demobilization**

Site: **Dowe Fl40.00 Mine** Permit Action: TR-04 Bond Estimate Permit/Job#: M1993041

PROJECT IDENTIFICATION

Task #: 049 State: Colorado Abbreviation: None
Date: 4/22/2020 County: Boulder Filename: M041-049
User: AME

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 637G w/push-pull	59.59	$174.06	$141.54	10	$3,156.00	$1,415.40	$2,500.00
CAT 992K	107.88	$207.81	$141.54	4	$1,397.40	$566.16	$1,000.00
Cat D9T - 9SU	60.01	$121.49	$141.54	6	$1,578.18	$849.24	$1,500.00
CAT 16M	28.73	$87.15	$123.81	8	$1,687.68	$990.48	$2,000.00
Drill/Broadcast Seeder with Tractor	25.00	$18.15	$67.39	4	$342.16	$269.56	$1,000.00
Subtotals:					**$8,161.42**	**$4,090.84**	**$8,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Cat 777F	$314.72	6	$1,888.32	$1,888.32
Water Tanker, 3,500 Gal.	$42.46	3	$127.38	$127.38
Light Duty Pickup, 4x4, 3/4 T.	$12.96	2	$25.92	$25.92
Subtotals:			**$2,041.62**	**$2,041.62**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	LONGMONT	
Total one-way travel distance:	10.00	miles
Average Travel Speed:	40.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$397,551.45
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$1,020.81

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.25	0.25
Return Time (Hours):	0.25	0.25
Loading Time (Hours):	11.50	NA
Unloading Time (Hours):	11.50	NA
Subtotals:	23.50	0.50

JOB TIME AND COST

Total job time:	**47.00**	Hours
Total job cost:	**$398,572**	