

November 6, 2018

Martin Azcarraga
M.A. Concrete Construction, Inc.
2323 River Road
Grand Junction, CO 81505



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

1313 Sherman Street, Room 215
Denver, CO 80203

RE: Cole Gravel Pit, Permit No. M-2004-020, Reclamation Costs Update and Notice of Surety Increase (SI-1)

Dear Mr. Azcarraga:

In an effort to ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan, the Colorado Division of Reclamation, Mining and Safety (Division) has updated the reclamation cost estimate (copy enclosed).

Division calculations estimate the cost to reclaim the above referenced site to be \$399,857.32 rounded up to \$399,860.00. This is an increase of \$34,860.00 over the \$335,000.00 currently held by the Division. This estimate is based on conditions observed during the October 29, 2018 inspection. ***Therefore, pursuant to Section 34-32.5-117(4) of the Colorado Land Reclamation Act, adequate Financial Warranty must be submitted to the Division within 60 days of the mailing date of this letter.*** The additional amount needs to be accepted prior to **Monday, January 07, 2019**. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted.

Please make arrangements with Barbara Coria at the Division of Reclamation, Mining and Safety Denver Office, phone no. 303.866.3567, ext. 8148 for submittal of the financial warranty. Any questions regarding completion, execution and/or submittal of financial warranty forms should also be directed to Barbara Coria.

If you require additional information, or have questions or concerns, please feel free to contact me. Amy Yeldell at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203. Direct contact can be made by phone at 970-254-8511 or via email at amy.yeldell@state.co.us

Sincerely,

Amy Yeldell
Environmental Protection Specialist

Ec: Wally Erickson, Senior EPS, Grand Junction DRMS

Enc: Financial Warranty Cost Estimate



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1313 Sherman Street, Room 215
Denver, CO 80203

RE: Cole Gravel Pit, Permit No. M-2004-020, SI-1 Reclamation Cost Estimate

Dear Mr. Azcarraga:

This reclamation cost update was based on site conditions observed at the October 29, 2018 site inspection. There have been no surety increases since the permit issuance in 2004. It is Division policy to periodically update its costs to ensure that the Financial Warranty adequately, reflects the actual current cost of fulfilling the requirements of the approved reclamation plan.

Below is a table summarizing input values that have been used. This table does not account for price changes resulting from inflation or other RS Means cost changes. Bond calculations are based on a combination of field observations and worst case scenario based on the approved reclamation permit.

Task	Form Used	Change	Justification
01a	Scraper	-	36,170 CCY w/ 600 Ft max push @ 1% (5000 LF of 12.5 ft vertical highwall) Previous: 65,000 CCY W/ 800 Ft push at 16.5%
02a	Dozer	+	18,085 LCY@ 0% (grade half of transported up and down slope) Previous 8,664 LCY @ 30%
03a	Scraper	-	3,703 CCY w/ 600 Ft max push @ 1% (5000 LF 40' slope = 4.59 ac @ 6" deep) Previous: 2000 CCY W/ 800 Ft push at 16.5%
04a	Dozer	-	3,703 LCY@ 0% (grade transported volume up and down slope) Previous 4,332 LCY (5.37 ac @ 6" deep @ 30%
05a	Reveg	-/+	4.59 ac with mix B, added weed treatment, power mulcher and improvised for biosol fertilizer Previous: 5.37 ac



06a	Ripper	+	65ac. Previous 60 ac
07a	Scraper	+	52,434 CCY w/ 600 Ft max push @ 1% (65 ac pit floor @ 6" deep) Previous: 48,400 CCY W/ 800 Ft push at 16.5% (60 ac @ 6")
08a	Ripper	-	7.41 ac stockpile footprint. Previous 17.2 ac
09a	Grader	-/+	72.41 (65 ac pit floor + 7.41 stockpiles). Previous 72 ac
10a	Reveg	+	65 ac with mix A, added weed treatment, power mulcher and improvised for biosol fertilizer Previous: 60 ac
11a	Reveg	-	7.41 ac with mix B, added weed treatment, power mulcher and improvised for biosol fertilizer Previous: 17.2 ac
	Reveg	-	Removed erosion control blankets, redundant when already straw mulch and crimping
12a	Mob	-	Updated fleet size and made consistent. Added power mulcher
Indirect costs		+	Added financial warranty processing and engineering work costs

