

## COST SUMMARY WORK

Task description: Reclamation Tasks for Permit Renewal No. 7

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-000

User: JHB

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolish King I Structures	DEMOLISH	1	40.00	\$37,920.29
002	King I - Rip 12" in upper facility area	RIPPER	1	2.95	\$610.00
003	King I - push ripped waste to tipple highwall	DOZER	1	16.28	\$3,362.00
004	King I - haul topsoil/growth medium to Upper Facilities Area	TRUCK1	1	4.51	\$972.00
005	King I - Finish grade upper facilities area	GRADER	1	1.92	\$168.00
006	King I - Revegetate upper facilities area (area #3)	REVEGE	1	4.00	\$1,803.00
008	King I - backfill portals, grade fill slope and topsoil	DOZER	1	1.54	\$307.00
009	King I - revegetate highwall area (Area #4)	REVEGE	1	4.00	\$1,205.00
010	King I - rip and final grade lower facilities area	GRADER	1	1.09	\$97.00
011	King I - revegetate highwall area (Area #4)	REVEGE	1	4.00	\$1,095.00
012	King I - regrade cover of pre-law portion of refuse area	DOZER	1	8.11	\$1,616.00
013	King I - regrade 6" growth medium on pre-law refuse area	DOZER	1	1.16	\$231.00
014	King I - revegetate refuse area (Area #5)	REVEGE	1	2.00	\$534.00
015	King I - Push 3.5' cover to refuse pile	DOZER	1	39.02	\$7,780.00
016	King I - grade 3.5' cover on post-law refuse area	DOZER	1	10.03	\$1,999.00
017	King I - Haul topsoil to post-law refuse area	TRUCK1	1	3.03	\$655.00
018	King I - finish grade post-law refuse area (area #6)	GRADER	1	0.97	\$85.00
019	King I - revegetate refuse area (Area #6)	REVEGE	1	2.00	\$994.00
020	King I - finish grade topsoil area	GRADER	1	1.84	\$161.00
021	King I - revegetate borrow area	REVEGE	1	4.00	\$1,840.00
022	King I - seal vent hole	BOREHOLE	1	8.00	\$1,550.62
023	King I - backfill and regrade east and west sediment ponds	DOZER	1	10.40	\$2,073.00
025	King I - revegetate east and west ponds (Area #6)	REVEGE	1	4.00	\$1,711.00
032	King I -Rill and gully maint. 8 hours every other yr, 10 yrs	SITEMAINT ENANCE	1	24.00	\$4,258.80
050	King I&II - mobilize for initial reclamation	MOBILIZE	1	8.00	\$10,051.00
051	King I&II - mobilize for rill and gully maintenance, X 3	MOBILIZE	1	8.00	\$5,148.00
052	King I&II - mobilize for second pond cleaning	MOBILIZE	1	8.00	\$2,780.00
060	King II-Rill and gully maint. 8 hours every other yr, 10 yrs	SITEMAINT ENANCE	1	24.00	\$4,258.80
062	Weed Control over liability period	REVEGE	1	35.00	\$3,150.00
064	Clean sediment ponds (two cleanings)	EXCAVATE	1	65.13	\$5,126.00
065	King II - haul sediment from ponds to King I site	TRUCK1	1	30.85	\$23,690.00
100	Seal Mine Openings	MINESEAL	1	32.00	\$110,737.60
200	King II structural demolition	DEMOLISH	1	140.00	\$207,465.41

300	King II - Haul coal waste rock to King I waste pile	TRUCK1	1	1.06	\$311.00
301	King II - Rip coal sales area	RIPPER	1	1.61	\$334.00
302	King II - Haul gravel from coal sales, portals, rd/wtr tank	TRUCK1	1	14.81	\$4,662.00
303	King II - Haul office fill to portal cuts/acc rd/wtr tank	TRUCK1	1	50.64	\$19,660.00
304	King II - grade portal cuts, access roads, water tank pad	DOZER	1	38.65	\$7,705.00
305	King II-Compact fill on portal cuts/access rd/water tank pad	COMPACT	1	17.23	\$3,514.00
306	King II - Rip portal, access rd., coal sales areas	RIPPER	1	34.32	\$7,092.00
308	King II - remove east and west cleanwater ditches	DOZER	1	8.62	\$1,718.00
309	King II - construct drainage channel in Cochrane Canyon	DOZER	1	3.51	\$699.00
310	King II - construct channel in office drainage	DOZER	1	4.53	\$904.00
311	King II - backfill pond	DOZER	1	18.49	\$3,686.00
312	King II - Rip coal sales area	RIPPER	1	3.43	\$710.00
313	King II - Grade haul road	DOZER	1	13.20	\$2,631.00
314	Water truck for dust control	MISCTRUK	1	240.00	\$10,562.00
401	King II - distribute tosoil from Cochrane stockpile	TRUCK1	1	101.93	\$39,571.00
402	King II - finish grade topsoil area	GRADER	1	20.66	\$1,802.00
403	King II revegetate Rangeland Areas (19.36 acres)	REVEGE	1	20.00	\$35,913.00
404	King II revegetate Pinyon-Juniper areas (3 acres)	REVEGE	1	3.00	\$7,722.00
406	King II-seed water line corridor (0.47 ac)	REVEGE	1	1.25	\$819.00
409	Seal Boreholes CO-14-01 through CO-14-09	BOREHOLE	1	36.00	\$4,632.91
410	Regrade drill pads and pits CO-14-01 through CO-14-09	DOZER	1	7.06	\$615.00
411	Replace topsoil on CO-14-01 through CO-14-09 disturbance	DOZER	1	3.00	\$261.00
412	King II-Broadcast seed CO-14-01 thru CO-09 disturbance	REVEGE	1	9.00	\$2,198.00
500	King II - seal downgradient monitoring well	BOREHOLE	1	4.00	\$386.16
501	Plug and Seal MW-1, 2, 3 and 4 Clusters (12 Wells) TR26	BOREHOLE	1	53.00	\$9,283.92
502	Remove MW-1,2,3,4 Well Clusters Cement Pads/Poles TR26	DEMOLISH	1	0.00	\$356.19
503	Regrade drill pads and pits (MW-1, 2, 3, 4)	DOZER	1	2.73	\$367.00
504	Replace Topsoil on Well Clusters (TR26)	DOZER	1	1.54	\$200.00
505	Revegetation; MW-1,2,3,4 Well Cluster Pads	REVEGE	1	1.00	\$3,111.00
<b><u>SUBTOTALS:</u></b>				<b>1264.1</b>	<b>\$616,861</b>

## **INDIRECT COSTS**

### **OVERHEAD AND PROFIT:**

Liability insurance:	2.02	Total =	\$12,460.59
Performance bond:	1.05	Total =	\$6,477.04
Job superintendent:	632.05	Total =	\$46,171.25
Profit:	10.00	Total =	\$61,686.10
		TOTAL O & P =	\$126,794.98
		CONTRACT AMOUNT (direct + O & P) =	\$743,655.98

### **LEGAL - ENGINEERING - PROJECT MANAGEMENT:**

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	4.25	Total =	\$31,605.38

Reclamation management and/or administration:	<u>5.00</u>		<u>\$37,182.80</u>
CONTINGENCY:	0.00	Total =	<u>\$0.00</u>
		TOTAL INDIRECT COST =	<u>\$196,083.16</u>
		<b>TOTAL BOND AMOUNT (direct + indirect) =</b>	<b><u>\$812,944.16</u></b>

