



## Cost Estimate for TR10 at THE Aggregate, M-1977-193

1 message

**Bowles - DNR, Brock** <brock.bowles@state.co.us>

Mon, Aug 23, 2021 at 7:08 PM

To: Kenneth Klco <kenneth.klco@gmail.com>, Randy DiLuzio <rdiluzio@tezakheavyequipment.com>, sscarter@blm.gov

Cc: Tim Cazier <tim.cazier@state.co.us>

Hi everyone,

I have been assisting Tim Cazier with the cost estimate for TR10 at the T.H.E Aggregate Pit, M-1977-193. The DRMS cost estimate is attached.

The cost estimate submitted by Tezak had a total of: \$1,160,109.73 (both BLM and private land).

I ran the numbers in our system for verification and got a significantly lower value: \$911,998.

After a little research and discussion with our cost estimate specialist, there are two main reasons for the large difference:

1. Ken Klco was given the cost of \$596.77 per acre for fertilizer application by DRMS. DRMS got this value from RSMeans, who we later learned changed their cost this year to include labor, equipment and material costs. DRMS prices these items separately. So, Ken's estimate unknowingly double charged for these services. DRMS has corrected this discrepancy and the reclamation cost in this estimate is adjusted to reflect this change.
2. The structural demolition task #170 submitted by Tezak in TR10 was \$66,656.70 based on the 2013 estimate. The DRMS cost for the demolition is \$32,989. I do not know why the cost is significantly lower and our cost estimator does not know why either. We have not kept records tracking the changes in costs over the years, but the current value reflects the RSMeans market value.

The tasks on BLM land are labeled as such. We are planning to approve TR10 on Sept 8. Please have your questions to me prior to Sept 8. If we don't hear from you we will assume you approve of the estimate.

I can be reached at 720-774-0040 or [brock.bowles@state.co.us](mailto:brock.bowles@state.co.us) for questions.

Thanks,  
Brock

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Brock Bowles  
Environmental Protection Specialist



**COLORADO**  
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## COST SUMMARY WORK

Task description: Site Reclamation

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 8/16/2021

County: Fremont

Filename: M193-000

User: BFB

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
110	Phase 1- Replace Topsoil (12" over 123.3 ac)	SCRAPER1	1	392.04	\$125,465
120	Phase 1- Rough Grade Topsoil (10% of Task 110 area)	GRADER	1	8.94	\$1,013
130	Phase 1- Rip Pit Floor	RIPPER	1	198.91	\$43,146
140	Phase 1- Reseed Dist Area (pit flr, borrow area & rd easm't)	REVEGE	1	123.00	\$306,592
150	Phase 1- Bench Ditch Maintenance	DOZERGRADER	1	5.00	\$572
170	Permanent Structure Demolition	DEMOLISH	1	80.00	\$32,989
190	Mob/Demob	MOBILIZE	1	1.40	\$2,109
210	Phase 2 BLM- Replace Topsoil (12" over 14.3 ac)	SCRAPER1	1	45.47	\$14,551
220	Phase 2 BLM- Rough Grade Topsoil (10% of Task 210 area)	GRADER	1	1.04	\$118
230	Phase 2 BLM- Rip Pit Floor	RIPPER	1	23.07	\$5,004
240	Phase 2 BLM- Reseed	REVEGE	1	14.00	\$35,558
250	Phase 2 BLM- Bench Ditch Maintenance	DOZERGRADER	1	2.00	\$229
310	Phase 3 BLM- Replace Topsoil (12" over 7.8 ac)	SCRAPER1	1	24.80	\$7,937
320	Phase 3 BLM- Rough Grade Topsoil (10% of Task 310 area)	GRADER	1	0.56	\$64
330	Phase 3 BLM- Rip Pit Floor	RIPPER	1	12.58	\$2,729
340	Phase 3 BLM- Reseed	REVEGE	1	8.00	\$19,395
350	Phase 3 BLM- Bench Ditch Maintenance	DOZERGRADER	1	3.45	\$394
410	Phase 4 BLM- Replace Topsoil (12" over 7.1 ac)	SCRAPER1	1	22.57	\$7,224
420	Phase 4 BLM- Rough Grade Topsoil (10% of Task 410 area)	GRADER	1	0.51	\$58
430	Phase 4 BLM- Rip Pit Floor	RIPPER	1	11.45	\$2,484
440	Phase 4 BLM- Reseed	REVEGE	1	7.00	\$17,655
450	Phase 4 BLM- Bench Ditch Maintenance	DOZERGRADER	1	3.22	\$368
501	Phase 5 BLM- Replace Topsoil (12" over 2.7 ac)	SCRAPER1	1	8.58	\$2,747
502	Phase 5 BLM- Rough Grade Topsoil (10% of Task 501 area)	GRADER	1	0.51	\$58
503	Phase 5 BLM- Rip Pit Floor	RIPPER	1	4.35	\$945
504	Phase 5 BLM- Reseed	REVEGE	1	3.00	\$6,714
505	Phase 5 BLM- Bench Ditch Maintenance	DOZERGRADER	1	4.49	\$513
551	Phase 5 Tezak- Replace Topsoil (12" over 17.3 ac)	SCRAPER1	1	55.01	\$17,604

552	Phase 5 Tezak- Rough Grade (10% of Task 551 area)	GRADER	1	1.25	\$143
553	Phase 5 Tezak- Rip Pit Floor	RIPPER	1	27.91	\$6,054
554	Phase 5 Tezak- Reseed	REVEGE	1	17.00	\$43,017
555	Phase 5 Tezak- Bench Ditch Maintenance	DOZERGRADER	1	2.42	\$277
<b><u>SUBTOTALS:</u></b>				<b>1113.53</b>	<b>\$703,726</b>

