

COST SUMMARY WORKTask description: **Cost Summary**Site: **Tucson South Resource**Permit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**Task #: 000State: ColoradoAbbreviation: NoneDate: 11/15/2019County: AdamsFilename: M044-000User: JLEAgency or organization name: DRMS**TASK LIST (DIRECT COSTS)**

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill remaining East Cell mining face and side slopes	LOADER	2	78.41	\$49,073
002	Rough grade disturbed area in East Cell (85' x 2300')	GRADER	1	1.95	\$404
003	Replace topsoil on backfilled mining cell area above HWL	SCRAPER1	1	45.69	\$63,272
004	Final grade East Cell (85' x 2300') + (800'+100')	GRADER	1	2.76	\$571
005	Excavate, haul and backfill material for South Mine Area	TRUCK1	1	1,582.44	\$2,285,607
006	Replace topsoil, South Cell	SCRAPER1	1	8.91	\$12,338
007	Replace topsoil on internal haul roads and main site ent.	SCRAPER1	1	1.82	\$2,518
008	Replace topsoil on conveyor route	SCRAPER1	1	3.10	\$4,288
009	Replace topsoil on stockpile areas	SCRAPER1	1	3.03	\$4,196
010	Scarify internal haul roads and conveyor route	GRADER	1	3.62	\$748
011	Final grade all miscellaneous areas (8.3 acres x .5')	GRADER	1	3.62	\$734
012	Revegetation of Affected Land	REVEGE	1	103.00	\$112,332
013	Mobilization	MOBILIZE	1	8.76	\$32,278
014	East Cell Slurry Wall, Contingency	NA	1	0.00	\$145,800
<u>SUBTOTALS:</u>				1847.11	\$2,714,159

INDIRECT COSTS**OVERHEAD AND PROFIT:**Liability insurance: 2.02Total = \$54,826Performance bond: 1.05Total = \$28,499Job superintendent: 923.55Total = \$64,085Profit: 10.00Total = \$271,416TOTAL O & P = \$418,826CONTRACT AMOUNT (direct + O & P) = \$3,132,985**LEGAL - ENGINEERING - PROJECT MANAGEMENT:**Financial warranty processing (legal/related costs): \$500Total = \$500Engineering work and/or contract/bid preparation: 4.25Total = \$133,152Reclamation management and/or administration: 5.00\$156,649

CONTINGENCY:	3.00	Total =	<u>\$81,425</u>
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TOTAL INDIRECT COST =	<u>\$790,552</u>
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TOTAL BOND AMOUNT (direct + indirect) =	<u>\$3,504,711</u>
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TOTAL Proposed Bond Amount =	<u>\$3,505,000</u>
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WHEEL LOADER – LOAD AND CARRY WORK

Task description: Backfill remaining East Cell mining face and side slopes

Site: Tucson South Resource

Permit Action: AM01_Nov2019

Permit/Job#: M2004044

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
 Date: 11/14/2019 County: Adams Filename: M044-001
 User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 990H Horsepower: 621
 Attachment 1: ROPS Cab Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$141.85	NA
Operating Cost/Hour:	\$135.12	100
Operator Cost/Hour:	\$35.93	NA
Total Unit Cost/Hour:	\$312.89	
Total Fleet Cost/Hour:	\$625.78	

MATERIAL QUANTITIES

Initial volume: 93,150 CCY Swell factor: 1.000
 Loose volume: 93,150 LCY

Source of estimated volume: Exhibit L
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.600 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.060	minutes
Adjusted Basic Cycle Time:		0.540	minutes

Rolling Resistance – Road Conditions

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	0.00	5.00	5.00	0.2493	(Cat HB)
Return Route:	300	0.00	5.00	5.00	0.2483	(Cat HB)

Total Travel Time: 0.4976 minutes
Total Cycle Time: 1.0376 minutes

Load Bucket Capacity

Rated Capacity: 11.25 LCY (heaped)
Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity: 12.38 LCY

