



COLORADO

**Division of Reclamation,
Mining and Safety**

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, Colorado 80203

January 29, 2019

Karl Nyquist
Prowers Aggregate Operators, LLC
7991 Shaffer Parkway, Suite 200
Littleton, CO 80127

Re: West Farm Pit, Permit No. M-2008-078, 112c Permit Amendment Application (Revision No. AM-01), Adequacy Review No. 3

Mr. Nyquist:

The Division of Reclamation, Mining and Safety (Division) has completed its adequacy review of your response submitted via email on January 24, 2019. The Division has calculated a reclamation bond (see enclosed estimate) for the proposed operation based on the mining and reclamation plans provided in the above referenced application.

The Division has the following clarification regarding a discrepancy between the Division's bond estimate and the operator's bond estimate:

- 1) The Division's bond estimate includes costs for reclaiming all proposed disturbance in Phases 5-12 in the North Mining Area (85.46 acres). This is in contrast to the operator's bond estimate for Phases 5-12, which only includes costs for reclaiming pit slopes (above water line) for the proposed second reservoir. The reclamation bond must include costs for reclaiming the proposed maximum disturbance for the site. Once the second reservoir has been fully excavated and is ready for water storage, the operator may request a Surety Reduction for Phases 5-12, to only include costs for reclaiming the pit slopes above water line (as with the Phase 1-4 reservoir).

Please review the enclosed estimate and submit any comments at your earliest convenience. If the Division receives no comments from you by the application decision date of **February 4, 2019**, and no extension of the decision date has been requested by that time, the application will be approved with the required financial warranty set at the amount provided in the estimate, \$1,849,793.00.

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

Sincerely,

Amy Eschberger
Environmental Protection Specialist



Encl: Division's Bond Estimate

Cc: J.C. York
J&T Consulting, Inc.
305 Denver Avenue, Suite D
Fort Lupton, CO 80621



COST SUMMARY WORK

Task description: Cost Summary

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-000

User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	West wash plant/sediment pond area; Backfill sediment ponds	SCRAPER1	1	14.65	\$12,169.00
002	West wash plant/sed pond area; Rip ground	RIPPER	1	13.82	\$3,113.00
003	West wash plant/sediment pond area; Replace topsoil	SCRAPER1	1	11.74	\$13,901.00
004	West wash plant/sediment pond area; Revegetate	REVEGE	1	8.87	\$14,974.00
005	Scale house/land west; Rip ground	RIPPER	2	19.61	\$8,833.00
006	Scale house/land west; Replace topsoil	SCRAPER1	1	41.13	\$48,712.00
007	Scale house/land west; Revegetate	REVEGE	1	26.76	\$45,175.00
008	South stockpile area; Rip ground	RIPPER	2	8.47	\$3,816.00
009	South stockpile area; Replace topsoil	SCRAPER1	1	17.73	\$14,729.00
010	South stockpile area; Revegetate	REVEGE	1	11.56	\$19,515.00
011	Stockpile/sediment pond area-Ph 13; Backfill sediment ponds	SCRAPER1	1	23.79	\$28,177.00
012	Stockpile/sediment pond area-Ph 13; Rip ground	RIPPER	2	10.61	\$4,783.00
013	Stockpile/sediment pond area-Ph 13; Replace topsoil	SCRAPER1	1	11.11	\$13,160.00
014	Stockpile/sediment pond area-Ph 13; Revegetate	REVEGE	1	14.49	\$24,462.00
015	Stockpile areas, Phases 14-17; Rip ground	RIPPER	2	39.81	\$17,933.00
016	Stockpile areas, Phases 14-17; Replace topsoil	SCRAPER1	1	57.89	\$68,554.00
017	Stockpile areas, Phases 14-17; Revegetate	REVEGE	1	54.33	\$91,718.00
018	Phases 1-4 reservoir slopes; Replace topsoil	SCRAPER1	1	16.05	\$13,334.00
019	Phases 1-4 reservoir slopes; Revegetate	REVEGE	1	5.01	\$8,458.00
020	Phases 5-12, north mining area; Rip ground	RIPPER	2	62.62	\$28,208.00
021	Phases 5-12, north mining area; Replace topsoil	SCRAPER1	1	97.73	\$115,733.00
022	Phases 5-12, north mining area; Revegetate	REVEGE	1	85.46	\$144,271.00
023	North disturbed area/roadside ditch; Revegetate	REVEGE	1	3.09	\$5,216.00
024	Parking area; Revegetate	REVEGE	1	3.16	\$5,335.00
025	Parcel B; Rip ground	RIPPER	2	17.07	\$7,688.00
026	Parcel B; Replace topsoil	SCRAPER1	1	20.41	\$24,176.00
027	Parcel B; Revegetate	REVEGE	1	23.05	\$38,890.00
028a	20% slurry wall, phases 1-4, 2,725 LF (N & W sides) x \$79	NA	1	0.00	\$215,275.00
028b	20% slurry wall, phases 5-7, 9-12, 6,625 LF x \$68	NA	1	0.00	\$450,500.00
029	Mobilization/Demobilization	MOBILIZE	1	18.11	\$53,918.00
		<u>SUBTOTALS:</u>		738.13	\$1,544,726