**INDIRECT COSTS****OVERHEAD AND PROFIT:**

Liability insurance:	2.02	Total =	\$14,215
Performance bond:	1.05	Total =	\$7,389
Job superintendent:	536.17	Total =	\$38,620
Profit:	10.00	Total =	\$70,373
		TOTAL O & P =	\$130,597
		CONTRACT AMOUNT (direct + O & P) =	\$834,323

**LEGAL - ENGINEERING - PROJECT MANAGEMENT:**

Financial warranty processing (legal/related costs):	\$500	Total =	\$500
Engineering work and/or contract/bid preparation:	4.25	Total =	\$35,459
Reclamation management and/or administration:	5.00		\$41,716

CONTINGENCY: 0.00 Total = \$0

TOTAL INDIRECT COST = \$208,272

**TOTAL BOND AMOUNT (direct + indirect) = \$911,998**

**SCRAPER TEAM WORK**Task description: **Phase 1- Replace Topsoil (12" over 123.3 ac)**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **110**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **77193110**User: **BFB**Agency 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:	\$147.77	NA	NA	NA	NA	NA
Operating cost/hour:	\$141.36	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:	\$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	\$320.03	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work: \$320.03		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$320.03****MATERIAL QUANTITIES**Initial volume: **198,924**

CCY

Swell factor: **1.125**Loose volume: **223,790**

LCY

Source of estimated volume: **TR10 application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b>2,650 lbs/LCY</b>	Struck Volume:	<b>24.00</b>	LCY
Material description:	<b>Decomposed rock - 25% Rock, 75% Earth</b>	Heaped Volume:	<b>34.00</b>	LCY
Rated Payload:	<b>81,600 pounds</b>	Average Volume:	<b>29.00</b>	LCY
Payload Capacity:	<b>30.79 LCY</b>	Adjusted Capacity:	<b>29.00</b>	LCY

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

Site Altitude: 5600 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	500.00	3.00	5.00	8.00	783	0.67

Haul Time: 0.67 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: 0.36 minutesTotal Scraper team cycle time: 2.53 minutesAdjusted for job conditions: 570.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 570.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 570.83 LCY/HourUnadjusted unit production/hour: 687.75 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 392.04 HoursUnit cost: \$0.561 /LCYTotal job cost: \$125,465

## MOTOR GRADER WORK

Task description: Phase 1- Rough Grade Topsoil (10% of Task 110 area)

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 120

State: Colorado

Abbreviation: None

Date: 8/16/2021

County: Fremont

Filename: M193-120

User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Horsepower: 158

Ripper Attachment:

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$47.01	NA
Operating Cost/Hour:	\$37.67	100
Ripper Ownership Cost/Hour:	\$0.00	NA
Ripper Operating Cost/Hour:	\$0.00	
Operator Cost/Hour:	\$28.56	NA
Total Unit Cost/Hour:	\$113.24	
Total Fleet Cost/Hour:	<b>\$113.24</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 12.30 acres

Source of estimated acreage: TR10 application

### HOURLY PRODUCTION

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

#### Job Condition Correction Factors

Site Altitude: 5600 feet

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

Adjusted Hourly Unit Production: 1.3745 acres/Hour

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

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **8.95** Hours

Unit cost: \$82.38 per acre Total job cost: **\$1,013**

## BULLDOZER RIPPING WORK

Task description: **Phase 1- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: **TR10** Permit/Job#: **M1977193**

### PROJECT IDENTIFICATION

Task #: **130** State: **Colorado** Abbreviation: **None**  
Date: **8/16/2021** County: **Fremont** Filename: **M193-130**  
User: **BFB**

Agency or organization name: **DRMS**

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$81.02	NA
Operating Cost/Hour:	\$79.33	100
Ripper Ownership Cost/Hour:	\$9.32	NA
Ripper Operating Cost/Hour:	\$5.93	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$216.90	
Total Fleet Cost/Hour:	<b>\$216.90</b>	

### MATERIAL QUANTITIES

Selected estimating method: **Area**

#### Alternate Methods:

Seismic: **NA** Bank Volume: **NA** BCY **NA**  
Area: **123.30** acres Rip Depth (ft): **1.00** Volume: **198,924** BCY or CCY

Source of estimated quantity: **TR10 Application**

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: **NA** feet/second

#### Area:

Average Ripping Depth: **2.45** feet/pass  
Average Ripping Width: **6.50** feet/pass  
Average Ripping Length: **400.00** feet/pass  
Average Dozer Speed: **88.00** feet/minute  
Average Maneuver Time: **0.25** minutes/pass  
Production per unit area: **0.747** acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: **0.747** Acres/hr  
Site Altitude: **5,600** feet  
Altitude Adj: **1.00** (CAT HB)  
Job Efficiency: **0.83** (1 shift/day)  
Net Correction: **0.83** multiplier

Adjusted Hourly Unit Production: **0.62** Acres/hr  
Adjusted Hourly Fleet Production: **0.62** Acres/hr

### JOB TIME AND COST

Fleet size: **1** Grader(s) Total job time: **198.92** Hours

Unit cost: **\$349.925** Per acre Total job cost: **\$43,146**

**REVEGETATION WORK**Task description: Phase 1- Reseed Dist Area (pit flr, borrow area & rd easm't)Site: T.H.E. Aggregate SourcePermit Action: TR10Permit/Job#: M1977193**PROJECT IDENTIFICATION**Task #: 140  
Date: 8/16/2021  
User: BFBState: Colorado  
County: FremontAbbreviation: None  
Filename: M193-140Agency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	\$0.29	\$87.00
Composted manure DRMS Survey	2,000.00	pound	\$0.02	\$47.40
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$134.40</b>

**Application**

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	\$27.44
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$66.21</b>

**TILLING**

Description	Cost /Acre
Chisel plowing {DMG}	\$96.50
<b>Total Tilling Cost/Acre</b>	<b>\$96.50</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	\$7.99
Indian Ricegrass - Nespar	1.50	4.86	\$13.31
Sideoats Grama - Butte	2.50	8.21	\$22.50
Juniper, Single Seed	1.00	0.29	\$75.33
Crested Wheatgrass - Standard	0.50	2.30	\$2.08
Pine, Pinyon	1.00	0.03	\$29.50
Mahogany, Mountain	1.50	2.03	\$55.21
Needle and Thread	1.50	3.96	\$62.78
Western Wheatgrass - Native	1.00	2.53	\$6.00