Job Condition Correction Factors

Site Altitude: 4960 feet

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

Unadjusted Hourly Unit Production: 715.58 LCY/Hour
Adjusted Hourly Unit Production: 593.93 LCY/Hour
Adjusted Hourly Fleet Production: 1,187.86 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 78.42 Hours
Unit cost: \$0.527 /LCY Total job cost: \$49,073

MOTOR GRADER WORKTask description: **Rough grade disturbed area in East Cell (85' x 2300')**Site: **Tucson South Resource**Permit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**

Task #: 002 State: Colorado Abbreviation: None
 Date: 11/14/2019 County: Adams Filename: M044-002
 User: JLE

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

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

Cost Breakdown:

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

MATERIAL QUANTITIESTotal Area to be graded or ripped: 4.48 acresSource of estimated acreage: Exhibit L**HOURLY PRODUCTION**

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

Job Condition Correction FactorsSite Altitude: 4960 feet

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

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

JOB TIME AND COSTFleet size: 1 Grader(s) Total job time: 1.96 HoursUnit cost: \$90.16 per acre Total job cost: \$404

SCRAPER TEAM WORKTask description: **Replace topsoil on backfilled mining cell area above HWL**Site: **Tucson South Resource**Permit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 11/14/2019County: AdamsFilename: M044-003User: JLEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 10,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	25	25
Ownership cost/hour:	\$174.06	\$121.49	NA	NA	\$82.71	\$68.95
Operating cost/hour:	\$190.35	\$105.84	NA	NA	\$17.52	\$25.83
%Utilization-ripper:	NA	0	NA	NA	0	NA
Ripper own. cost/hour:	NA	\$13.94	NA	NA	\$4.44	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$45.58	\$39.98	NA	NA	\$45.39	\$38.86
Unit Subtotals:	\$409.98	\$281.24	NA	NA	\$150.05	\$133.64
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	\$1,101.20	Support:	\$0.00	Maint:	\$283.69

Total work team cost/hour: **\$1,384.89****MATERIAL QUANTITIES**Initial volume: 49,610

CCY

Swell factor: 1.000Loose volume: **49,610**

LCY

Source of estimated volume: Exhibit LSource 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: 1.00 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 4960 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

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

Haul Time: 0.57 minutesReturn Route:

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

Return Time: 0.49 minutesTotal Scraper team cycle time: 2.66 minutesAdjusted for job conditions: 1,085.86 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,085.86 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,085.86 LCY/HourUnadjusted unit production/hour: 1,308.27 LCY/HourOptimal Number of Scrapers per push
dozer: _____**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 45.69 HoursUnit cost: \$1.275 /LCYTotal job cost: \$63,272

MOTOR GRADER WORKTask description: **Final grade East Cell (85' x 2300') + (800'+100')**Site: **Tucson South Resource**Permit Action: **AM01_Nov2019**Permit/Job#: **M2004044****PROJECT IDENTIFICATION**Task #: **004**State: **Colorado**Abbreviation: **None**Date: **11/14/2019**County: **Adams**Filename: **M044-004**User: **JLE**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 16M**Horsepower: **297**Ripper Attachment: **Multi-Shank Ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

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

MATERIAL QUANTITIESTotal Area to be graded or ripped: **6.33** acresSource of estimated acreage: **Exhibit L****HOURLY PRODUCTION**

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

Job Condition Correction FactorsSite Altitude: **4960** feet

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

Adjusted Hourly Unit Production: **2.2909** acres/HourAdjusted Hourly Fleet Production: **2.2909** acres/Hour**JOB TIME AND COST**Fleet size: **1** Grader(s) Total job time: **2.76** HoursUnit cost: **\$90.16** per acre Total job cost: **\$571**

TRUCK/LOADER TEAM WORKTask description: **Excavate, haul and backfill material for South Mine Area**Site: **Tucson South Resource**Permit Action: **AM01_Nov2019**Permit/Job#: **M2004044****PROJECT IDENTIFICATION**Task #: **005**State: **Colorado**Abbreviation: **None**Date: **11/15/2019**County: **Adams**Filename: **M044-005**User: **JLE**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Shift basis: **1 per day**