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	<u>\$31,203.47</u>
Performance bond:	1.05	Total =	<u>\$16,219.62</u>
Job superintendent:	200.00	Total =	<u>\$14,610.00</u>
Profit:	10.00	Total =	<u>\$154,472.60</u>
		TOTAL O & P =	<u>\$216,505.69</u>
		CONTRACT AMOUNT (direct + O & P) =	<u>\$1,761,231.69</u>

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	<u>500.00</u>	Total =	<u>500.00</u>
Engineering work and/or contract/bid preparation:	<u>0.00</u>	Total =	<u>\$0.00</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$88,061.58</u>

CONTINGENCY:	0.00	Total =	<u>\$0.00</u>
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TOTAL INDIRECT COST =	<u>\$305,067.27</u>
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TOTAL BOND AMOUNT (direct + indirect) =	<u>\$1,849,793.27</u>
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SCRAPER TEAM WORKTask description: West wash plant/sediment pond area; Backfill sediment pondsSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 001State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-001User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	1	0	1	1	1	1
Group Subtotals:	Work: \$353.51		Support: \$314.30		Maint: \$162.95	

Total work team cost/hour: **\$830.76****MATERIAL QUANTITIES**Initial volume: 6,145

CCY

Swell factor: 1.125Loose volume: **6,913**

LCY

Source of estimated volume: AM-01 materialsSource 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: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	0.00	3.00	3.00	2800	0.91

Haul Time: 0.91 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	0.00	3.00	3.00	2949	0.75

Return Time: 0.75 minutesTotal Scraper team cycle time: 3.06 minutesAdjusted for job conditions: 471.96 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 471.96 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 471.96 LCY/HourUnadjusted unit production/hour: 568.63 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 14.65 HoursUnit cost: \$1.760 /LCYTotal job cost: \$12,169

BULLDOZER RIPPING WORK

Task description: West wash plant/sediment pond area; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 002

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-002

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$225.20	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 8.87 acres Rip Depth (ft): 2.00 Volume: 28,621 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 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: 3,600 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: **0.64** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **13.82** Hours

Unit cost: \$350.941 Per acre Total job cost: **\$3,113**

SCRAPER TEAM WORKTask description: West wash plant/sediment pond area; Replace topsoilSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-003User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work: \$707.02		Support: \$314.30		Maint:	\$162.95

Total work team cost/hour: \$1,184.27**MATERIAL QUANTITIES**Initial volume: 7,155

CCY

Swell factor: 1.215Loose volume: 8,693

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3100.00	0.00	3.00	3.00	2800	1.31

Haul Time: 1.31 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3100.00	0.00	3.00	3.00	2949	1.19

Return Time: 1.19 minutesTotal Scraper team cycle time: 3.90 minutesAdjusted for job conditions: 370.31 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 740.62 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 740.62 LCY/HourUnadjusted unit production/hour: 446.15 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 11.74 HoursUnit cost: \$1.599 /LCYTotal job cost: \$13,901

REVEGETATION WORKTask description: West wash plant/sediment pond area; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-004User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres:	8.87	Cost /Acre:	\$1,520.37
Estimated Failure Rate:	25%	Cost /Acre*:	\$671.20
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	\$13,485.68		
Reseeding Job Cost:	\$1,488.39		
Total Job Cost:	\$14,974		
Job Hours:	8.87		

BULLDOZER RIPPING WORK

Task description: Scale house/land west; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 005