Saltbush, Four Wing	2.50	3.44	\$31.25
Winter Fat	1.50	3.82	\$30.75
<b>Totals Seed Mix</b>	<b>15.00</b>	<b>39.63</b>	<b>\$336.69</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
<b>Total Mulch Materials Cost/Acre</b>				<b>\$614.04</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
<b>Total Mulch Application Cost/Acre</b>	<b>\$177.86</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres:	123.3	Cost /Acre:	\$1,657.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,657.70
*Selected Replanting Work Items:	FERTILIZING,TILLING,SEEDING,MU LCHING		
Initial Job Cost:	<b>\$204,394.41</b>		
Reseeding Job Cost:	<b>\$102,197.21</b>		
Total Job Cost:	<b>\$306,592</b>		
Job Hours:	<b>123.00</b>		

**DOZERGRADER WORK**Task description: **Phase 1- Bench Ditch Maintenance**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **150**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-150**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D5K2 XL - 5P**

Horsepower: \_\_\_\_\_

Blade Type: \_\_\_\_\_

Attachment: **NA**Shift Basis: **1 per day**

Data Source: \_\_\_\_\_

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$36.53	NA
Operating Cost/Hour:	\$36.50	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$114.33**Total Fleet Cost/Hour: **\$114.33****JOB TIME AND COST**Fleet size: **1 Dozer(s)**Unit cost: **\$114.33/LCY**Total job time: **5.00 Hours**Total job cost: **\$572**

## DEMOLITION WORK

Task description: **Permanent Structure Demolition**

Site: **T.H.E. Aggregate Source**

Permit Action: **TR10**

Permit/Job#: **M1977193**

### PROJECT IDENTIFICATION

Task #: **170**

State: **Colorado**

Abbreviation: **None**

Date: **8/17/2021**

County: **Fremont**

Filename: **M193-170**

User: **BFB**

Agency or organization name: **DRMS**

### UNIT COSTS

**Location adjustment: 94.10 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Existing Office - single story	30'x40'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	9,600.00	CF	\$0.36	\$3,427.20
Existing Office Floor	30'x40'	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,200.00	SF	\$0.96	\$1,152.00
Office Addition - 2-story portion ONLY	30'x40'x16'	Bldg. (MN) demo./off-site disposal in approved landfill - Max. 15 mile haul	19,200.00	CF	\$0.38	\$7,296.00
Office Addition Mech. Room	8.5'x10'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	680.00	CF	\$0.36	\$242.76
Office Addition Vault (conc.)	9.5'x10'x8'	Bldg. (SC) demo./off-site disposal in approved landfill - Max. 15 mile haul	760.00	CF	\$0.61	\$462.84
Office Addition Floor	30'x40'+18'x10'	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,380.00	SF	\$0.96	\$1,324.80
Water Tank Stor. bldg #1 (dirt floor)	35'x20'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	5,600.00	CF	\$0.36	\$1,999.20
Water Tank Stor. bldg #2 (dirt floor)	35'x15'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	4,200.00	CF	\$0.36	\$1,499.40
Remove Pavement from Cañon City prop.	1000'x30'	Pavement, bituminous, demolition only - 3 in. thick	3,333.00	SY	\$4.66	\$15,531.78
Truck Scale Pit Floors (2)	70'x10' each	Demo. and on-site disposal in existing pit, 6 in. thick - Max. 10,000 ft. haul	1,400.00	SF	\$1.00	\$1,401.40
Truck Scale Pit Foundation	70'x20'	Demo. and on-site disposal in existing pit, 1.0 ft. x 2 ft. - Max. 10,000 ft. haul	180.00	LF	\$4.00	\$720.00

Job Hours: **80.00**

**Subtotal**  
(unadjusted): **\$35,057.38**

**Total Cost**  
(adjusted for location): **\$32,988.99**

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mob/Demob**Site: **T.H.E. Aggregate Source**Permit Action: TR10Permit/Job#: M1977193**PROJECT IDENTIFICATION**Task #: 190State: ColoradoAbbreviation: NoneDate: 8/17/2021County: FremontFilename: M193-190User: BFBAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per dayCost Data Source: CRG DataTruck 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:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
Ownership Cost/Hour:	\$21.28	\$37.94	\$47.67
Operating Cost/Hour:	\$26.55	\$50.48	\$56.21
Operator Cost/Hour:	\$20.54	\$20.54	\$20.54
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$68.37	\$132.49	\$147.95

**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 631G	52.50	\$147.77	\$147.95	1	\$295.72	\$147.95	\$250.00
Cat D7R DS XR Series II	32.01	\$81.02	\$132.49	1	\$213.51	\$132.49	\$250.00
CAT 12M	16.01	\$47.01	\$68.37	1	\$115.38	\$68.37	\$250.00
Cat D5K2 XL - 5P	11.15	\$36.53	\$68.37	1	\$104.90	\$68.37	\$250.00
Subtotals:					<b>\$729.51</b>	<b>\$417.18</b>	<b>\$1,000.00</b>

**ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Drill/Broadcast Seeder with Tractor	\$16.28	1	\$16.28	\$16.28
Power Mulcher (Bowie LD-90)	\$33.28	1	\$33.28	\$33.28
Subtotals:			<b>\$49.56</b>	<b>\$49.56</b>

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: CAÑON CITY  
 Total one-way travel distance: 3.00 miles  
 Average Travel Speed: 30.00 mph