## DEMOLITION WORK

Task description: Demolish King I Structures

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 5/3/2017

County: La Plata

Filename: C035-001

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Location adjustment: 94.00 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Two office trailers	12x120x10	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	14,400.00	CF	\$0.35	\$5,097.60
Portal Building	12x20x8	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	1,920.00	CF	\$0.35	\$679.68
Main Conveyor	40	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	40.00	LF	\$44.51	\$1,780.36
Tipple Building	60x65x8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	31,200.00	CF	\$0.18	\$5,584.80
Tipple Lean-to Shed	16x44x8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	5,632.00	CF	\$0.18	\$1,008.13
East bins	15x25x50	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	18,750.00	CF	\$0.18	\$3,356.25
Mine fan	8x6x30	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	1,440.00	CF	\$0.35	\$509.76
Mine fan	8x6x10	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	480.00	CF	\$0.35	\$169.92
Stacker conveyor	300	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	300.00	LF	\$44.51	\$13,352.70
Stacker tower #1	16x16x50/10x10x50	Bldg. (SN) demo./off-site disposal in approved landfill -	8,900.00	CF	\$0.35	\$3,150.60

		Max. 15 mile haul				
Stacker tower #2	8.5x16x25/8.5x5.5x25	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	2,284.00	CF	\$0.35	\$808.54
2 500 gallon fuel tanks	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	2.00	EA	\$760.00	\$1,520.00
Bury debris	10x10x40.5	Push demolished materials/rubble/debris into pit - Max. 200 ft. push	150.00	CY	\$0.83	\$123.90
Scale house	40x42x10	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	16,800.00	CF	\$0.18	\$3,007.20
Cement Pads (TR26) MW-1,2,3 & 4	3(3' x4' x0.3'th)	Demo. and on-site disposal in existing pit, 4 in. thick - Max. 50 ft. push	36.00	SF	\$0.40	\$14.33
(TR26) 4" x 6' l steel poles MW-1,2,3 &4	24(4" dia. x 6'l)	Pipe, steel, welded connections - 4 in. diameter pipe	144.00	LF	\$1.16	\$167.04
(TR26) disposal of poles	24 poles	Dump fees - Rubbish only	1.05	CY	\$9.45	\$9.92

		<b>Total Cost</b>
		<b>(adjusted for</b>
<b>Job Hours:</b> <u>40.00</u>	<b>Subtotal</b>	<b>location):</b> <u>\$37,920.29</u>
	<b>(unadjusted):</b> <u>\$40,340.73</u>	

## BULLDOZER RIPPING WORK

Task description: King I - Rip 12" in upper facility area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 002

State: Colorado

Abbreviation: None

Date: 5/3/2017

County: La Plata

Filename: C035-002

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

Horsepower: 310  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper Ownership Cost/Hour:	\$7.55	NA
Ripper Operating Cost/Hour:	\$7.21	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$206.59	
Total Fleet Cost/Hour:	<b>\$206.59</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 1.96 acres Rip Depth (ft): 1.00 Volume: 3,162 BCY or CCY

Source of estimated quantity: Map King I-007

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 1.00 mph  
Average Ripping Width: 7.08 degrees  
Average Ripping Length: 300.00 feet  
Average Dozer Speed: 88.00 feet  
Average Maneuver Time: 0.25 feet  
Production per unit area: 0.800 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.800 Acres/hr  
Site Altitude: 7,400 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.66 Acres/hr  
Adjusted Hourly Fleet Production: **0.66** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: 2.95 Hours

Unit cost: \$311.305 Per acre

Total job cost: \$610

## BULLDOZER WORK

Task description: King I - push ripped waste to tipple highwall

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 003

State: Colorado

Abbreviation: None

Date: 5/3/2017

County: La Plata

Filename: C035-003

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$7.21	100
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$206.59

Total Fleet Cost/Hour: \$206.59

### MATERIAL QUANTITIES

Initial Volume: 3,794

Swell factor: 1.000

Loose volume: 3,794 LCY

Source of estimated volume: Volume from Task 002, 20% swell

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)



Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 233.11 LCY/hr

Adjusted fleet production: **233.11** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.886/LCY

Total job time: **16.28** Hours

Total job cost: **\$3,362**

## TRUCK/LOADER TEAM WORK

Task description: King I - haul topsoil/growth medium to Upper Facilities Area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 004

State: Colorado

Abbreviation: None

Date: 5/3/2017

County: La Plata

Filename: C035-004

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

		Equipment Description
Truck Loader Team -Truck:		Generic 10-12 cy, 6x4
-Loader:		OBSOLETE - CAT 938H
Support Equipment -Load Area:		NA
-Dump Area:		NA
Road Maintenance -Motor Grader:		NA
-Water Truck:		NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$18.29	\$25.66	NA	NA	NA	NA
Operating cost/hour:	\$39.97	\$32.31	NA	NA	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$0.00	\$41.20	NA	NA	NA	NA
Unit Subtotals:	\$58.26	\$99.17	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$215.69		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$215.69

### MATERIAL QUANTITIES

Initial volume: 1,581

CCY

Swell factor: 1.165

Loose volume: 1,842

LCY

Source of estimated volume: 1.96 acres x 6" depth

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: 2,850

Pounds/LCY

Description: User Provided

Rated Payload: 35,400

Pounds

Payload Capacity: 12.42

LCY

**Truck Bed (volume) Basis:**

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 7400 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: 3 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.090	minutes
Adjusted Loader Cycle Time:		<b>0.393</b>	minutes
Net Load Time per Truck:		<b>0.885</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

**Truck Travel (Haul & Return) Time:**

Road Condition: Rutted dirt, little maintenance, no water, 2" tire

**penetration 5.0****Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	5.00	5.00	2218	0.293

Haul Time: 0.293 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	5.00	5.00	2814	0.203

Return Time: 0.203 minutes

Total Truck Cycle Time: 2.781 minutes

Loading Tool unit  
Production 494.19 LCY/Hour      Adjusted for job efficiency: 410.18 LCY/Hour  
Truck Unit Production 246.12 LCY/Hour      Adjusted for job efficiency: 204.28 LCY/Hour

Optimal No. of Trucks: 2 Truck(s)      Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 408.55 LCY/Hour  
Adjusted single truck/loader team production: 408.55 LCY/Hour  
Adjusted multiple truck/loader team production: 408.55 LCY/Hour

### **JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: 4.51 Hours

Unit cost: \$0.528 /LCY      Total job cost: \$972

## MOTOR GRADER WORK

Task description: King I - Finish grade upper facilities area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 005

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-005

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Ripper Attachment: Multi-Shank Ripper

Horsepower: 158

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$28.02	NA
Operating Cost/Hour:	\$28.28	100
Ripper Ownership Cost/Hour:	\$1.99	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.90	NA
Total Unit Cost/Hour:	\$87.19	
Total Fleet Cost/Hour:	<b>\$87.19</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.96 acres

Source of estimated acreage: Section 2.05.3 of permit application

### HOURLY PRODUCTION

Average Grader Speed:	<u>1.25</u>	mph
Selected Application:	<u>Production Deration - 1.25</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>1.2727</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 7400 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.80</u>	(3sh/d, fav.)
Net Correction:	<u>0.8000</u>	multiplier