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-005

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$450.40	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 26.76 acres Rip Depth (ft): 2.00 Volume: 86,346 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 500.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.822 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.822 Acres/hr
Site Altitude: 3,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr

Adjusted Hourly Fleet Production: **1.36** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **19.61** Hours

Unit cost: \$330.074 Per acre Total job cost: **\$8,833**

SCRAPER TEAM WORKTask description: Scale house/land west; Replace topsoilSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 006State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-006User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work: \$707.02		Support: \$314.30		Maint:	\$162.95

Total work team cost/hour: \$1,184.27**MATERIAL QUANTITIES**Initial volume: 21,586

CCY

Swell factor: 1.215Loose volume: 26,227

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	0.00	3.00	3.00	2800	1.63

Haul Time: 1.63 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	0.00	3.00	3.00	2949	1.50

Return Time: 1.50 minutesTotal Scraper team cycle time: 4.53 minutesAdjusted for job conditions: 318.81 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 637.62 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 637.62 LCY/HourUnadjusted unit production/hour: 384.11 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 41.13 HoursUnit cost: \$1.857 /LCYTotal job cost: \$48,712

REVEGETATION WORKTask description: Scale house/land west; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078PROJECT IDENTIFICATIONTask #: 007State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-007User: AMEAgency or organization name: DRMSFERTILIZING**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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: 26.76 Cost /Acre: \$1,520.37
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$40,685.10**
 Reseeding Job Cost: **\$4,490.33**
 Total Job Cost: **\$45,175**
 Job Hours: **26.76**

BULLDOZER RIPPING WORK

Task description: South stockpile area; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 008

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-008

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$450.40	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 11.56 acres Rip Depth (ft): 2.00 Volume: 37,300 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 500.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.822 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.822 Acres/hr
Site Altitude: 3,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr

Adjusted Hourly Fleet Production: **1.36** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **8.47** Hours

Unit cost: \$330.074 Per acre Total job cost: **\$3,816**

SCRAPER TEAM WORKTask description: South stockpile areat; Replace topsoilSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 009State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-009User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	1	0	1	1	1	1
Group Subtotals:	Work: \$353.51		Support: \$314.30		Maint: \$162.95	

Total work team cost/hour: **\$830.76****MATERIAL QUANTITIES**Initial volume: 9,325

CCY

Swell factor: 1.215Loose volume: **11,330**

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	0.00	3.00	3.00	2800	0.47

Haul Time: 0.47 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	0.00	3.00	3.00	2949	0.39

Return Time: 0.39 minutesTotal Scraper team cycle time: 2.26 minutesAdjusted for job conditions: 639.03 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 639.03 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 639.03 LCY/HourUnadjusted unit production/hour: 769.91 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 17.73 HoursUnit cost: \$1.300 /LCYTotal job cost: \$14,729

REVEGETATION WORKTask description: South stockpile area; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 010State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-010User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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: 11.56 Cost /Acre: \$1,520.37
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$17,575.48**
 Reseeding Job Cost: **\$1,939.77**
 Total Job Cost: **\$19,515**
 Job Hours: **11.56**

SCRAPER TEAM WORKTask description: **Stockpile/sediment pond area-Ph 13; Backfill sediment ponds**Site: **West Farm Pit**Permit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 011State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-011User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work:	\$707.02	Support:	\$314.30	Maint:	\$162.95

Total work team cost/hour: **\$1,184.27****MATERIAL QUANTITIES**Initial volume: 17,655

CCY

Swell factor: 1.125Loose volume: **19,862**

LCY

Source of estimated volume: AM-01 materialsSource 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: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2375.00	0.00	3.00	3.00	2800	1.12

Haul Time: 1.12 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2375.00	0.00	3.00	3.00	2949	0.94

Return Time: 0.94 minutesTotal Scraper team cycle time: 3.46 minutesAdjusted for job conditions: 417.40 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 834.80 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 834.80 LCY/HourUnadjusted unit production/hour: 502.89 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 23.79 HoursUnit cost: \$1.419 /LCYTotal job cost: \$28,177

BULLDOZER RIPPING WORK

Task description: Stockpile/sediment pond area-Ph 13; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 012

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-012

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$450.40	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 14.49 acres Rip Depth (ft): 2.00 Volume: 46,754 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 500.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.822 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.822 Acres/hr
Site Altitude: 3,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr
Adjusted Hourly Fleet Production: **1.36** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **10.62** Hours