Total Non-Roadable Mob/Demob Cost \* \$2,958.85  
 \* two round trips with haul rig:  
 Total Roadable Mob/Demob Cost \*\* \$9.91  
 \*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.10	0.10
Return Time (Hours):	0.10	0.10
Loading Time (Hours):	0.25	NA
Unloading Time (Hours):	0.25	NA
Subtotals:	0.70	0.20

**JOB TIME AND COST**

Total job time: 1.40 Hours

Total job cost: \$2,969

**SCRAPER TEAM WORK**Task description: **Phase 2 BLM- Replace Topsoil (12" over 14.3 ac)**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **210**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-210**User: **BFB**Agency 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:	\$147.77	NA	NA	NA	NA	NA
Operating cost/hour:	\$141.36	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:	\$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	\$320.03	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work: \$320.03		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$320.03****MATERIAL QUANTITIES**Initial volume: **23,071**

CCY

Swell factor: **1.125**Loose volume: **25,955**

LCY

Source of estimated volume: **TR10 application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b>2,650 lbs/LCY</b>	Struck Volume:	<b>24.00</b>	LCY
Material description:	<b>Decomposed rock - 25% Rock, 75% Earth</b>	Heaped Volume:	<b>34.00</b>	LCY
Rated Payload:	<b>81,600 pounds</b>	Average Volume:	<b>29.00</b>	LCY
Payload Capacity:	<b>30.79 LCY</b>	Adjusted Capacity:	<b>29.00</b>	LCY

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

Site Altitude: 5600 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	500.00	3.00	5.00	8.00	783	0.67

Haul Time: 0.67 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: 0.36 minutesTotal Scraper team cycle time: 2.53 minutesAdjusted for job conditions: 570.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 570.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 570.83 LCY/HourUnadjusted unit production/hour: 687.75 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 45.47 HoursUnit cost: \$0.561 /LCYTotal job cost: \$14,551

## MOTOR GRADER WORK

Task description: Phase 2 BLM- Rough Grade Topsoil (10% of Task 210 area)

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 220 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-220  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158  
Ripper Attachment:  Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$47.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$37.67</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>\$28.56</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$113.24</u>	
Total Fleet Cost/Hour:	<u><b>\$113.24</b></u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.43 acres

Source of estimated acreage: TR10 application

### HOURLY PRODUCTION

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

#### Job Condition Correction Factors

Site Altitude: 5600 feet

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

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

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.04** Hours

Unit cost: \$82.38 per acre Total job cost: **\$118**



## BULLDOZER RIPPING WORK

Task description: Phase 2 BLM- Rip Pit Floor

Site: T.H.E. Aggregate Source Permit Action: TR10 Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 230 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-230  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$81.02	NA
Operating Cost/Hour:	\$79.33	100
Ripper Ownership Cost/Hour:	\$9.32	NA
Ripper Operating Cost/Hour:	\$5.93	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$216.90	
Total Fleet Cost/Hour:	<b>\$216.90</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 14.30 acres Rip Depth (ft): 1.00 Volume: 23,071 BCY or CCY

Source of estimated quantity: TR10 Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 1.00 feet/pass  
Average Ripping Width: 6.50 feet/pass  
Average Ripping Length: 400.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.747 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr  
Site Altitude: 5,600 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr  
Adjusted Hourly Fleet Production: **0.62** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **23.07** Hours

Unit cost: \$349.925 Per acre Total job cost: **\$5,004**

**REVEGETATION WORK**Task description: **Phase 2 BLM- Reseed**Site: **T.H.E. Aggregate Source**Permit Action: TR10Permit/Job#: M1977193**PROJECT IDENTIFICATION**Task #: 240State: ColoradoAbbreviation: NoneDate: 8/16/2021County: FremontFilename: M193-240User: BFBAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	\$0.29	\$87.00
Composted manure DRMS Survey	2,000.00	pound	\$0.02	\$47.40
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$134.40</b>

**Application**

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	\$27.44
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$66.21</b>

**TILLING**

Description	Cost /Acre
Chisel plowing {DMG}	\$96.50
<b>Total Tilling Cost/Acre</b>	<b>\$96.50</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	\$7.99
Indian Ricegrass - Nespar	1.50	4.86	\$13.31
Sideoats Grama - Butte	2.50	8.21	\$22.50
Juniper, Single Seed	1.00	0.29	\$75.33
Crested Wheatgrass - Standard	0.50	2.30	\$2.08
Pine, Pinyon	1.00	0.03	\$29.50
Mahogany, Mountain	1.50	2.03	\$55.21
Needle and Thread	1.50	3.96	\$62.78
Western Wheatgrass - Native	1.00	2.53	\$6.00

Saltbush, Four Wing	2.50	3.44	\$31.25
Winter Fat	1.50	3.82	\$30.75
<b>Totals Seed Mix</b>	<b>15.00</b>	<b>39.63</b>	<b>\$336.69</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
<b>Total Mulch Materials Cost/Acre</b>				<b>\$614.04</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
<b>Total Mulch Application Cost/Acre</b>	<b>\$177.86</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 14.3                      Cost /Acre: \$1,657.70  
 Estimated Failure Rate: 50%                      Cost /Acre\*: \$1,657.70  
 \*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MU  
    LCHING

Initial Job Cost: **\$23,705.11**  
 Reseeding Job Cost: **\$11,852.56**  
 Total Job Cost: **\$35,558**  
 Job Hours: **14.00**

**DOZERGRADER WORK**Task description: **Phase 2 BLM- Bench Ditch Maintenance**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **250**State: **Colorado**Abbreviation: **None**Date: **8/17/2021**County: **Fremont**Filename: **M193-250**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D5K2 XL - 5P**

Horsepower: \_\_\_\_\_

Blade Type: \_\_\_\_\_

Attachment: **NA**Shift Basis: **1 per day**

Data Source: \_\_\_\_\_

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$36.53	NA
Operating Cost/Hour:	\$36.50	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$114.33**Total Fleet Cost/Hour: **\$114.33****JOB TIME AND COST**Fleet size: **1 Dozer(s)**Unit cost: **\$114.33/LCY**Total job time: **2.00 Hours**Total job cost: **\$229**