Adjusted Hourly Unit Production: 1.0182 acres/Hour

Adjusted Hourly Fleet Production: **1.0182** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 1.93 Hours

Unit cost: \$85.63 per acre Total job cost: **\$168**

## REVEGETATION WORK

Task description: King I - Revegetate upper facilities area (area #3)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 006

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-006

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

#### **Application**

--	--

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

## **MULCHING and MISCELLANEOUS**

### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

### **Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</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:	1.96	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,735.97</b>
Reseeding Job Cost:	<b>\$67.38</b>
Total Job Cost:	<b>\$1,803</b>
Job Hours:	<b>4.00</b>

## TRUCK/LOADER TEAM WORK

Task description: King I - Haul topsoil/growth medium to highwall

Site: King Coal Mine

Permit Action: 007

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 007

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-007

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

		Equipment Description
Truck Loader Team -Truck:		Generic 10-12 cy, 6x4
-Loader:		OBSOLETE - CAT 938H
Support Equipment -Load Area:		NA
-Dump Area:		NA
Road Maintenance -Motor Grader:		NA
-Water Truck:		NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$18.29	\$25.66	NA	NA	NA	NA
Operating cost/hour:	\$39.97	\$32.31	NA	NA	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$0.00	\$41.20	NA	NA	NA	NA
Unit Subtotals:	\$58.26	\$99.17	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$215.69		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$215.69

### MATERIAL QUANTITIES

Initial volume: 1,057

CCY

Swell factor: 1.000

Loose volume: 1,057

LCY

Source of estimated volume: 1.96 acres, 6" depth

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: 2,850

Pounds/LCY

Description: User Provided

Rated Payload: 35,400

Pounds

Payload Capacity: 12.42

LCY



**Truck Bed (volume) Basis:**

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 7500 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: 3 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.090	minutes
Adjusted Loader Cycle Time:		<b>0.393</b>	minutes
Net Load Time per Truck:		<b>0.885</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

**Truck Travel (Haul & Return) Time:**

Road Condition: Rutted dirt, little maintenance, no water, 2" tire

**penetration 5.0****Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1100.00	-6.00	5.00	-1.00	2938	0.444

Haul Time: 0.444 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1100.00	6.00	5.00	11.00	1584	0.702

Return Time: 0.702 minutes

Total Truck Cycle Time: 3.431 minutes

Loading Tool unit  
Production 494.19 LCY/Hour      Adjusted for job efficiency: 410.18 LCY/Hour  
Truck Unit Production  
199.49 LCY/Hour      Adjusted for job efficiency: 165.58 LCY/Hour  
Optimal No. of Trucks: 2 Truck(s)      Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 331.15 LCY/Hour  
Adjusted single truck/loader team production: 331.15 LCY/Hour  
Adjusted multiple truck/loader team production: 331.15 LCY/Hour

### **JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: 3.19 Hours

Unit cost: \$0.651 /LCY      Total job cost: \$688

## BULLDOZER WORK

Task description: King I - backfill portals, grade fill slope and topsoil

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 008

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-008

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### MATERIAL QUANTITIES

Initial Volume: 400

Swell factor: 1.000

Loose volume: 400 LCY

Source of estimated volume: Reclamation plan

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 491.9 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: -5 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(SSD-AC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5284

Adjusted unit production: 259.92 LCY/hr

Adjusted fleet production: **259.92** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.767/LCY

Total job time: **1.54** Hours

Total job cost: **\$307**

## REVEGETATION WORK

Task description: King I - revegetate highwall area (Area #4)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 009

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-009

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

#### **Application**

--	--

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

### **MULCHING and MISCELLANEOUS**

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

#### **Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</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:	1.31	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,160.27</b>
Reseeding Job Cost:	<b>\$45.04</b>
Total Job Cost:	<b>\$1,205</b>
Job Hours:	<b>4.00</b>

## MOTOR GRADER WORK

Task description: King I - rip and final grade lower facilities area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 010

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-010

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Ripper Attachment: Multi-Shank Ripper

Horsepower: 158

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$28.02	NA
Operating Cost/Hour:	\$28.28	100
Ripper Ownership Cost/Hour:	\$1.99	NA
Ripper Operating Cost/Hour:	\$2.16	100
Operator Cost/Hour:	\$28.90	NA
Total Unit Cost/Hour:	\$89.35	
Total Fleet Cost/Hour:	<b>\$89.35</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.18 acres

Source of estimated acreage: TR-9 submittal

### HOURLY PRODUCTION

Average Grader Speed:	<u>1.25</u>	mph
Selected Application:	<u>Production Deration - 1.25</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>1.2727</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 7400 feet

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

Adjusted Hourly Unit Production: 1.0818 acres/Hour

Adjusted Hourly Fleet Production: **1.0818** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.09** Hours

Unit cost: \$82.59 per acre Total job cost: **\$97**

## REVEGETATION WORK

Task description: King I - revegetate highwall area (Area #4)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 011

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-011

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

#### **Application**

--	--



Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

### **MULCHING and MISCELLANEOUS**

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

#### **Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</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:	1.19	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,053.98</b>
Reseeding Job Cost:	<b>\$40.91</b>
Total Job Cost:	<b>\$1,095</b>
Job Hours:	<b>4.00</b>

## BULLDOZER WORK

Task description: King I - regrade cover of pre-law portion of refuse area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 012

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-012

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### MATERIAL QUANTITIES

Initial Volume: 3,275

Swell factor: 1.000

Loose volume: 3,275 LCY

Source of estimated volume: 0.58 acres, 3.5' depth

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 404.05 LCY/hr

Adjusted fleet production: **404.05** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.493/LCY

Total job time: **8.11** Hours

Total job cost: **\$1,616**

## BULLDOZER WORK

Task description: King I - regrade 6" growth medium on pre-law refuse area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 013

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-013

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### MATERIAL QUANTITIES

Initial Volume: 468

Swell factor: 1.000

Loose volume: 468 LCY

Source of estimated volume: 0.58 acres, 6" depth

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 404.05 LCY/hr

Adjusted fleet production: **404.05** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.493/LCY

Total job time: **1.16** Hours

Total job cost: **\$231**

## REVEGETATION WORK

Task description: King I - revegetate refuse area (Area #5)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 014

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-014

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

#### **Application**

--	--

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

## **MULCHING and MISCELLANEOUS**

### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

### **Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</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:	0.58	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$513.71</b>
Reseeding Job Cost:	<b>\$19.94</b>
Total Job Cost:	<b>\$534</b>
Job Hours:	<b>2.00</b>

## BULLDOZER WORK

Task description: King I - Push 3.5' cover to refuse pile

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 015

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-015

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### MATERIAL QUANTITIES

Initial Volume: 6,098

Swell factor: 1.000

Loose volume: 6,098 LCY

Source of estimated volume: 3.5' depth on 1.08 acres

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 25 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)



Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.422	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.1833

Adjusted unit production: 156.28 LCY/hr

Adjusted fleet production: **156.28** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$1.276/LCY

Total job time: **39.02** Hours

Total job cost: **\$7,780**

## BULLDOZER WORK

Task description: King I - grade 3.5' cover on post-law refuse area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 016