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 990H high lift
Support Equipment -Load Area:	NA
-Dump Area:	Cat D9T - 9SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 10,000 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	75	25	25
Ownership cost/hour:	\$68.27	\$141.85	NA	\$121.49	\$82.71	\$68.95
Operating cost/hour:	\$59.78	\$135.12	NA	\$79.38	\$17.52	\$25.83
%Utilization-riper:	NA	0	NA	0	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$13.94	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$24.79	\$35.93	NA	\$39.98	\$45.39	\$38.86
Unit Subtotals:	\$152.84	\$312.89	NA	\$240.85	\$145.62	\$133.64
Number of Units:	4	1	0	1	1	1
Group Subtotals:	Work: \$924.25		Support: \$240.85		Maint: \$279.26	

Total work team cost/hour: **\$1,444.36****MATERIAL QUANTITIES**Initial volume: **1,506,997**

CCY

Swell factor: **1.000**Loose volume: **1,506,997**

LCY

Source of estimated volume: **Exhibit L, 700,000 Tons, (929 lbs/yard of dirt and sand)**Source of estimated swell factor: **Cat Handbook**Material Purchase Cost: **\$0.00**Total Cost: **\$0.00****HOURLY PRODUCTION****Truck Capacity:**

Truck Payload (weight) Basis:

Material weight: **2,900** Pounds/LCY

Description: Sand and gravel - Dry
 Rated Payload: 87,000 Pounds
 Payload Capacity: 30.00 LCY

Truck Bed (volume) Basis:

Struck Volume: 24.20 LCY
 Heaped Volume: 31.40 LCY
 Average Volume: 27.80 LCY
 Adjusted Volume: 30.00 LCY

Final Truck Volume Based on Number of Loader Passes: **24.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity: 11.250 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: **12.375** LCY

Job Condition Corrections:

Site Altitude (ft.): 4960 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Loading Tool Cycle Time:

Number of Loading Tool Passes Required to Fill Truck: **2** passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
 Selected Value within this Basic Rating: NA

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): **0.600** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.060	minutes
Adjusted Loader Cycle Time:		0.540	minutes
Net Load Time per Truck:		0.640	minutes

Truck Cycle Time:

Truck Exchange Time: 0.60 Minutes Adjusted for site altitude: 0.600 Minutes
 Truck Load Time: 0.640 Minutes Adjusted for site altitude: 0.640 Minutes

Truck Maneuver and Dump Time: 1.00 Minutes Adjusted for site altitude: 1.000 Minutes

Truck Travel (Haul & Return) Time: Road Condition: Hard, smooth, stabilized, surfaced, watered, maintained 2.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3500.00	0.00	2.00	2.00	3005	1.627

Haul Time: 1.627 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3500.00	0.00	2.00	2.00	3005	1.310

Return Time: 1.310 minutes

Total Truck Cycle Time: 5.177 minutes

Loading Tool unit
 Production 1,197.58 LCY/Hour Adjusted for job efficiency: 993.99 LCY/Hour
 Truck Unit Production 286.85 LCY/Hour Adjusted for job efficiency: 238.08 LCY/Hour
 Optimal No. of Trucks: 4 Truck(s) Selected Number of Trucks: 4 Truck(s)

Adjusted hourly truck team production: 952.33 LCY/Hour
 Adjusted single truck/loader team production: 952.33 LCY/Hour
 Adjusted multiple truck/loader team production: 952.33 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 1,582.44 Hours

Unit cost: \$1.517 /LCY Total job cost: \$2,285,607

SCRAPER TEAM WORKTask description: Replace topsoil, South CellSite: Tucson South ResourcePermit Action: Replace Topsoil South CellPermit/Job#: M2004044**PROJECT IDENTIFICATION**Task #: 006State: ColoradoAbbreviation: NoneDate: 11/15/2019County: AdamsFilename: M044-006User: JLEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 10,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	25	25
Ownership cost/hour:	\$174.06	\$121.49	NA	NA	\$82.71	\$68.95
Operating cost/hour:	\$190.35	\$105.84	NA	NA	\$17.52	\$25.83
%Utilization-ripper:	NA	0	NA	NA	0	NA
Ripper own. cost/hour:	NA	\$13.94	NA	NA	\$4.44	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$45.58	\$39.98	NA	NA	\$45.39	\$38.86
Unit Subtotals:	\$409.98	\$281.24	NA	NA	\$150.05	\$133.64
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	\$1,101.20	Support:	\$0.00	Maint:	\$283.69