Please feel free to contact me with any further questions. Amy Yeldell at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203. Direct contact can be made by phone at 970-254-8511 or via email at amy.yeldell@ state.co.us

Sincerely,



Amy Yeldell
Environmental Protection Specialist

Ec:
Wally Erickson, Senior EPS, Grand Junction DRMS

COST SUMMARY WORK

Task description: Updated based on inspection 10-2018

Site: Cole Gravel Pit

Permit Action: Inspection 10-2018

Permit/Job#: M2004020

PROJECT IDENTIFICATION

Task #: ACY

State: Colorado

Abbreviation: None

Date: 11/5/2018

County: Mesa

Filename: M020-ACY

User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Haul materials to establish 3:1 slopes in Phase 1 & 2	SCRAPER1	2	39.09	\$21,557.00
02a	Establish final grade for re-established slopes	DOZER	2	13.63	\$5,944.00
03a	Haul topsoil to slope	SCRAPER1	2	3.74	\$2,060.00
04a	Push topsoil over 4.59 ac of slope	DOZER	2	2.45	\$1,017.00
05a	Revegetation of 4.59 ac of slope area	REVEGE	1	6.50	\$11,971.00
06a	Rip 60 ac pit floor	RIPPER	2	46.75	\$20,936.00
07a	Replace topsoil over pit floor	SCRAPER1	2	51.46	\$28,379.00
08a	Rip 7.41 ac of topsoil/overburden stockpile footprint area	RIPPER	2	5.77	\$2,586.00
09a	Final grading of 72.41 acres of flat area	GRADER	1	46.38	\$7,266.00
10a	Revegetation of 65 acres on pit floor	REVEGE	1	88.00	\$181,231.00
11a	Revegetation of 7.41 ac of stockpile footprint area	REVEGE	1	10.00	\$20,660.00
12a	Initial mobilization	MOBILIZE	1	3.06	\$7,720.00
12b	Secondary mobilization	MOBILIZE	1	3.06	\$1,630.00
<u>SUBTOTALS:</u>				319.89	\$312,957

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Performance bond: 1.05

Job superintendent: 159.95

Profit: 10.00

Total = \$6,321.73

Total = \$3,286.05

Total = \$11,683.98

Total = \$31,295.70

TOTAL O & P = \$52,587.46

CONTRACT AMOUNT (direct + O & P) = \$365,544.46

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00

Engineering work and/or contract/bid preparation: 4.25

Reclamation management and/or administration: 5.00

Total = 500.00

Total = \$15,535.64

\$18,277.22

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$86,900.32

TOTAL BOND AMOUNT (direct + indirect) = \$399,857.32

TOTAL BOND AMOUNT (Rounded) = \$399,860.00

SCRAPER TEAM WORKTask description: **Haul materials to establish 3:1 slopes in Phase 1 & 2**Site: **Cole Gravel Pit**Permit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 01AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-01aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:**Scraper Work Team****Support Equipment****Maintenance Equipment**

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$110.85	NA	NA	NA	NA	NA
Operating cost/hour:	\$119.02	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$45.84	NA	NA	NA	NA	NA
Unit Subtotals:	\$275.71	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$551.42		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$551.42****MATERIAL QUANTITIES**Initial volume: 36,170

CCY

Swell factor: 1.165Loose volume: **42,138**

LCY

Source of estimated volume: 5000 LF of vertical 12.5 ft highwall to 3:1Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>34.00</u>	LCY
Rated Payload:	<u>81,600 pounds</u>	Average Volume:	<u>29.00</u>	LCY
Payload Capacity:	<u>28.14 LCY</u>	Adjusted Capacity:	<u>28.14</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.70 MinutesJob Condition Correction:

Site Altitude: 5150 feet

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

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	1.00	5.00	6.00	1069	0.63

Haul Time: 0.63 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	-1.00	5.00	4.00	2744	0.47