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-016

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### MATERIAL QUANTITIES

Initial Volume: 6,098

Swell factor: 1.000

Loose volume: 6,098 LCY

Source of estimated volume: 3.5' depth on 1.08 acres

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 50 feet

Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)

Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr

Adjusted fleet production: **608.16** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.328/LCY

Total job time: **10.03** Hours

Total job cost: **\$1,999**

## TRUCK/LOADER TEAM WORK

Task description: King I - Haul topsoil to post-law refuse area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 017

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-017

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

		Equipment Description
Truck Loader Team -Truck:		Generic 10-12 cy, 6x4
-Loader:		OBSOLETE - CAT 938H
Support Equipment -Load Area:		NA
-Dump Area:		NA
Road Maintenance -Motor Grader:		NA
-Water Truck:		NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$18.29	\$25.66	NA	NA	NA	NA
Operating cost/hour:	\$39.97	\$32.31	NA	NA	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$0.00	\$41.20	NA	NA	NA	NA
Unit Subtotals:	\$58.26	\$99.17	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$215.69		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$215.69

### MATERIAL QUANTITIES

Initial volume: 871

CCY

Swell factor: 1.429

Loose volume: 1,245

LCY

Source of estimated volume: 1.08 acres, 6" depth

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: 2,850

Pounds/LCY

Description: User Provided

Rated Payload: 35,400

Pounds

Payload Capacity: 12.42

LCY

**Truck Bed (volume) Basis:**

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 7500 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: 3 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.090	minutes
Adjusted Loader Cycle Time:		<b>0.393</b>	minutes
Net Load Time per Truck:		<b>0.885</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

**Truck Travel (Haul & Return) Time:**

Road Condition: Rutted dirt, little maintenance, no water, 2" tire

**penetration 5.0****Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	0.00	5.00	5.00	2218	0.158

Haul Time: 0.158 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	0.00	5.00	5.00	2814	0.097

Return Time: 0.097 minutes

Total Truck Cycle Time: 2.540 minutes

Loading Tool unit  
Production 494.19 LCY/Hour      Adjusted for job efficiency: 410.18 LCY/Hour  
Truck Unit Production  
269.47 LCY/Hour      Adjusted for job efficiency: 223.66 LCY/Hour  
Optimal No. of Trucks: 2 Truck(s)      Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 447.32 LCY/Hour  
Adjusted single truck/loader team production: 410.18 LCY/Hour  
Adjusted multiple truck/loader team production: 410.18 LCY/Hour

### **JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: 3.03 Hours

Unit cost: \$0.526 /LCY      Total job cost: \$655

## MOTOR GRADER WORK

Task description: King I - finish grade post-law refuse area (area #6)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 018

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-018

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Ripper Attachment: Multi-Shank Ripper

Horsepower: 158

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$28.02	NA
Operating Cost/Hour:	\$28.28	100
Ripper Ownership Cost/Hour:	\$1.99	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.90	NA
Total Unit Cost/Hour:	\$87.19	
Total Fleet Cost/Hour:	<b>\$87.19</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.06 acres

Source of estimated acreage: Section 2.05.3 of permit application

### HOURLY PRODUCTION

Average Grader Speed:	<u>1.25</u>	mph
Selected Application:	<u>Production Deration - 1.25</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>1.2727</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 7400 feet

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

Adjusted Hourly Unit Production: 1.0818 acres/Hour

Adjusted Hourly Fleet Production: **1.0818** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.98** Hours

Unit cost: \$80.60 per acre Total job cost: **\$85**





## REVEGETATION WORK

Task description: King I - revegetate refuse area (Area #6)

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 019 State: Colorado Abbreviation: None  
Date: 5/4/2017 County: La Plata Filename: C035-019  
User: JHB

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>
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

**TILLING**

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

**Application**

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

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

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

**Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</b>

**NURSERY STOCK PLANTING**

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

### **JOB TIME AND COST**

No. of Acres:	1.08	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$956.56</b>
Reseeding Job Cost:	<b>\$37.13</b>
Total Job Cost:	<b>\$994</b>
Job Hours:	<b>2.00</b>

## MOTOR GRADER WORK

Task description: King I - finish grade topsoil area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 020

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-020

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Ripper Attachment: Multi-Shank Ripper

Horsepower: 158

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$28.02	NA
Operating Cost/Hour:	\$28.28	100
Ripper Ownership Cost/Hour:	\$1.99	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.90	NA
Total Unit Cost/Hour:	\$87.19	
Total Fleet Cost/Hour:	<b>\$87.19</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 2.00 acres

Source of estimated acreage: Section 2.05.3 of permit application

### HOURLY PRODUCTION

Average Grader Speed:	<u>1.25</u>	mph
Selected Application:	<u>Production Deration - 1.25</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>1.2727</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 7400 feet

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

Adjusted Hourly Unit Production: 1.0818 acres/Hour

Adjusted Hourly Fleet Production: **1.0818** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.85** Hours

Unit cost: \$80.60 per acre Total job cost: **\$161**



## REVEGETATION WORK

Task description: King I - revegetate borrow area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 021

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-021

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

#### **Application**

--	--

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

### **MULCHING and MISCELLANEOUS**

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

#### **Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</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	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,771.40</b>
Reseeding Job Cost:	<b>\$68.76</b>
Total Job Cost:	<b>\$1,840</b>
Job Hours:	<b>4.00</b>

## BOREHOLE SEALING WORK

Task description: King I - seal vent hole

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 022

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035=022

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal hole	Portland cement grout - 8 in. (labor, equip, materials)	7	100	100.00	LF	\$11.21	\$1,121.00
Bottom Plug	Stainless steel plug - 8 in. diameter borehole	7	100	1.00	EA	\$192.81	\$192.81
Cut Casing	Exposed casing removal - Calculate Circumference in Linear Feet	7	2	2.00	LF	\$1.77	\$3.54
Mark Hole	Borehole location/identification marker (EA, material cost only)	7	1	1.00	EA	\$3.67	\$3.67
drill rig	SCHRAMM T450WS	7	NA	1.00	hr	\$229.60	\$229.60

Job Hours: 8.00

Total Cost: \$1,551.00



## BULLDOZER WORK

Task description: King I - backfill and regrade east and west sediment ponds

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 023

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-023

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### MATERIAL QUANTITIES

Initial Volume: 3,226

Swell factor: 1.165

Loose volume: 3,758 LCY

Source of estimated volume: Operator estimate

Source of estimated swell

factor:

Cat Handbook

### HOURLY PRODUCTION

Average push distance: 75 feet

Unadjusted hourly  
production: 1,017.1 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %

Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor

Operator Skill: 0.750

Source

(AVG.)

Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3554

Adjusted unit production: 361.48 LCY/hr

Adjusted fleet production: **361.48 LCY/hr**

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.552/LCY

Total job time: **10.40 Hours**  
Total job cost: **\$2,073**

## REVEGETATION WORK

Task description: King I - revegetate east and west ponds (Area #6)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 025

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-025

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

#### **Application**

--	--

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

### **MULCHING and MISCELLANEOUS**

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

#### **Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</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:	1.86	Cost /Acre:	\$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	\$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,647.40</b>
Reseeding Job Cost:	<b>\$63.95</b>
Total Job Cost:	<b>\$1,711</b>
Job Hours:	<b>4.00</b>

## SITE MAINTENANCE

Task description: King I -Rill and gully maint. 8 hours every other yr, 10 yrs

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 032

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-032

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	8.00	Cat D3K LGP - 3P	24.00	EA	\$81.57	\$1,957.68
12M Grader	8.00	CAT 12M	24.00	EA	\$95.88	\$2,301.12

Job Hours: 24.00

Total Cost: \$4,258.80

## EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: King I&II - mobilize for initial reclamation

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 050

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-050

User: JHB

Agency or organization name: DRMS

### EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day

Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER  
(25T, 50T, AND 100T)

#### Cost Breakdown:

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

### NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D8T - 8SU	47.71	\$62.67	\$117.55	2	\$360.44	\$235.10	\$0.00
CAT 938H	16.34	\$21.63	\$88.67	2	\$220.60	\$177.34	\$0.00
CAT 12M	16.01	\$24.98	\$88.67	1	\$113.65	\$88.67	\$0.00
CAT 825H	36.08	\$62.10	\$117.55	1	\$179.65	\$117.55	\$0.00
Drill/Broadcast Seeder with Tractor	25.00	\$39.59	\$88.67	1	\$128.26	\$88.67	\$0.00
Power Mulcher (Reinco M90)	6.00	\$7.03	\$88.67	1	\$95.70	\$88.67	\$0.00
GENERIC 3.0 in. - 1, 700 ft. capy.	0.00	\$17.72	\$88.67	1	\$106.39	\$88.67	\$250.00

Subtotals: **\$1,204.69** **\$884.67** **\$250.00**

### ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	\$101.68	2	\$203.36	\$203.36
Water Tanker, 2,500 Gal.	\$29.67	1	\$29.67	\$29.67

Subtotals: **\$233.03** **\$233.03**

### EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>DURANGO</u>	
Total one-way travel distance:	<u>20.00</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$9,817.50</u>
‘* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$233.03</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

**JOB TIME AND COST**

Total job time:	<u>8.00</u>	Hours
Total job cost:	<u>\$10,051</u>	

## EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: King I&II - mobilize for rill and gully maintenance, X 3

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 051

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-051

User: JHB

Agency or organization name: DRMS

### EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day

Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER  
(25T, 50T, AND 100T)

#### Cost Breakdown:

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

### NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D3K LGP - 3P	9.20	\$13.24	\$88.67	3	\$305.74	\$266.01	\$0.00
CAT 12M	16.01	\$24.98	\$88.67	3	\$340.94	\$266.01	\$0.00
Subtotals:					<b>\$646.68</b>	<b>\$532.02</b>	<b>\$0.00</b>



**ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	\$29.67	3	\$89.01	\$89.01

Subtotals: **\$89.01** **\$89.01**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: DURANGO

Total one-way travel distance: 20.00 miles

Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost \* \$5,058.78

    '\* two round trips with haul rig:

Total Roadable Mob/Demob Cost \*\* \$89.01

    \*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

**JOB TIME AND COST**

Total job time: 8.00 Hours

Total job cost: \$5,148

## EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: King I&II - mobilize for second pond cleaning

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 052

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-052

User: JHB

Agency or organization name: DRMS

### EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day

Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,  
400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER  
(25T, 50T, AND 100T)

#### Cost Breakdown:

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

### NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
CAT 938H	16.34	\$21.63	\$88.67	2	\$220.60	\$177.34	\$0.00
Cat 312D L 9'-2" Stick	14.83	\$20.89	\$88.67	1	\$109.56	\$88.67	\$0.00

Subtotals: **\$330.16** **\$266.01** **\$0.00**

### ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	\$101.68	2	\$203.36	\$203.36

Subtotals: **\$203.36** **\$203.36**

### EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: DURANGO

Total one-way travel distance: 20.00 miles

Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost \* \$2,577.13

\* two round trips with haul rig:

Total Roadable Mob/Demob Cost \*\* \$203.36

\*\* one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

**JOB TIME AND COST**

Total job time: 8.00 Hours

Total job cost: \$2,780

## SITE MAINTENANCE

Task description: King II-Rill and gully maint. 8 hours every other yr, 10 yrs

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 060

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-060

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	8.00	Cat D3K LGP - 3P	24.00	EA	\$81.57	\$1,957.68
12M Grader	8.00	CAT 12M	24.00	EA	\$95.88	\$2,301.12

Job Hours: 24.00

Total Cost: \$4,258.80

## REVEGETATION WORK

Task description: Weed Control over liability period

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 062

State: Colorado

Abbreviation: None

Date: 5/4/2017

County: La Plata

Filename: C035-062

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

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

#### **Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
			\$
<b>Totals Seed Mix</b>	0.00	0.00	<b>\$0.00</b>

#### **Application**

Description	Cost /Acre
	\$
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

## **MULCHING and MISCELLANEOUS**

### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
	5.00		\$0.00	\$0.00
Total Mulch Materials Cost/Acre				<b>\$0.00</b>

### **Application**

Description	Cost /Acre
Weed spray, hand, non-aquatic area, nox. [DMG]	\$180.00
Total Mulch Application Cost/Acre	\$180.00

## **NURSERY STOCK PLANTING**

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

## **JOB TIME AND COST**

No. of Acres:	17.5	Cost /Acre:	\$180.00
Estimated Failure Rate:	0%	Cost /Acre*:	\$0.00
*Selected Replanting Work Items:	NONE		

Initial Job Cost:	<b>\$3,150.00</b>
Reseeding Job Cost:	<b>\$0.00</b>
Total Job Cost:	<b>\$3,150</b>
Job Hours:	<b>35.00</b>

## HYDRAULIC EXCAVATOR WORK

Task description: Clean sediment ponds (two cleanings)

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 064 State: Colorado Abbreviation: None  
Date: 5/5/2017 County: La Plata Filename: C035-064  
User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 312D L 9'-2" Stick Horsepower: 90  
Attachment 1: ROPS Cab Weight (MT): 13.48  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$21.10</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$19.81</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.79</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$78.70</u>	
Total Fleet Cost/Hour:	<u>\$78.70</u>	

### MATERIAL QUANTITIES

Initial volume: 6,453 CCY Swell factor: 1.135  
Loose volume: 7,324 LCY

Source of estimated volume: 2 pond cleanings, 2 ac ft per cleanout  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE  
Secondary Job Condition within Basic Description: AVERAGE  
Cycle Time Value: 0.256 minutes

#### Load Bucket Capacity

Rated Capacity: 0.68 LCY (heaped) Bucket Size Class: Medium  
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850  
Adjusted Capacity: 0.58 LCY

#### Job Condition Correction Factors

Site Altitude: 7500 feet

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

Unadjusted Hourly Unit Production: 135.47 LCY/Hour  
Adjusted Hourly Unit Production: 112.44 LCY/Hour  
Adjusted Hourly Fleet Production: 112.44 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 65.14 Hours

Unit cost: \$0.700 /LCY Total job cost: \$5,126

**TRUCK/LOADER TEAM WORK**

Task description: King II - haul sediment from ponds to King I site

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

**PROJECT IDENTIFICATION**

Task #: 065 State: Colorado Abbreviation: None  
Date: 5/5/2017 County: La Plata Filename: C035-065  
User: JHB