Total work team cost/hour: \$1,384.89**MATERIAL QUANTITIES**Initial volume: 11,858

CCY

Swell factor: 1.000Loose volume: 11,858

LCY

Source of estimated volume: Exhibit LSource 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: 1.00 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 4960 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2800	0.32

Haul Time: 0.32 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2949	0.25

Return Time: 0.25 minutesTotal Scraper team cycle time: 2.17 minutesAdjusted for job conditions: 1,331.06 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,331.06 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,331.06 LCY/HourUnadjusted unit production/hour: 1,603.69 LCY/HourOptimal Number of Scrapers per push
dozer: _____**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 8.91 HoursUnit cost: \$1.040 /LCYTotal job cost: \$12,338

SCRAPER TEAM WORKTask description: Replace topsoil on internal haul roads and main site ent.Site: Tucson South ResourcePermit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**

Task #: 007 State: Colorado Abbreviation: None
 Date: 11/15/2019 County: Adams Filename: M044-007
 User: JLE

Agency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 10,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	25	25
Ownership cost/hour:	\$174.06	\$121.49	NA	NA	\$82.71	\$68.95
Operating cost/hour:	\$190.35	\$105.84	NA	NA	\$17.52	\$25.83
%Utilization-ripper:	NA	0	NA	NA	0	NA
Ripper own. cost/hour:	NA	\$13.94	NA	NA	\$4.44	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$45.58	\$39.98	NA	NA	\$45.39	\$38.86
Unit Subtotals:	\$409.98	\$281.24	NA	NA	\$150.05	\$133.64
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	\$1,101.20	Support:	\$0.00	Maint:	\$283.69

Total work team cost/hour: \$1,384.89**MATERIAL QUANTITIES**

Initial volume: 2,420 CCY Swell factor: 1.000
 Loose volume: 2,420 LCY

Source of estimated volume: Exhibit L
 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: 1.00 Minutes
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 4960 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2800	0.32

Haul Time: 0.32 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2949	0.25

Return Time: 0.25 minutes

Total Scraper team cycle time: 2.17 minutes
 Adjusted for job conditions: 1,331.06 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,331.06 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,331.06 LCY/Hour

Unadjusted unit production/hour: 1,603.69 LCY/Hour
 Optimal Number of Scrapers per push
 dozer: _____

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 1.82 Hours
 Unit cost: \$1.040 /LCY Total job cost: \$2,518

SCRAPER TEAM WORKTask description: Replace topsoil on conveyor routeSite: Tucson South ResourcePermit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**Task #: 008State: ColoradoAbbreviation: NoneDate: 11/15/2019County: AdamsFilename: M044-008User: JLEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 10,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	25	25
Ownership cost/hour:	\$174.06	\$121.49	NA	NA	\$82.71	\$68.95
Operating cost/hour:	\$190.35	\$105.84	NA	NA	\$17.52	\$25.83
%Utilization-ripper:	NA	0	NA	NA	0	NA
Ripper own. cost/hour:	NA	\$13.94	NA	NA	\$4.44	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$45.58	\$39.98	NA	NA	\$45.39	\$38.86
Unit Subtotals:	\$409.98	\$281.24	NA	NA	\$150.05	\$133.64
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	\$1,101.20	Support:	\$0.00	Maint:	\$283.69

Total work team cost/hour: \$1,384.89**MATERIAL QUANTITIES**Initial volume: 2,662

CCY

Swell factor: 1.000Loose volume: 2,662

LCY

Source of estimated volume: Exhibit LSource 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: 1.00 Minutes
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 4960 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul 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	0.93