Return Time: 0.47 minutesTotal Scraper team cycle time: 2.60 minutesAdjusted for job conditions: 538.95 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 538.95 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,077.90 LCY/HourUnadjusted unit production/hour: 649.34 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 2 Team(s)Total job time: 39.09 HoursUnit cost: \$0.512 /LCYTotal job cost: \$21,557

BULLDOZER WORKTask description: Establish final grade for re-established slopesSite: Cole Gravel Pit Permit Action: Inspection 10-2018 Permit/Job#: M2004020**PROJECT IDENTIFICATION**

Task #: 02A State: Colorado Abbreviation: None
 Date: 11/5/2018 County: Mesa Filename: M020-02a
 User: ACY

Agency or organization name: DRMS**HOURLY EQUIPMENT COST**

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

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$93.62</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$73.35</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$8.93</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$1.95</u>	<u>25</u>
Operator Cost/Hour:	<u>\$40.23</u>	<u>NA</u>

Total unit Cost/Hour: \$218.07
 Total Fleet Cost/Hour: **\$436.15**

MATERIAL QUANTITIES

Initial Volume: 18,085
 Swell factor: 1.000
 Loose volume: **18,085 LCY**

Source of estimated volume: Half of transported volume (task 01a)
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
 Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
 Average site altitude: 5,150 feet

Material weight: 2,900 lbs/LCYWeight description: Decomposed rock - 50% Rock, 50% Earth**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.200</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 663.46 LCY/hr

Adjusted fleet production: **1326.92** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.329/LCY

Total job time: **13.63** Hours

Total job cost: **\$5,944**

SCRAPER TEAM WORKTask description: Haul topsoil to slopeSite: Cole Gravel PitPermit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 03AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-03aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

Scraper Work Team

Support Equipment

Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$110.85	NA	NA	NA	NA	NA
Operating cost/hour:	\$119.02	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$45.84	NA	NA	NA	NA	NA
Unit Subtotals:	\$275.71	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$551.42		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$551.42****MATERIAL QUANTITIES**Initial volume: 3,703

CCY

Swell factor: 1.125Loose volume: **4,166**

LCY

Source of estimated volume: 4.59 ac (40' slope x 5000 LF) @ 6" DeepSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Scraper Bowl (volume) Basis:

Material weight: 2,550 lbs/LCY
 Material description: Earth - Dry packed
 Rated Payload: 81,600 pounds
 Payload Capacity: 32.00 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: 0.80 MinutesManeuver and Spread Time: 0.70 MinutesJob Condition Correction:

Site Altitude: 5150 feet

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

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	1.00	5.00	6.00	1069	0.62

Haul Time: 0.62 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	-1.00	5.00	4.00	2744	0.47

Return Time: 0.47 minutesTotal Scraper team cycle time: 2.59 minutesAdjusted for job conditions: 557.61 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 557.61 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,115.21 LCY/HourUnadjusted unit production/hour: 671.81 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 2 Team(s)Total job time: 3.74 HoursUnit cost: \$0.494 /LCYTotal job cost: \$2,060

BULLDOZER WORKTask description: Push topsoil over 4.59 ac of slopeSite: Cole Gravel PitPermit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 04AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-04aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	25
Operator Cost/Hour:	\$40.23	NA

Total unit Cost/Hour: \$207.20Total Fleet Cost/Hour: **\$414.41****MATERIAL QUANTITIES**Initial Volume: 3,703Swell factor: 1.000Loose volume: **3,703 LCY**Source of estimated volume: 4.59 ac @ 6" deep transported volumeSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feetUnadjusted hourly production: 1,400.0 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 5,150 feetMaterial weight: 2,550 lbs/LCYWeight description: Earth - Dry packed**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5390

Adjusted unit production: 754.60 LCY/hr

Adjusted fleet production: **1509.2** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.275/LCY

Total job time: **2.45** Hours

Total job cost: **\$1,017**

REVEGETATION WORKTask description: Revegetation of 4.59 ac of slope areaSite: Cole Gravel PitPermit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 05AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-05aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium sulfate, 21-0-0 with 24% S	5.00	pound	\$0.34	\$1.70
Richlawn 3-6-3 w/ mycorrhiza humates (Pounds)	500.00	pound	\$0.46	\$227.80
			Total Fertilizer Materials Cost/Acre	\$229.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$34.72
Total Fertilizer Application Cost/Acre	\$34.72