**SCRAPER TEAM WORK**Task description: **Phase 3 BLM- Replace Topsoil (12" over 7.8 ac)**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **310**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-310**User: **BFB**Agency 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:	\$147.77	NA	NA	NA	NA	NA
Operating cost/hour:	\$141.36	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:	\$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	\$320.03	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work: \$320.03		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$320.03****MATERIAL QUANTITIES**Initial volume: **12,584**

CCY

Swell factor: **1.125**Loose volume: **14,157**

LCY

Source of estimated volume: **TR10 application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b>2,650 lbs/LCY</b>	Struck Volume:	<b>24.00</b>	LCY
Material description:	<b>Decomposed rock - 25% Rock, 75% Earth</b>	Heaped Volume:	<b>34.00</b>	LCY
Rated Payload:	<b>81,600 pounds</b>	Average Volume:	<b>29.00</b>	LCY
Payload Capacity:	<b>30.79 LCY</b>	Adjusted Capacity:	<b>29.00</b>	LCY

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

Site Altitude: 5600 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	500.00	3.00	5.00	8.00	783	0.67

Haul Time: 0.67 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: 0.36 minutesTotal Scraper team cycle time: 2.53 minutesAdjusted for job conditions: 570.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 570.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 570.83 LCY/HourUnadjusted unit production/hour: 687.75 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 24.80 HoursUnit cost: \$0.561 /LCYTotal job cost: \$7,937

## MOTOR GRADER WORK

Task description: Phase 3 BLM- Rough Grade Topsoil (10% of Task 310 area)

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 320 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-320  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158  
Ripper Attachment: \_\_\_\_\_ Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$47.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$37.67</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>\$28.56</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$113.24</u>	
Total Fleet Cost/Hour:	<u>\$113.24</u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.78 acres

Source of estimated acreage: TR10 application

### HOURLY PRODUCTION

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

#### Job Condition Correction Factors

Site Altitude: 5600 feet

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

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

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 0.57 Hours

Unit cost: \$82.38 per acre Total job cost: \$64

## BULLDOZER RIPPING WORK

Task description: Phase 3 BLM- Rip Pit Floor

Site: T.H.E. Aggregate Source Permit Action: TR10 Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 330 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-330  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$81.02	NA
Operating Cost/Hour:	\$79.33	100
Ripper Ownership Cost/Hour:	\$9.32	NA
Ripper Operating Cost/Hour:	\$5.93	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$216.90	
Total Fleet Cost/Hour:	<b>\$216.90</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 7.80 acres Rip Depth (ft): 1.00 Volume: 12,584 BCY or CCY

Source of estimated quantity: TR10 Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 1.00 feet/pass  
Average Ripping Width: 6.50 feet/pass  
Average Ripping Length: 400.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.747 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr  
Site Altitude: 5,600 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr  
Adjusted Hourly Fleet Production: **0.62** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **12.58** Hours

Unit cost: \$349.925 Per acre Total job cost: **\$2,729**



**REVEGETATION WORK**Task description: **Phase 3 BLM- Reseed**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **340**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-340**User: **BFB**Agency or organization name: **DRMS****FERTILIZING****Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
6-24-24, 10-20-10, 15-15-15	300.00	pound	\$0.29	\$87.00
Composted manure DRMS Survey	2,000.00	pound	\$0.02	\$47.40
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$134.40</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Tractor spreader (MEANS 32 91 13.16 0950)	\$27.44
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$66.21</b>

**TILLING**

<b>Description</b>	<b>Cost /Acre</b>
Chisel plowing {DMG}	\$96.50
<b>Total Tilling Cost/Acre</b>	<b>\$96.50</b>

**SEEDING**

<b>Seed Mix</b>	<b>Rate – PLS LBS / Acre</b>	<b>Seeds per SQ. FT</b>	<b>Cost /Acre</b>
Blue Grama - Hachita	0.50	8.16	\$7.99
Indian Ricegrass - Nespar	1.50	4.86	\$13.31
Sideoats Grama - Butte	2.50	8.21	\$22.50
Juniper, Single Seed	1.00	0.29	\$75.33
Crested Wheatgrass - Standard	0.50	2.30	\$2.08
Pine, Pinyon	1.00	0.03	\$29.50
Mahogany, Mountain	1.50	2.03	\$55.21
Needle and Thread	1.50	3.96	\$62.78
Western Wheatgrass - Native	1.00	2.53	\$6.00

Saltbush, Four Wing	2.50	3.44	\$31.25
Winter Fat	1.50	3.82	\$30.75
<b>Totals Seed Mix</b>	15.00	39.63	<b>\$336.69</b>

**Application**

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
<b>Total Mulch Materials Cost/Acre</b>				<b>\$614.04</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
<b>Total Mulch Application Cost/Acre</b>	<b>\$177.86</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 7.8 Cost /Acre: \$1,657.70  
 Estimated Failure Rate: 50% Cost /Acre\*: \$1,657.70  
 \*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MU  
LCHING

Initial Job Cost: \$12,930.06  
 Reseeding Job Cost: \$6,465.03  
 Total Job Cost: \$19,395  
 Job Hours: 8.00

**DOZERGRADER WORK**Task description: **Phase 3 BLM- Bench Ditch Maintenance**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **350**State: **Colorado**Abbreviation: **None**Date: **8/17/2021**County: **Fremont**Filename: **M193-350**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D5K2 XL - 5P**

Horsepower: \_\_\_\_\_

Blade Type: \_\_\_\_\_

Attachment: **NA**Shift Basis: **1 per day**

Data Source: \_\_\_\_\_

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$36.53	NA
Operating Cost/Hour:	\$36.50	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$114.33**Total Fleet Cost/Hour: **\$114.33****JOB TIME AND COST**Fleet size: **1 Dozer(s)**Unit cost: **\$114.33/LCY**Total job time: **3.45 Hours**Total job cost: **\$394**