Haul Time: 0.93 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	0.83

Return Time: 0.83 minutes

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

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

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 3.10 Hours
 Unit cost: \$1.611 /LCY Total job cost: \$4,288

SCRAPER TEAM WORKTask description: Replace topsoil on stockpile areasSite: Tucson South ResourcePermit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**Task #: 009State: ColoradoAbbreviation: NoneDate: 11/15/2019County: AdamsFilename: M044-009User: JLEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D9T - 9SU
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 10,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	25	25
Ownership cost/hour:	\$174.06	\$121.49	NA	NA	\$82.71	\$68.95
Operating cost/hour:	\$190.35	\$105.84	NA	NA	\$17.52	\$25.83
%Utilization-ripper:	NA	0	NA	NA	0	NA
Ripper own. cost/hour:	NA	\$13.94	NA	NA	\$4.44	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$45.58	\$39.98	NA	NA	\$45.39	\$38.86
Unit Subtotals:	\$409.98	\$281.24	NA	NA	\$150.05	\$133.64
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	\$1,101.20	Support:	\$0.00	Maint:	\$283.69

Total work team cost/hour: \$1,384.89**MATERIAL QUANTITIES**Initial volume: 4,033

CCY

Swell factor: 1.000Loose volume: 4,033

LCY

Source of estimated volume: Exhibit LSource 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: 1.00 Minutes
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 4960 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2800	0.32

Haul Time: 0.32 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2949	0.25

Return Time: 0.25 minutes

Total Scraper team cycle time: 2.17 minutes
 Adjusted for job conditions: 1,331.06 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,331.06 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,331.06 LCY/Hour

Unadjusted unit production/hour: 1,603.69 LCY/Hour
 Optimal Number of Scrapers per push
 dozer: _____

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 3.03 Hours
 Unit cost: \$1.040 /LCY Total job cost: \$4,196

MOTOR GRADER WORKTask description: Scarify internal haul roads and conveyor routeSite: Tucson South ResourcePermit Action: AM01_Nov2019Permit/Job#: M2004044**PROJECT IDENTIFICATION**

Task #: 010 State: Colorado Abbreviation: None
 Date: 11/15/2019 County: Adams Filename: M044-010
 User: JLE

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

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

Cost Breakdown:

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

MATERIAL QUANTITIESTotal Area to be graded or ripped: 8.30 acresSource of estimated acreage: Exhibit L**HOURLY PRODUCTION**

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

Job Condition Correction FactorsSite Altitude: 4960 feet

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

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

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 3.62 Hours

Unit cost: \$90.16 per acreTotal job cost: **\$748**

MOTOR GRADER WORKTask description: **Final grade all miscellaneous areas (8.3 acres x .5')**Site: **Tucson South Resource**Permit Action: **AM01_Nov2019**Permit/Job#: **M2004044****PROJECT IDENTIFICATION**Task #: **011**State: **Colorado**Abbreviation: **None**Date: **11/15/2019**County: **Adams**Filename: **M044-011**User: **JLE**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 16M**Horsepower: **297**Ripper Attachment: **Multi-Shank Ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$82.71	NA
Operating Cost/Hour:	\$70.09	100
Ripper Ownership Cost/Hour:	\$4.44	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$45.39	NA
Total Unit Cost/Hour:	\$202.62	
Total Fleet Cost/Hour:	\$202.62	

MATERIAL QUANTITIESTotal Area to be graded or ripped: **8.30** acresSource of estimated acreage: **Exhibit L****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>0</u>	degrees
Effective Blade Length:	<u>16.00</u>	feet
Width of blade overlap per pass:	<u>2.00</u>	feet
Net grading or ripping width per pass:	<u>14.00</u>	feet
Unadjusted Hourly Unit Production:	<u>2.5455</u>	acres/hour

Job Condition Correction FactorsSite Altitude: **4960** 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: **2.2909** acres/HourAdjusted Hourly Fleet Production: **2.2909** acres/Hour**JOB TIME AND COST**Fleet size: **1**

Grader(s)