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arrowleaf Balsamroot	0.25	0.31	\$17.97
Indian Ricegrass - Paloma	3.00	9.71	\$29.25
Galleta	2.00	7.30	\$50.58
Rabbitbrush, Rubber	0.12	1.79	\$7.90
Sage, Fringed	0.06	5.01	\$2.52
Sagebrush, Mountain or Big	0.12	6.34	\$2.43
Saltbush, Four Wing	2.00	2.75	\$25.60
Globemallow, Scarlet (or copper)	0.50	5.66	\$69.38
Timothy - Climax	2.00	57.39	\$3.20

Yarrow, Western	0.12	7.30	\$5.14
Totals Seed Mix	10.17	103.56	\$213.96

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
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$578.81

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Power mulcher (MEANS 32 91 13.16 0350)	\$92.78
Weed spray, truck, non-aquatic area, nox. [DMG]	\$73.22
Total Mulch Application Cost/Acre	\$234.78

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:	4.59	Cost /Acre:	\$1,630.06
Estimated Failure Rate:	60%	Cost /Acre*:	\$1,630.06
*Selected Replanting Work Items:	FERTILIZING,TILLING,SEEDING,MU LCHING		

Initial Job Cost:	\$7,481.98
Reseeding Job Cost:	\$4,489.19
Total Job Cost:	\$11,971
Job Hours:	6.50

BULLDOZER RIPPING WORK

Task description: Rip 60 ac pit floor

Site: Cole Gravel Pit Permit Action: Inspection 10-2018 Permit/Job#: M2004020

PROJECT IDENTIFICATION

Task #: 06A State: Colorado Abbreviation: None
Date: 11/5/2018 County: Mesa Filename: M020-06a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper Ownership Cost/Hour:	\$8.93	NA
Ripper Operating Cost/Hour:	\$7.78	100
Operator Cost/Hour:	\$40.23	NA
Total Unit Cost/Hour:	\$223.91	
Total Fleet Cost/Hour:	\$447.82	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 60.00 acres Rip Depth (ft): 2.00 Volume: 193,600 BCY or CCY

Source of estimated quantity: Reclamation Plan

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.00 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 200.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.773 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.773 Acres/hr
Site Altitude: 5,150 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.64 Acres/hr
Adjusted Hourly Fleet Production: 1.28 Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: 46.75 Hours

Unit cost: \$348.931 Per acre Total job cost: \$20,936

SCRAPER TEAM WORKTask description: **Replace topsoil over pit floor**Site: **Cole Gravel Pit**Permit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 07AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-07aUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:**Scraper Work Team****Support Equipment****Maintenance Equipment**

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$110.85	NA	NA	NA	NA	NA
Operating cost/hour:	\$119.02	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$45.84	NA	NA	NA	NA	NA
Unit Subtotals:	\$275.71	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$551.42		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$551.42****MATERIAL QUANTITIES**Initial volume: 52,434

CCY

Swell factor: 1.125Loose volume: **58,988**

LCY

Source of estimated volume: 55 ac existing pit floor + 10 ac stripped areaSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>34.00</u>	LCY
Rated Payload:	<u>81,600 pounds</u>	Average Volume:	<u>29.00</u>	LCY
Payload Capacity:	<u>32.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.70 MinutesJob Condition Correction:

Site Altitude: 5150 feet

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

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	0.00	5.00	5.00	1343	0.55

Haul Time: 0.55 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	0.00	5.00	5.00	2445	0.47

Return Time: 0.47 minutesTotal Scraper team cycle time: 2.52 minutesAdjusted for job conditions: 573.10 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 573.10 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,146.19 LCY/HourUnadjusted unit production/hour: 690.48 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 2 Team(s)Total job time: 51.46 HoursUnit cost: \$0.481 /LCYTotal job cost: \$28,379