Unit cost: \$330.074 Per acre Total job cost: **\$4,783**

SCRAPER TEAM WORKTask description: **Stockpile/sediment pond area-Ph 13; Replace topsoil**Site: **West Farm Pit**Permit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 013State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-013User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work: \$707.02		Support: \$314.30		Maint: \$162.95	

Total work team cost/hour: **\$1,184.27****MATERIAL QUANTITIES**Initial volume: 11,689

CCY

Swell factor: 1.215Loose volume: **14,202**

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 1,600 lbs/LCY
 Material description: Top Soil
 Rated Payload: 81,600 pounds
 Payload Capacity: 51.00 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: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	0.00	3.00	3.00	2800	0.47

Haul Time: 0.47 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	0.00	3.00	3.00	2949	0.39

Return Time: 0.39 minutesTotal Scraper team cycle time: 2.26 minutesAdjusted for job conditions: 639.03 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,278.05 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,278.05 LCY/HourUnadjusted unit production/hour: 769.91 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 11.11 HoursUnit cost: \$0.927 /LCYTotal job cost: \$13,160

REVEGETATION WORKTask description: Stockpile/sediment pond area-Ph 13; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 014State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-014User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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:	14.49	Cost /Acre:	\$1,520.37
Estimated Failure Rate:	25%	Cost /Acre*:	\$671.20
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$22,030.16
Reseeding Job Cost:	\$2,431.42
Total Job Cost:	\$24,462
Job Hours:	14.49

BULLDOZER RIPPING WORK

Task description: Stockpile areas, Phases 14-17; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 015

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-015

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$450.40	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 54.33 acres Rip Depth (ft): 2.00 Volume: 175,305 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 500.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.822 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.822 Acres/hr
Site Altitude: 3,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr

Adjusted Hourly Fleet Production: **1.36** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **39.82** Hours

Unit cost: \$330.074 Per acre Total job cost: **\$17,933**

SCRAPER TEAM WORKTask description: **Stockpile areas, Phases 14-17; Replace topsoil**Site: **West Farm Pit**Permit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 016State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-016User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work:	\$707.02	Support:	\$314.30	Maint:	\$162.95

Total work team cost/hour: **\$1,184.27****MATERIAL QUANTITIES**Initial volume: 43,826

CCY

Swell factor: 1.215Loose volume: **53,249**

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul 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	0.92

Haul Time: 0.92 minutesReturn 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	0.82

Return Time: 0.82 minutesTotal Scraper team cycle time: 3.14 minutesAdjusted for job conditions: 459.94 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 919.87 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 919.87 LCY/HourUnadjusted unit production/hour: 554.14 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 57.89 HoursUnit cost: \$1.287 /LCYTotal job cost: \$68,554

REVEGETATION WORKTask description: Stockpile areas, Phases 14-17; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078PROJECT IDENTIFICATIONTask #: 017State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-017User: AMEAgency or organization name: DRMSFERTILIZING**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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: 54.33 Cost /Acre: \$1,520.37
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$82,601.70**
 Reseeding Job Cost: **\$9,116.57**
 Total Job Cost: **\$91,718**
 Job Hours: **54.33**

SCRAPER TEAM WORKTask description: **Phases 1-4 reservoir slopes; Replace topsoil**Site: **West Farm Pit**Permit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 018State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-018User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	1	0	1	1	1	1
Group Subtotals:	Work:	\$353.51	Support:	\$314.30	Maint:	\$162.95

Total work team cost/hour: **\$830.76****MATERIAL QUANTITIES**Initial volume: 4,042

CCY

Swell factor: 1.215Loose volume: **4,911**

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4280.00	0.00	3.00	3.00	2800	1.73

Haul Time: 1.73 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4280.00	0.00	3.00	3.00	2949	1.59

Return Time: 1.59 minutesTotal Scraper team cycle time: 4.72 minutesAdjusted for job conditions: 305.97 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 305.97 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 305.97 LCY/HourUnadjusted unit production/hour: 368.64 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 16.05 HoursUnit cost: \$2.715 /LCYTotal job cost: \$13,334