Total job time: **3.62** Hours

Unit cost: \$88.45 per acreTotal job cost: \$734 **REVEGETATION WORK**Task description: Revegetation of Affected Land Site: Tucson South Resource Permit Action: AM01_Nov2019 Permit/Job#: M2004044 **PROJECT IDENTIFICATION**Task #: 012 State: Colorado Abbreviation: None Date: 11/15/2019 County: Adams Filename: M044-012 User: JLE Agency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Big Bluestem - Kaw	1.70	5.07	\$22.70
Blue Grama - Hachita	0.30	4.90	\$4.79
Switchgrass - Blackwell	2.00	17.86	\$23.00
Sideoats Grama - Vaughn	1.00	3.28	\$8.38
Western Wheatgrass - Arriba	4.80	12.12	\$31.20
Needlegrass, Green - Lodorm	1.50	6.23	\$17.66

Totals Seed Mix	11.30	49.47	\$107.73
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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}	1.00	TON	\$295.00	\$295.00
Total Mulch Materials Cost/Acre				\$295.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Total Mulch Application Cost/Acre	\$70.17

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Chokecherry	0.39	Container, 1 gallon (MEANS)	\$14.76	\$2.40	\$5.76
Cottonwood, Plains	0.35	Container, 5 gallon (MEANS)	\$48.62	\$2.40	\$17.02
Willow, Sandbar	0.39	Container, 1 gallon (MEANS)	\$17.33	\$2.40	\$6.76
Totals Nursery Stock Cost / Acre					\$29.53

JOB TIME AND COST

No. of Acres:	103	Cost /Acre:	\$1,022.66
Estimated Failure Rate:	20%	Cost /Acre*:	\$339.73
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$105,333.98
Reseeding Job Cost:	\$6,998.44
Total Job Cost:	\$112,332
Job Hours:	103.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization**Site: **Tucson South Resource**Permit Action: **AM01_Nov2019**Permit/Job#: **M2004044****PROJECT IDENTIFICATION**

Task #: **013** State: **Colorado** Abbreviation: **None**
 Date: **11/15/2019** County: **Adams** Filename: **M044-013**
 User: **JLE**

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

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

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

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$17.20	\$29.63	\$38.69
Operating Cost/Hour:	\$26.56	\$47.02	\$55.69
Operator Cost/Hour:	\$23.63	\$23.63	\$23.63
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$67.39	\$123.81	\$141.54

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Drill/Broadcast Seeder with Tractor	25.00	\$18.15	\$67.39	2	\$171.08	\$134.78	\$500.00
CAT 16M	28.73	\$87.15	\$123.81	2	\$421.92	\$247.62	\$500.00
Cat 637G w/push-pull	59.59	\$174.06	\$141.54	2	\$631.20	\$283.08	\$1,000.00
Cat D9T - 9SU	66.13	\$135.43	\$141.54	2	\$553.94	\$283.08	\$500.00
Cat 740	36.49	\$68.27	\$123.81	4	\$768.32	\$495.24	\$1,000.00
CAT 990H high lift	83.34	\$141.85	\$141.54	1	\$283.39	\$141.54	\$250.00

Subtotals: **\$2,829.85** **\$1,585.34** **\$3,750.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 10,000 Gal.	\$211.14	2	\$422.28	\$422.28

Subtotals: **\$422.28** **\$422.28**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>BRIGHTON</u>	
Total one-way travel distance:	<u>1.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$32,259.33</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$18.77</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.02	0.02
Return Time (Hours):	0.02	0.02
Loading Time (Hours):	2.17	NA
Unloading Time (Hours):	2.17	NA
Subtotals:	4.38	0.04

JOB TIME AND COST

Total job time:	<u>8.77</u>	Hours
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Total job cost:	<u>\$32,278</u>
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Task 014 - **East Cell Slurry Wall, Contingency Cost**

Slurry Wall Length – 8,100 LF

Average Depth – 30 LF

Square foot of slurry Wall – 243,000 SF

Average Unit Cost - \$3.00/SF

Total Cost - \$729,000.00

20% Contingency - \$145,800