Agency or organization name: DRMS

**HOURLY EQUIPMENT COST**

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:**

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	\$22.16	\$25.66	NA	\$25.66	NA	NA
Operating cost/hour:	\$42.40	\$32.31	NA	\$32.31	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Operator cost/hour:	\$30.37	\$41.20	NA	\$41.20	NA	NA
Unit Subtotals:	\$94.93	\$99.17	NA	\$99.17	NA	NA
Number of Units:	6	1	0	1	0	0
Group Subtotals:	Work: \$668.75		Support: \$99.17		Maint: \$0.00	

Total work team cost/hour: \$767.92

**MATERIAL QUANTITIES**

Initial volume: 6,453 CCY Swell factor: 1.000  
Loose volume: 6,453 LCY

Source of estimated volume: 2 pond cleanings, 2 ac ft each cleanout  
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: 2,700 Pounds/LCY  
Description: Earth - Wet excavated  
Rated Payload: 50,300 Pounds  
Payload Capacity: 18.63 LCY



**Truck Bed (volume) Basis:**

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 7500 feet

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

**Loading Tool Cycle Time:**

Number of Loading Tool Passes Required to Fill  
Truck: 4 passes

**Excavators and Front Shovels:**

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

Track Loaders – Material Description: \_\_\_\_\_

**Cycle Time Elements (min.):**

Load: NA      Maneuver: NA      Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.080	minutes
Adjusted Loader Cycle Time:		<b>0.403</b>	minutes
Net Load Time per Truck:		<b>1.308</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

**Truck Travel (Haul & Return) Time:**

Road Condition: Rutted dirt, little maintenance, no water, 2" tire

**penetration 5.0****Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
-------	-----------------------	-----------	------------------	------------------	-------------------	-------------------------

1	10560.00	11.50	5.00	16.50	690	15.314
---	----------	-------	------	-------	-----	--------

Haul Time: 15.314 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	-11.50	5.00	-6.50	2938	3.705

Return Time: 3.705 minutes

Total Truck Cycle Time: 21.727 minutes

Loading Tool unit

Production 504.90 LCY/Hour

Adjusted for job efficiency: 419.06 LCY/Hour

Truck Unit Production

42.00 LCY/Hour

Adjusted for job efficiency: 34.86 LCY/Hour

Optimal No. of Trucks: 12 Truck(s)

Selected Number of Trucks: 6 Truck(s)

Adjusted hourly truck team production: 209.18 LCY/Hour

Adjusted single truck/loader team production: 209.18 LCY/Hour

Adjusted multiple truck/loader team production: 209.18 LCY/Hour

### **JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: 30.85 Hours

Unit cost: \$3.671 /LCY

Total job cost: \$23,690

## SAFEGUARDING UNDERGROUND OPENINGS

Task description: Seal Mine Openings

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 100

State: Colorado

Abbreviation: None

Date: 5/5/2017

County: La Plata

Filename: C035-100

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Portal 1 seal	200	Aduit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	\$105.56	\$21,112.00
Portal 1 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	\$9.56	\$1,577.40
Portal 1 backfill	185	Aduit closure - backfilling (per cu. yd.)	185.00	CY	\$27.00	\$4,995.00
Portal 2 seal	200	Aduit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	\$105.56	\$21,112.00
Portal 2 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	\$9.56	\$1,577.40
Portal 2 backfill	185	Aduit closure - backfilling (per cu. yd.)	185.00	CY	\$27.00	\$4,995.00
Portal 3 seal	200	Aduit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	\$105.56	\$21,112.00
Portal 3 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	\$9.56	\$1,577.40
Portal 3 backfill	185	Aduit closure - backfilling (per cu. yd.)	185.00	CY	\$27.00	\$4,995.00
Portal 4 seal	200	Aduit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	\$105.56	\$21,112.00
Portal 4 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	\$9.56	\$1,577.40
Portal 4 backfill	185	Aduit closure - backfilling (per cu. yd.)	185.00	CY	\$27.00	\$4,995.00

Job Hours: 32.00

Total Cost: \$110,737.60

## DEMOLITION WORK

Task description: King II structural demolition

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 200

State: Colorado

Abbreviation: None

Date: 5/5/2017

County: La Plata

Filename: C035-200

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Location adjustment: 94.00

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Water storage tank	100k gal	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	13,333.00	CF	\$0.20	\$2,666.60
water storage tank slab	24' diam, .75 thick	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	613.00	SF	\$0.87	\$532.70
water storage tank	37k gal	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	7,933.00	CF	\$0.20	\$1,586.60
water storage tank slab	32x14x.5	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	448.00	SF	\$0.65	\$292.10
Main pump house	14x10x12.67	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	1,774.00	CF	\$0.20	\$354.80
Shop equipment wash pad slab	20x25x.75	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,250.00	SF	\$0.87	\$1,086.25
shop equipment wash pad footers	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	150.00	LF	\$2.61	\$391.50
Shop building	60x50x16	Bldg. (SN) demo./on-site disposal in	48,000.00	CF	\$0.20	\$9,600.00

		excavated pit - Max. 10,000 ft. haul				
shop building slab	60x50x.75	Demo. and on- site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	3,000.00	SF	\$0.87	\$2,607.00
shop building footers	2x1	Demo. and on- site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	220.00	LF	\$2.61	\$574.20
Mine fan	28.6x25x10.5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	7,508.00	CF	\$0.20	\$1,501.60
mine fan slab	4x8x6	Demo. and on- site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	192.00	SF	\$1.30	\$250.18
Retaining wall adjacent to fan	1x60x8	Wall, concrete, demolition only, average reinforcing - 12 in. thick	480.00	SF	\$1.28	\$614.40
retaining wall footers	7x1	Demo. and on- site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	60.00	LF	\$2.82	\$169.20
Fan portal	30x20x8	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	\$0.20	\$960.00
fan portal slab	30x20	Demo. and on- site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	600.00	SF	\$1.30	\$781.80
fan portal footers	.75x4	Demo. and on- site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	100.00	LF	\$5.86	\$586.00
Travelway portal	30x20x8	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	\$0.20	\$960.00
travelway portal	14x1	Demo. and on-	60.00	LF	\$2.82	\$169.20

footers		site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push				
Portal Motor Control Center (MCC)	14x10x12.67	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	1,774.00	CF	\$0.20	\$354.80
MCC slab	14x10	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	140.00	SF	\$0.65	\$91.28
MCC footers	1x2	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	48.00	LF	\$2.61	\$125.28
Rock dust storage silo	11' diam x 40'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,799.00	CF	\$0.22	\$835.78
rock dust storage silo slab	12x12	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	144.00	SF	\$1.30	\$187.63
rock dust storage silo footers	2x2	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	2.00	LF	\$5.86	\$11.72
Concrete retaining wall #2	70x2x4	Wall, block, demolition only, 12 in. thick - Horizontal reinforcing	560.00	SF	\$1.06	\$593.60
Exec. offices/Parts warehouse/Bath house bldgs	150x60x34	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	306,000.00	CF	\$0.23	\$69,156.00
offices/warehouse/bath house slab	150x60	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	9,000.00	SF	\$0.65	\$5,868.00
offices/warehouse/bath house footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft.	420.00	LF	\$5.86	\$2,461.20