**SCRAPER TEAM WORK**Task description: **Phase 4 BLM- Replace Topsoil (12" over 7.1 ac)**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **410**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-410**User: **BFB**Agency 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:	\$147.77	NA	NA	NA	NA	NA
Operating cost/hour:	\$141.36	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:	\$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	\$320.03	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work: \$320.03		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$320.03****MATERIAL QUANTITIES**Initial volume: **11,454**

CCY

Swell factor: **1.125**Loose volume: **12,886**

LCY

Source of estimated volume: **TR10 application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b>2,650 lbs/LCY</b>	Struck Volume:	<b>24.00</b>	LCY
Material description:	<b>Decomposed rock - 25% Rock, 75% Earth</b>	Heaped Volume:	<b>34.00</b>	LCY
Rated Payload:	<b>81,600 pounds</b>	Average Volume:	<b>29.00</b>	LCY
Payload Capacity:	<b>30.79 LCY</b>	Adjusted Capacity:	<b>29.00</b>	LCY

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

Site Altitude: 5600 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	500.00	3.00	5.00	8.00	783	0.67

Haul Time: 0.67 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: 0.36 minutesTotal Scraper team cycle time: 2.53 minutesAdjusted for job conditions: 570.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 570.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 570.83 LCY/HourUnadjusted unit production/hour: 687.75 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 22.57 HoursUnit cost: \$0.561 /LCYTotal job cost: \$7,224

## MOTOR GRADER WORK

Task description: Phase 4 BLM- Rough Grade Topsoil (10% of Task 410 area)

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 420 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-420  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158  
Ripper Attachment: \_\_\_\_\_ Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$47.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$37.67</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>\$28.56</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$113.24</u>	
Total Fleet Cost/Hour:	<u><b>\$113.24</b></u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.71 acres

Source of estimated acreage: TR10 application

### HOURLY PRODUCTION

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

#### Job Condition Correction Factors

Site Altitude: 5600 feet

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

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

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.52** Hours

Unit cost: \$82.38 per acre Total job cost: **\$58**

## BULLDOZER RIPPING WORK

Task description: Phase 4 BLM- Rip Pit Floor

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 430

State: Colorado

Abbreviation: None

Date: 8/16/2021

County: Fremont

Filename: M193-430

User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II  
Ripper Attachment: 3-Shank Ripper

Horsepower: 240  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$81.02	NA
Operating Cost/Hour:	\$79.33	100
Ripper Ownership Cost/Hour:	\$9.32	NA
Ripper Operating Cost/Hour:	\$5.93	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$216.90	
Total Fleet Cost/Hour:	<b>\$216.90</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 7.10 acres Rip Depth (ft): 1.00 Volume: 11,455 BCY or CCY

Source of estimated quantity: TR10 Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 1.00 feet/pass  
Average Ripping Width: 6.50 feet/pass  
Average Ripping Length: 400.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.747 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr  
Site Altitude: 5,600 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr  
Adjusted Hourly Fleet Production: **0.62** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **11.45** Hours

Unit cost: \$349.925 Per acre Total job cost: **\$2,484**

**REVEGETATION WORK**Task description: **Phase 4 BLM- Reseed**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **440**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-440**User: **BFB**Agency or organization name: **DRMS****FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost / Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	\$0.29	\$87.00
Composted manure DRMS Survey	2,000.00	pound	\$0.02	\$47.40
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$134.40</b>

**Application**

Description	Cost / Acre
Tractor spreader (MEANS 32 91 13.16 0950)	\$27.44
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$66.21</b>

**TILLING**

Description	Cost / Acre
Chisel plowing {DMG}	\$96.50
<b>Total Tilling Cost/Acre</b>	<b>\$96.50</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost / Acre
Blue Grama - Hachita	0.50	8.16	\$7.99
Indian Ricegrass - Nespar	1.50	4.86	\$13.31
Sideoats Grama - Butte	2.50	8.21	\$22.50
Juniper, Single Seed	1.00	0.29	\$75.33
Crested Wheatgrass - Standard	0.50	2.30	\$2.08
Pine, Pinyon	1.00	0.03	\$29.50
Mahogany, Mountain	1.50	2.03	\$55.21
Needle and Thread	1.50	3.96	\$62.78
Western Wheatgrass - Native	1.00	2.53	\$6.00



Saltbush, Four Wing	2.50	3.44	\$31.25
Winter Fat	1.50	3.82	\$30.75
<b>Totals Seed Mix</b>	<b>15.00</b>	<b>39.63</b>	<b>\$336.69</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
<b>Total Mulch Materials Cost/Acre</b>				<b>\$614.04</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
<b>Total Mulch Application Cost/Acre</b>	<b>\$177.86</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 7.1 Cost /Acre: \$1,657.70  
 Estimated Failure Rate: 50% Cost /Acre\*: \$1,657.70  
 \*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MU  
LCHING

Initial Job Cost: **\$11,769.67**  
 Reseeding Job Cost: **\$5,884.84**  
 Total Job Cost: **\$17,655**  
 Job Hours: **7.00**

**DOZERGRADER WORK**Task description: **Phase 4 BLM- Bench Ditch Maintenance**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **450**State: **Colorado**Abbreviation: **None**Date: **8/17/2021**County: **Fremont**Filename: **M193-450**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D5K2 XL - 5P**

Horsepower: \_\_\_\_\_

Blade Type: \_\_\_\_\_

Attachment: **NA**Shift Basis: **1 per day**

Data Source: \_\_\_\_\_

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$36.53	NA
Operating Cost/Hour:	\$36.50	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$114.33**Total Fleet Cost/Hour: **\$114.33****JOB TIME AND COST**Fleet size: **1 Dozer(s)**Unit cost: **\$114.33/LCY**Total job time: **3.22 Hours**Total job cost: **\$368**