REVEGETATION WORKTask description: Phases 1-4 reservoir slopes; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 019State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-019User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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: 5.01 Cost /Acre: \$1,520.37
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$7,617.05**
 Reseeding Job Cost: **\$840.68**
 Total Job Cost: **\$8,458**
 Job Hours: **5.01**

BULLDOZER RIPPING WORK

Task description: Phases 5-12, north mining area; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 020

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-020

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$450.40	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 85.46 acres Rip Depth (ft): 2.00 Volume: 275,751 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 500.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.822 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.822 Acres/hr
Site Altitude: 3,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr

Adjusted Hourly Fleet Production: **1.36** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **62.63** Hours

Unit cost: \$330.074 Per acre Total job cost: **\$28,208**

SCRAPER TEAM WORKTask description: **Phases 5-12, north mining area; Replace topsoil**Site: **West Farm Pit**Permit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 021State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-021User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work:	\$707.02	Support:	\$314.30	Maint:	\$162.95

Total work team cost/hour: **\$1,184.27****MATERIAL QUANTITIES**Initial volume: 68,938

CCY

Swell factor: 1.215Loose volume: **83,760**

LCY

Source of estimated volume: AM-01 materialsSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 1,600 lbs/LCY
 Material description: Top Soil
 Rated Payload: 81,600 pounds
 Payload Capacity: 51.00 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: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2345.00	0.00	3.00	3.00	2800	1.04

Haul Time: 1.04 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2345.00	0.00	3.00	3.00	2949	0.93

Return Time: 0.93 minutesTotal Scraper team cycle time: 3.37 minutesAdjusted for job conditions: 428.55 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 857.09 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 857.09 LCY/HourUnadjusted unit production/hour: 516.32 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 97.73 HoursUnit cost: \$1.382 /LCYTotal job cost: \$115,733

REVEGETATION WORKTask description: Phases 5-12, north mining area; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 022State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-022User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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:	85.46	Cost /Acre:	\$1,520.37
Estimated Failure Rate:	25%	Cost /Acre*:	\$671.20
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	\$129,930.82		
Reseeding Job Cost:	\$14,340.19		
Total Job Cost:	\$144,271		
Job Hours:	85.46		

REVEGETATION WORKTask description: North disturbed area/roadside ditch; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 023State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-023User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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: 3.09 Cost /Acre: \$1,520.37
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$4,697.94**
 Reseeding Job Cost: **\$518.50**
 Total Job Cost: **\$5,216**
 Job Hours: **3.09**

REVEGETATION WORKTask description: Parking area; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 024State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-024User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, aquatic area, annuals [DMG]	\$27.96
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$166.88

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: 3.16 Cost /Acre: \$1,520.37
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$4,804.37**
 Reseeding Job Cost: **\$530.25**
 Total Job Cost: **\$5,335**
 Job Hours: **3.16**

BULLDOZER RIPPING WORK

Task description: Parcel B; Rip ground

Site: West Farm Pit

Permit Action: AM-01 Bond Estimate

Permit/Job#: M2008078

PROJECT IDENTIFICATION

Task #: 025

State: Colorado

Abbreviation: None

Date: 1/18/2019

County: Prowers

Filename: M078-025

User: AME

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:	\$41.52	NA
Total Unit Cost/Hour:	\$225.20	
Total Fleet Cost/Hour:	\$450.40	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 23.05 acres Rip Depth (ft): 2.00 Volume: 74,375 BCY or CCY

Source of estimated quantity: AM-01 materials

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 mph
Average Ripping Width: 7.08 degrees
Average Ripping Length: 400.00 feet
Average Dozer Speed: 88.00 feet
Average Maneuver Time: 0.25 feet
Production per unit area: 0.813 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.813 Acres/hr
Site Altitude: 3,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr
Adjusted Hourly Fleet Production: 1.35 Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: 17.07 Hours

Unit cost: \$333.552 Per acre Total job cost: \$7,688

SCRAPER TEAM WORKTask description: **Parcel B; Replace topsoil**Site: **West Farm Pit**Permit Action: **AM-01 Bond Estimate**Permit/Job#: **M2008078****PROJECT IDENTIFICATION**Task #: **026**State: **Colorado**Abbreviation: **None**Date: **1/18/2019**County: **Prowers**Filename: **M078-026**User: **AME**Agency or organization name: **DRMS****HOURLY EQUIPMENT**COSTShift basis: **1 per day**