		push				
Covered storage building	80x20x18.5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	29,600.00	CF	\$0.20	\$5,920.00
storage building slab	80x26	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	2,080.00	SF	\$0.65	\$1,356.16
storage building footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	260.00	LF	\$5.86	\$1,523.60
Main septic system tank	4000 gal	Excavate and load tank onto trailer, non-leaking - 3,000 gal. to 5,000 gal.	1.00	EA	\$571.50	\$571.50
Fuel storage building and apron	45x25x20	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	22,500.00	CF	\$0.20	\$4,500.00
fuel storage building slab	45x27	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,215.00	SF	\$0.87	\$1,055.84
fuel storage building footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	140.00	LF	\$5.86	\$820.40
Belt portal	15x20x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,000.00	CF	\$0.20	\$600.00
belt portal footers	1x2	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	30.00	LF	\$2.61	\$78.30
Return portal	15x20x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,000.00	CF	\$0.20	\$600.00
return portal footers	1x2	Demo. and on-site disposal in	30.00	LF	\$3.91	\$117.30

		excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push				
Belt portal pump house	20x14x10	Bldg. (SC) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,800.00	CF	\$0.25	\$708.40
belt portal pump house slab	20x14	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	280.00	SF	\$1.09	\$304.08
belt portal pump house footer	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	68.00	LF	\$2.61	\$177.48
Electrical substation	19x14x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,660.00	CF	\$0.20	\$532.00
electircal substation slab	19x14	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	266.00	SF	\$0.65	\$173.43
Electrical substation slabs	35x35	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,225.00	SF	\$0.65	\$798.70
Main dumpster pad	20x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	160.00	SF	\$0.65	\$104.32
Slope conveyor (box truss section)	8x8	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	240.00	LF	\$44.51	\$10,682.16
Slope conveyor (non-box truss section)	4x4	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	110.00	LF	\$44.51	\$4,895.99
Magnet Dumpster Pad #1	8x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max.	64.00	SF	\$0.65	\$41.73



		200 ft. push				
Coal Stack Tube #1 Head House	14.5x12x25	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,350.00	CF	\$0.23	\$983.10
Magnet Dumpster Pad #2	8x8	Demo. and on- site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	64.00	SF	\$0.65	\$41.73
Raw Coal Conveyor	4x4	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	177.00	LF	\$44.51	\$7,878.09
Crushing/Screening structure	28x25x53	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	37,100.00	CF	\$0.23	\$8,384.60
crushing/screening slab	40x30	Demo. and on- site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	7,200.00	SF	\$0.65	\$4,694.40
Crushing/Screening Pile Caps	6 - 4x6.5x3.5	Demo. and on- site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	546.00	SF	\$1.30	\$711.44
Crushing/screening pile footers	1.5x1.5	Demo. and on- site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	24.00	LF	\$3.91	\$93.84
Lump conveyor (radial stacker belt)	3x3	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	\$17.60	\$1,760.00
Stoker conveyor (radial stacker belt)	3x3	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	\$17.60	\$1,760.00
Crushed coal storage conveyor	4x8x320	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	320.00	LF	\$44.51	\$14,242.88

crushed coal storage conveyor slab	7.75x6	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	47.00	SF	\$1.30	\$61.24
crushed coal storage conveyor footers	4x4	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	6.00	LF	\$2.82	\$16.92
Coal Stack Tube #2 Head House	14.5x12x25	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,350.00	CF	\$0.23	\$983.10
Cross-Belt Coal Sampler	20x20	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	\$0.65	\$260.80
Truck Loadout Conveyor	4x8x260	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	260.00	LF	\$44.51	\$11,572.34
Truck Loadout & Bins	30x15x30	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	13,500.00	CF	\$0.23	\$3,051.00
truck loadout & bins slab	6.5x3.5x4	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	273.00	SF	\$1.30	\$355.72
truck loadout & bins footers	2x4	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	24.00	LF	\$2.82	\$67.68
Truck scale	120x20x2	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	\$0.20	\$960.00
truck scale slab	150x16	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	2,400.00	SF	\$1.30	\$3,127.20
Coal sales building	20x12x10	Bldg. (SN) demo./on-site disposal in	2,400.00	CF	\$0.20	\$480.00

		excavated pit - Max. 10,000 ft. haul				
coal sales slab	20x12	Demo. and on- site disposal in excavated pit, 6 in. thick - Max. 50 ft. push	240.00	SF	\$0.64	\$152.88
Coal Sales Building Septic System Tank	6x10x5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	300.00	CF	\$0.19	\$58.20
Main Motor Control Center (Main MCC)	21x16.67x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,501.00	CF	\$0.19	\$679.19
Main MCC slab	21x20	Demo. and on- site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	420.00	SF	\$0.65	\$273.84
Main MCC footers	1.5x2	Demo. and on- site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	84.00	LF	\$3.91	\$328.44
Cattle guard	8x24x.5	Demo. and on- site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	96.00	SF	\$1.30	\$125.09
Culvert C-1	48"	Pipe, corrugated metal (CMP) - 48 in. diameter pipe	81.00	LF	\$14.56	\$1,179.28
Culvert C-2	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	48.00	LF	\$6.47	\$310.66
Culvert C-2A	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	48.00	LF	\$4.98	\$238.94
Culvert C-3 (double)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	120.00	LF	\$6.47	\$776.64
Culvert C-5A	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	63.00	LF	\$6.47	\$407.74
Culvert C-5B	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	40.00	LF	\$6.47	\$258.88

Culvert C-6	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	90.00	LF	\$6.47	\$582.48
Culvert C-7	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	203.00	LF	\$6.47	\$1,313.82
Culvert C-8	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	58.00	LF	\$6.47	\$375.38
Culvert C-9	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	201.00	LF	\$6.47	\$1,300.87
Culvert C-10	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	158.00	LF	\$6.47	\$1,022.58
Culvert C-11	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	82.00	LF	\$6.47	\$530.70
West Clearwater Culvert	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	220.00	LF	\$6.47	\$1,423.84
Culvert C-14	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	40.00	LF	\$4.98	\$199.12
Culvert C-14A	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	40.00	LF	\$6.47	\$258.88
Culvert C-14B	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	12.00	LF	\$6.47	\$77.66
Culvert C-15	15"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	60.00	LF	\$6.47	\$388.32
Pond primary spillway	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	120.00	LF	\$6.47	\$776.64
Pond emergency spillway	36"	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	120.00	LF	\$10.09	\$1,210.92
Material and debris removal	NA	Loading and 2 mile haul, no salvage - Machine loading	200.00	CY	\$17.70	\$3,540.00
Remove/dispose of signs and markers	NA	USER PROVIDED ITEM	1.00	EA	\$500.00	\$500.00

<b>Job Hours:</b>	<b>140.00</b>	<b>Subtotal</b>	<b>Total Cost</b>
		<b>(unadjusted):</b>	<b>(adjusted for</b>
		<b>\$220,707.88</b>	<b>location):</b>
			<b>\$207,465.41</b>

## TRUCK/LOADER TEAM WORK

Task description: King II - Haul coal waste rock to King I waste pile

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 300

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-300

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	\$22.16	\$25.66	NA	\$25.66	NA	NA
Operating cost/hour:	\$42.40	\$32.31	NA	\$32.31	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Operator cost/hour:	\$30.37	\$41.20	NA	\$41.20	NA	NA
Unit Subtotals:	\$94.93	\$99.17	NA	\$99.17	NA	NA
Number of Units:	1	1	0	1	0	0
Group Subtotals:	Work:	\$194.10	Support:	\$99.17	Maint:	\$0.00