**SCRAPER TEAM WORK**Task description: **Phase 5 BLM- Replace Topsoil (12" over 2.7 ac)**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **501**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-501**User: **BFB**Agency 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:	\$147.77	NA	NA	NA	NA	NA
Operating cost/hour:	\$141.36	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:	\$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	\$320.03	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work: \$320.03		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$320.03****MATERIAL QUANTITIES**Initial volume: **4,356**

CCY

Swell factor: **1.125**Loose volume: **4,901**

LCY

Source of estimated volume: **TR10 application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	2,650 lbs/LCY	Struck Volume:	24.00	LCY
Material description:	Decomposed rock - 25% Rock, 75% Earth	Heaped Volume:	34.00	LCY
Rated Payload:	81,600 pounds	Average Volume:	29.00	LCY
Payload Capacity:	30.79 LCY	Adjusted Capacity:	29.00	LCY

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

Site Altitude: 5600 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	500.00	3.00	5.00	8.00	783	0.67

Haul Time: 0.67 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: 0.36 minutesTotal Scraper team cycle time: 2.53 minutesAdjusted for job conditions: 570.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 570.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 570.83 LCY/HourUnadjusted unit production/hour: 687.75 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 8.58 HoursUnit cost: \$0.561 /LCYTotal job cost: \$2,747

## MOTOR GRADER WORK

Task description: Phase 5 BLM- Rough Grade Topsoil (10% of Task 501 area)

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 502 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-502  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158  
Ripper Attachment: \_\_\_\_\_ Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$47.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$37.67</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>\$28.56</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$113.24</u>	
Total Fleet Cost/Hour:	<u>\$113.24</u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.71 acres

Source of estimated acreage: TR10 application

### HOURLY PRODUCTION

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

#### Job Condition Correction Factors

Site Altitude: 5600 feet

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

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

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 0.52 Hours

Unit cost: \$82.38 per acre Total job cost: \$58

## BULLDOZER RIPPING WORK

Task description: Phase 5 BLM- Rip Pit Floor

Site: T.H.E. Aggregate Source Permit Action: TR10 Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 503 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-503  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$81.02</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$79.33</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$9.32</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$5.93</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$216.90</u>	
Total Fleet Cost/Hour:	<u><b>\$216.90</b></u>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 2.70 acres Rip Depth (ft): 1.00 Volume: 4,356 BCY or CCY

Source of estimated quantity: TR10 Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 1.00 feet/pass  
Average Ripping Width: 6.50 feet/pass  
Average Ripping Length: 400.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.747 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr  
Site Altitude: 5,600 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr  
Adjusted Hourly Fleet Production: **0.62** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **4.36** Hours

Unit cost: \$349.925 Per acre Total job cost: **\$945**

**REVEGETATION WORK**Task description: **Phase 5 BLM- Reseed**Site: **T.H.E. Aggregate Source**Permit Action: TR10Permit/Job#: M1977193**PROJECT IDENTIFICATION**Task #: 504State: ColoradoAbbreviation: NoneDate: 8/16/2021County: FremontFilename: M193-504User: BFBAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	\$0.29	\$87.00
Composted manure DRMS Survey	2,000.00	pound	\$0.02	\$47.40
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$134.40</b>

**Application**

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	\$27.44
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$66.21</b>

**TILLING**

Description	Cost /Acre
Chisel plowing {DMG}	\$96.50
<b>Total Tilling Cost/Acre</b>	<b>\$96.50</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	\$7.99
Indian Ricegrass - Nespar	1.50	4.86	\$13.31
Sideoats Grama - Butte	2.50	8.21	\$22.50
Juniper, Single Seed	1.00	0.29	\$75.33
Crested Wheatgrass - Standard	0.50	2.30	\$2.08
Pine, Pinyon	1.00	0.03	\$29.50
Mahogany, Mountain	1.50	2.03	\$55.21
Needle and Thread	1.50	3.96	\$62.78
Western Wheatgrass - Native	1.00	2.53	\$6.00

Saltbush, Four Wing	2.50	3.44	\$31.25
Winter Fat	1.50	3.82	\$30.75
<b>Totals Seed Mix</b>	15.00	39.63	<b>\$336.69</b>

**Application**

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
<b>Total Mulch Materials Cost/Acre</b>				<b>\$614.04</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
<b>Total Mulch Application Cost/Acre</b>	<b>\$177.86</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 2.7 Cost /Acre: \$1,657.70  
 Estimated Failure Rate: 50% Cost /Acre\*: \$1,657.70  
 \*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MU  
LCHING

Initial Job Cost: **\$4,475.79**  
 Reseeding Job Cost: **\$2,237.90**  
 Total Job Cost: **\$6,714**  
 Job Hours: **3.00**



**DOZERGRADER WORK**Task description: **Phase 5 BLM- Bench Ditch Maintenance**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **505**State: **Colorado**Abbreviation: **None**Date: **8/17/2021**County: **Fremont**Filename: **M193-505**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D5K2 XL - 5P**

Horsepower: \_\_\_\_\_

Blade Type: \_\_\_\_\_

Attachment: **NA**Shift Basis: **1 per day**

Data Source: \_\_\_\_\_

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$36.53	NA
Operating Cost/Hour:	\$36.50	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$114.33**Total Fleet Cost/Hour: **\$114.33****JOB TIME AND COST**Fleet size: **1 Dozer(s)**Unit cost: **\$114.33/LCY**Total job time: **4.49 Hours**Total job cost: **\$513**

**SCRAPER TEAM WORK**Task description: **Phase 5 Tezak- Replace Topsoil (12" over 17.3 ac)**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **551**State: **Colorado**Abbreviation: **None**Date: **8/16/2021**County: **Fremont**Filename: **M193-551**User: **BFB**Agency 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:	\$147.77	NA	NA	NA	NA	NA
Operating cost/hour:	\$141.36	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:	\$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	\$320.03	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	\$320.03	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$320.03****MATERIAL QUANTITIES**Initial volume: **27,911**