BULLDOZER RIPPING WORK

Task description: Rip 7.41 ac of topsoil/overburden stockpile footprint area

Site: Cole Gravel Pit

Permit Action: Inspection 10-2018

Permit/Job#: M2004020

PROJECT IDENTIFICATION

Task #: 08A

State: Colorado

Abbreviation: None

Date: 11/5/2018

County: Mesa

Filename: M020-08a

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Ripper Attachment: 3-Shank Ripper

Horsepower: 310

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper Ownership Cost/Hour:	\$8.93	NA
Ripper Operating Cost/Hour:	\$7.78	100
Operator Cost/Hour:	\$40.23	NA
Total Unit Cost/Hour:	\$223.91	
Total Fleet Cost/Hour:	\$447.82	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 7.41 acres Rip Depth (ft): 2.00 Volume: 23,910 BCY or CCY

Source of estimated quantity: Reclamation Plan

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.00 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 200.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.773 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.773 Acres/hr
Site Altitude: 5,150 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.64 Acres/hr

Adjusted Hourly Fleet Production: 1.28 Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: 5.77 Hours

Unit cost: \$348.931 Per acre Total job cost: \$2,586

MOTOR GRADER WORK

Task description: Final grading of 72.41 acres of flat area

Site: Cole Gravel Pit

Permit Action: Inspection 10-2018

Permit/Job#: M2004020

PROJECT IDENTIFICATION

Task #: 09A State: Colorado Abbreviation: None
Date: 11/5/2018 County: Mesa Filename: M020-09a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 14M Horsepower: 259
Ripper Attachment: _____ Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$60.13</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$50.87</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$0.00</u>	
Operator Cost/Hour:	<u>\$45.64</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$156.64</u>	
Total Fleet Cost/Hour:	<u>\$156.64</u>	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 72.41 acres

Source of estimated acreage: 65 ac pit floor + 7.41 ac stockpile areas

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 12.10 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 10.10 feet
Unadjusted Hourly Unit Production: 1.8364 acres/hour

Job Condition Correction Factors

Site Altitude: 5150 feet

		Source
Altitude Adj:	<u>1.00</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.85</u>	<u>(1sh/d, mod.)</u>
Net Correction:	<u>0.8500</u>	<u>multiplier</u>

Adjusted Hourly Unit Production: 1.5609 acres/Hour
Adjusted Hourly Fleet Production: **1.5609** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **46.39** Hours

Unit cost: \$100.35 per acre Total job cost: **\$7,266**

REVEGETATION WORKTask description: Revegetation of 65 acres on pit floorSite: Cole Gravel PitPermit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 10AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-10aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium sulfate, 21-0-0 with 24% S	5.00	pound	\$0.34	\$1.70
Richlawn 3-6-3 w/ mycorrhiza humates (Pounds)	500.00	pound	\$0.46	\$227.80
			Total Fertilizer Materials Cost/Acre	\$229.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$34.72
Total Fertilizer Application Cost/Acre	\$34.72

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Paloma	1.00	3.24	\$9.75
Galleta	2.00	7.30	\$50.58
Milk Vetch, Cicer - Monarch	20.00	66.57	\$168.00
Saltbush, Four Wing	2.00	2.75	\$25.60
Globemallow, Scarlet (or copper)	0.50	5.66	\$69.38
Timothy - Climax	2.00	57.39	\$3.20
Totals Seed Mix	27.50	142.92	\$326.51

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
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$578.81

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Power mulcher (MEANS 32 91 13.16 0350)	\$92.78
Weed spray, truck, non-aquatic area, nox. [DMG]	\$73.22
Total Mulch Application Cost/Acre	\$234.78

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:	65	Cost /Acre:	\$1,742.61
Estimated Failure Rate:	60%	Cost /Acre*:	\$1,742.61
*Selected Replanting Work Items:	FERTILIZING, TILLING, SEEDING, MULCHING		
Initial Job Cost:	\$113,269.65		
Reseeding Job Cost:	\$67,961.79		
Total Job Cost:	\$181,231		
Job Hours:	88.00		