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS XR Series II
-Dump Area:	Cat D7R DS XR Series II
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	NA	100	100	50	50
Ownership cost/hour:	\$155.61	NA	\$61.41	\$61.41	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	\$54.22	\$54.22	\$31.67	\$13.01
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.05	NA	\$41.52	\$41.52	\$28.69	\$0.00
Unit Subtotals:	\$353.51	NA	\$157.15	\$157.15	\$137.55	\$25.40
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work: \$707.02		Support: \$314.30		Maint: \$162.95	

Total work team cost/hour: **\$1,184.27****MATERIAL QUANTITIES**Initial volume: **18,594**

CCY

Swell factor: **1.215**Loose volume: **22,592**

LCY

Source of estimated volume: **AM-01 materials**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	1,600 lbs/LCY	Struck Volume:	24.00	LCY
Material description:	Top Soil	Heaped Volume:	34.00	LCY
Rated Payload:	81,600 pounds	Average Volume:	29.00	LCY
Payload Capacity:	51.00 LCY	Adjusted Capacity:	29.00	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 3600 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1250.00	0.00	3.00	3.00	2800	0.65

Haul Time: 0.65 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1250.00	0.00	3.00	3.00	2949	0.56

Return Time: 0.56 minutesTotal Scraper team cycle time: 2.61 minutesAdjusted for job conditions: 553.33 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,106.67 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,106.67 LCY/HourUnadjusted unit production/hour: 666.67 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 20.41 HoursUnit cost: \$1.070 /LCYTotal job cost: \$24,176

REVEGETATION WORKTask description: Parcel B; RevegetateSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**Task #: 027State: ColoradoAbbreviation: NoneDate: 1/18/2019County: ProwersFilename: M078-027User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	3.00	48.97	\$49.98
Alkali Sacaton	1.50	58.54	\$43.50
Switchgrass - Blackwell	4.00	35.72	\$39.24
Buffalograss - Texoka	6.00	5.79	\$81.84
Sideoats Grama - Vaughn	9.00	29.55	\$92.16
Western Wheatgrass - Arriba	16.00	40.40	\$132.48
Totals Seed Mix	39.50	218.96	\$439.20

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Weed spray, truck, non-aquatic area, nox. [DMG]	\$73.22
Weed spray, truck, non-aquatic areas, ann. [DMG]	\$23.91
Total Mulch Application Cost/Acre	\$165.91

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: 23.05 Cost /Acre: \$1,519.40
 Estimated Failure Rate: 25% Cost /Acre*: \$671.20
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$35,022.17**
 Reseeding Job Cost: **\$3,867.79**
 Total Job Cost: **\$38,890**
 Job Hours: **23.05**

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Mobilization/DemobilizationSite: West Farm PitPermit Action: AM-01 Bond EstimatePermit/Job#: M2008078**PROJECT IDENTIFICATION**

Task #: 029 State: Colorado Abbreviation: None
 Date: 1/18/2019 County: Prowers Filename: M078-029
 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:	\$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 637G	57.28	\$155.61	\$125.45	4	\$1,124.24	\$501.80	\$1,000.00
Cat D7R DS Series II LGP	34.57	\$66.14	\$117.55	4	\$734.76	\$470.20	\$500.00
Cat D8T - 8SU	53.08	\$102.55	\$125.45	2	\$456.00	\$250.90	\$500.00
CAT 16M	28.73	\$77.19	\$117.55	2	\$389.48	\$235.10	\$500.00
Subtotals:					\$2,704.48	\$1,458.00	\$2,500.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 3,500 Gal.	\$38.41	2	\$76.82	\$76.82
Drill/Broadcast Seeder with Tractor	\$36.08	2	\$72.16	\$72.16
Light Duty Pickup, 4x4, 3/4 T.	\$12.23	1	\$12.23	\$12.23
Subtotals:			\$161.21	\$161.21

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>LAMAR</u>	
Total one-way travel distance:	<u>1.10</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$53,909.58</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$8.87</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.03</u>	<u>0.03</u>
Return Time (Hours):	<u>0.03</u>	<u>0.03</u>
Loading Time (Hours):	<u>4.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>4.50</u>	<u>NA</u>
Subtotals:	<u>9.06</u>	<u>0.06</u>

JOB TIME AND COST

Total job time:	<u>18.11</u>	Hours
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Total job cost:	<u>\$53,918</u>
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