CCY

Swell factor: **1.125**Loose volume: **31,400**

LCY

Source of estimated volume: **TR10 application**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b>2,650 lbs/LCY</b>	Struck Volume:	<b>24.00</b>	LCY
Material description:	<b>Decomposed rock - 25% Rock, 75% Earth</b>	Heaped Volume:	<b>34.00</b>	LCY
Rated Payload:	<b>81,600 pounds</b>	Average Volume:	<b>29.00</b>	LCY
Payload Capacity:	<b>30.79 LCY</b>	Adjusted Capacity:	<b>29.00</b>	LCY

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

Site Altitude: 5600 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	500.00	3.00	5.00	8.00	783	0.67

Haul Time: 0.67 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: 0.36 minutesTotal Scraper team cycle time: 2.53 minutesAdjusted for job conditions: 570.83 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 570.83 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 570.83 LCY/HourUnadjusted unit production/hour: 687.75 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 55.01 HoursUnit cost: \$0.561 /LCYTotal job cost: \$17,604

## MOTOR GRADER WORK

Task description: Phase 5 Tezak- Rough Grade (10% of Task 551 area)

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 552 State: Colorado Abbreviation: None  
Date: 8/16/2021 County: Fremont Filename: M193-552  
User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158  
Ripper Attachment:  Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$47.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$37.67</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>\$28.56</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$113.24</u>	
Total Fleet Cost/Hour:	<u>\$113.24</u>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.73 acres

Source of estimated acreage: TR10 application

### HOURLY PRODUCTION

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

#### Job Condition Correction Factors

Site Altitude: 5600 feet

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

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

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 1.26 Hours

Unit cost: \$82.38 per acre Total job cost: \$143

## BULLDOZER RIPPING WORK

Task description: Phase 5 Tezak- Rip Pit Floor

Site: T.H.E. Aggregate Source

Permit Action: TR10

Permit/Job#: M1977193

### PROJECT IDENTIFICATION

Task #: 553

State: Colorado

Abbreviation: None

Date: 8/16/2021

County: Fremont

Filename: M193-553

User: BFB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II  
Ripper Attachment: 3-Shank Ripper

Horsepower: 240  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$81.02	NA
Operating Cost/Hour:	\$79.33	100
Ripper Ownership Cost/Hour:	\$9.32	NA
Ripper Operating Cost/Hour:	\$5.93	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$216.90	
Total Fleet Cost/Hour:	<b>\$216.90</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 17.30 acres Rip Depth (ft): 1.00 Volume: 27,911 BCY or CCY

Source of estimated quantity: TR10 Application

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 1.00 feet/pass  
Average Ripping Width: 6.50 feet/pass  
Average Ripping Length: 400.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.747 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr  
Site Altitude: 5,600 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr  
Adjusted Hourly Fleet Production: **0.62** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **27.91** Hours

Unit cost: \$349.925 Per acre Total job cost: **\$6,054**

**REVEGETATION WORK**Task description: **Phase 5 Tezak- Reseed**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **554**  
Date: **8/16/2021**  
User: **BFB**State: **Colorado**  
County: **Fremont**Abbreviation: **None**  
Filename: **M193-554**Agency or organization name: **DRMS****FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	\$0.29	\$87.00
Composted manure DRMS Survey	2,000.00	pound	\$0.02	\$47.40
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$134.40</b>

**Application**

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	\$27.44
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$66.21</b>

**TILLING**

Description	Cost /Acre
Chisel plowing {DMG}	\$96.50
<b>Total Tilling Cost/Acre</b>	<b>\$96.50</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	\$7.99
Indian Ricegrass - Nespar	1.50	4.86	\$13.31
Sideoats Grama - Butte	2.50	8.21	\$22.50
Juniper, Single Seed	1.00	0.29	\$75.33
Crested Wheatgrass - Standard	0.50	2.30	\$2.08
Pine, Pinyon	1.00	0.03	\$29.50
Mahogany, Mountain	1.50	2.03	\$55.21
Needle and Thread	1.50	3.96	\$62.78
Western Wheatgrass - Native	1.00	2.53	\$6.00

Saltbush, Four Wing	2.50	3.44	\$31.25
Winter Fat	1.50	3.82	\$30.75
<b>Totals Seed Mix</b>	<b>15.00</b>	<b>39.63</b>	<b>\$336.69</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$307.02	\$614.04
<b>Total Mulch Materials Cost/Acre</b>				<b>\$614.04</b>

**Application**

<b>Description</b>	<b>Cost /Acre</b>
Crimping, with tractor {DMG survey data}	\$71.57
Power mulcher (MEANS 32 91 13.16 0350)	\$106.29
<b>Total Mulch Application Cost/Acre</b>	<b>\$177.86</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 17.3 Cost /Acre: \$1,657.70  
 Estimated Failure Rate: 50% Cost /Acre\*: \$1,657.70  
 \*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MU  
LCHING

Initial Job Cost: \$28,678.21  
 Reseeding Job Cost: \$14,339.11  
 Total Job Cost: \$43,017  
 Job Hours: 17.00

**DOZERGRADER WORK**Task description: **Phase 5 Tezak- Bench Ditch Maintenance**Site: **T.H.E. Aggregate Source**Permit Action: **TR10**Permit/Job#: **M1977193****PROJECT IDENTIFICATION**Task #: **555**State: **Colorado**Abbreviation: **None**Date: **8/17/2021**County: **Fremont**Filename: **M193-555**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D5K2 XL - 5P**

Horsepower: \_\_\_\_\_

Blade Type: \_\_\_\_\_

Attachment: **NA**Shift Basis: **1 per day**

Data Source: \_\_\_\_\_

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$36.53	NA
Operating Cost/Hour:	\$36.50	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$114.33**Total Fleet Cost/Hour: **\$114.33****JOB TIME AND COST**Fleet size: **1 Dozer(s)**Unit cost: **\$114.33/LCY**Total job time: **2.42 Hours**Total job cost: **\$277**