REVEGETATION WORKTask description: Revegetation of 7.41 ac of stockpile footprint areaSite: Cole Gravel PitPermit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**Task #: 11AState: ColoradoAbbreviation: NoneDate: 11/5/2018County: MesaFilename: M020-11aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium sulfate, 21-0-0 with 24% S	5.00	pound	\$0.34	\$1.70
Richlawn 3-6-3 w/ mycorrhiza humates (Pounds)	500.00	pound	\$0.46	\$227.80
			Total Fertilizer Materials Cost/Acre	\$229.50

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$34.72
Total Fertilizer Application Cost/Acre	\$34.72

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Paloma	1.00	3.24	\$9.75
Galleta	2.00	7.30	\$50.58
Milk Vetch, Cicer - Monarch	20.00	66.57	\$168.00
Saltbush, Four Wing	2.00	2.75	\$25.60
Globemallow, Scarlet (or copper)	0.50	5.66	\$69.38
Timothy - Climax	2.00	57.39	\$3.20
Totals Seed Mix	27.50	142.92	\$326.51

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
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$578.81

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Power mulcher (MEANS 32 91 13.16 0350)	\$92.78
Weed spray, truck, non-aquatic area, nox. [DMG]	\$73.22
Total Mulch Application Cost/Acre	\$234.78

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:	7.41	Cost /Acre:	\$1,742.61
Estimated Failure Rate:	60%	Cost /Acre*:	\$1,742.61
*Selected Replanting Work Items:	FERTILIZING, TILLING, SEEDING, MULCHING		
Initial Job Cost:	\$12,912.74		
Reseeding Job Cost:	\$7,747.64		
Total Job Cost:	\$20,660		
Job Hours:	10.00		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Initial mobilization**Site: **Cole Gravel Pit**Permit Action: **Inspection 10-2018**Permit/Job#: **M2004020****PROJECT IDENTIFICATION**

Task #: **12A** State: **Colorado** Abbreviation: **None**
 Date: **11/5/2018** County: **Mesa** Filename: **M020-12a**
 User: **ACY**

Agency or organization name: **DRMS****EQUIPMENT TRANSPORT RIG COST**

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

Truck Tractor Description: **GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)**Truck Trailer Description: **GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)****Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D8T - 8SU	53.08	\$102.55	\$125.45	2	\$456.00	\$250.90	\$500.00
Cat 631G	52.50	\$110.85	\$125.45	2	\$472.60	\$250.90	\$750.00
CAT 14M	23.57	\$60.13	\$88.67	1	\$148.80	\$88.67	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	1	\$104.21	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$8.33	\$88.67	1	\$97.00	\$88.67	\$250.00

Subtotals: **\$1,278.61** **\$767.81** **\$2,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Flatbed Truck, 4x2, 30K GVW	\$27.39	1	\$27.39	\$27.39
Water Tanker, 7,000 Gal.	\$106.29	1	\$106.29	\$106.29

Subtotals: **\$133.68** **\$133.68**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>12.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$7,648.64</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$71.30</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.27</u>	<u>0.27</u>
Return Time (Hours):	<u>0.27</u>	<u>0.27</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>1.53</u>	<u>0.53</u>

JOB TIME AND COST

Total job time: 3.07 Hours

Total job cost: \$7,720

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Secondary mobilizationSite: Cole Gravel PitPermit Action: Inspection 10-2018Permit/Job#: M2004020**PROJECT IDENTIFICATION**

Task #: 12B State: Colorado Abbreviation: None
 Date: 11/5/2018 County: Mesa Filename: M020-12b
 User: ACY

Agency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**

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

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)**Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	1	\$104.21	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$8.33	\$88.67	1	\$97.00	\$88.67	\$250.00
Subtotals:					\$201.21	\$177.34	\$500.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$47.74	1	\$47.74	\$47.74
Subtotals:			\$47.74	\$47.74

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>12.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$1,604.31</u>
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$25.46</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.27</u>	<u>0.27</u>
Return Time (Hours):	<u>0.27</u>	<u>0.27</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>1.53</u>	<u>0.53</u>

JOB TIME AND COST

Total job time:	<u>3.07</u>	Hours
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Total job cost:	<u>\$1,630</u>
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