Total work team cost/hour: \$293.27

### MATERIAL QUANTITIES

Initial volume: 37

CCY

Swell factor: 1.000

Loose volume: 37

LCY

Source of estimated volume: Assume 100 sf x 10 ft high

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:	User Provided	
Rated Payload:	50,300	Pounds
Payload Capacity:	17.34	LCY

#### **Truck Bed (volume) Basis:**

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	17.34	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 7500 feet

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

### **Loading Tool Cycle Time:**

Number of Loading Tool Passes Required to Fill Truck: 4 passes

#### **Excavators and Front Shovels:**

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

Track Loaders – Material Description: \_\_\_\_\_

#### **Cycle Time Elements (min.):**

Load: NA      Maneuver: NA      Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.080	minutes
Adjusted Loader Cycle Time:		<b>0.403</b>	minutes
Net Load Time per Truck:		<b>1.308</b>	minutes

### **Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time:  
penetration 5.0

Road Condition: Rutted dirt, little maintenance, no water, 2" tire



Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	11.50	5.00	16.50	690	15.314

Haul Time: 15.314 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	-11.50	5.00	-6.50	2938	3.705

Return Time: 3.705 minutes

Total Truck Cycle Time: 21.727 minutes

Loading Tool unit  
Production 504.90 LCY/Hour      Adjusted for job efficiency: 419.06 LCY/Hour  
Truck Unit Production 42.00 LCY/Hour      Adjusted for job efficiency: 34.86 LCY/Hour  
Optimal No. of Trucks: 12 Truck(s)      Selected Number of Trucks: 1 Truck(s)  
Adjusted hourly truck team production: 34.86 LCY/Hour  
Adjusted single truck/loader team production: 34.86 LCY/Hour  
Adjusted multiple truck/loader team production: 34.86 LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: 1.06 Hours

Unit cost: \$8.412 /LCY      Total job cost: \$311

## BULLDOZER RIPPING WORK

Task description: King II - Rip coal sales area

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 301 State: Colorado Abbreviation: None  
Date: 5/8/2017 County: La Plata Filename: C035-301  
User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper Ownership Cost/Hour:	\$7.55	NA
Ripper Operating Cost/Hour:	\$7.21	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$206.59	
Total Fleet Cost/Hour:	<b>\$206.59</b>	

## MATERIAL QUANTITIES

Selected estimating method: Area

### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 0.80 acres Rip Depth (ft): 2.00 Volume: 2,581 BCY or CCY

Source of estimated quantity: Map King II-007

## HOURLY PRODUCTION

### Seismic:

Seismic Velocity: NA feet/second

### Area:

Average Ripping Depth: 1.00 mph  
Average Ripping Width: 7.08 degrees  
Average Ripping Length: 50.00 feet  
Average Dozer Speed: 88.00 feet  
Average Maneuver Time: 0.25 feet  
Production per unit area: 0.596 acres/hour

### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.596 Acres/hr  
Site Altitude: 7,400 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.49 Acres/hr  
Adjusted Hourly Fleet Production: **0.49** Acres/hr

## JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.62** Hours

Unit cost: \$417.652 Per acre Total job cost: **\$334**

## TRUCK/LOADER TEAM WORK

Task description: King II - Haul gravel from coal sales, portals, rd/wtr tank

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 302

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-302

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	\$18.29	\$25.66	NA	\$25.66	NA	NA
Operating cost/hour:	\$39.97	\$32.31	NA	\$32.31	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Operator cost/hour:	\$0.00	\$41.20	NA	\$41.20	NA	NA
Unit Subtotals:	\$58.26	\$99.17	NA	\$99.17	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	\$215.69	Support:	\$99.17	Maint:	\$0.00

Total work team cost/hour: \$314.86

### MATERIAL QUANTITIES

Initial volume: 4,604

CCY

Swell factor: 1.060

Loose volume: 4,880

LCY

Source of estimated volume: Operator's estimate PR-8

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:	2,850	Pounds/LCY
Description:	User Provided	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.42	LCY

#### **Truck Bed (volume) Basis:**

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: 11.41 LCY

#### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 7500 feet

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

### **Loading Tool Cycle Time:**

Number of Loading Tool Passes Required to Fill  
Truck: 3 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): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.090	minutes
Adjusted Loader Cycle Time:		<b>0.393</b>	minutes
Net Load Time per Truck:		<b>0.885</b>	minutes

### **Truck Cycle Time:**

Truck Exchange Time: 0.50 Minutes                      Adjusted for site altitude: 0.500 Minutes

Truck Load Time:	<u>0.885</u>	Minutes	Adjusted for site altitude:	<u>0.885</u>	Minutes
Truck Maneuver and Dump Time:	<u>0.90</u>	Minutes	Adjusted for site altitude:	<u>0.900</u>	Minutes

Truck Travel (Haul & Return) Time:  
penetration 5.0

Road Condition: Rutted dirt, little maintenance, no water, 2" tire

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1120.00	2.00	5.00	7.00	1568	0.747

Haul Time: 0.747 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1120.00	-2.00	5.00	3.00	2874	0.415

Return Time: 0.415 minutes

Total Truck Cycle Time: 3.447 minutes

Loading Tool unit

Production 494.19 LCY/Hour Adjusted for job efficiency: 410.18 LCY/Hour

Truck Unit Production

198.56 LCY/Hour Adjusted for job efficiency: 164.81 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 329.62 LCY/Hour

Adjusted single truck/loader team production: 329.62 LCY/Hour

Adjusted multiple truck/loader team production: 329.62 LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: 14.81 Hours

Unit cost: \$0.955 /LCY Total job cost: \$4,662

## TRUCK/LOADER TEAM WORK

Task description: King II - Haul office fill to portal cuts/acc rd/wtr tank

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 303

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-303

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

		Equipment Description
Truck Loader Team -Truck:		Generic 12-18 cy, 6x4
-Loader:		OBSOLETE - CAT 938H
Support Equipment -Load Area:		NA
-Dump Area:		OBSOLETE - CAT 938H
Road Maintenance -Motor Grader:		NA
-Water Truck:		NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	\$22.16	\$25.66	NA	\$25.66	NA	NA
Operating cost/hour:	\$42.40	\$32.31	NA	\$32.31	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Operator cost/hour:	\$30.37	\$41.20	NA	\$41.20	NA	NA
Unit Subtotals:	\$94.93	\$99.17	NA	\$99.17	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	\$289.03	Support:	\$99.17	Maint:	\$0.00

Total work team cost/hour: \$388.20

### MATERIAL QUANTITIES

Initial volume: 18,217

CCY

Swell factor: 1.165

Loose volume: 21,223

LCY

Source of estimated volume: Map King II-007: portal 18148 yds, fan port/wtr tank 4673 yd

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:	2,700	Pounds/LCY
Description:	User Provided	
Rated Payload:	50,300	Pounds
Payload Capacity:	18.63	LCY

#### **Truck Bed (volume) Basis:**

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 7500 feet

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

### **Loading Tool Cycle Time:**

Number of Loading Tool Passes Required to Fill  
Truck: 4 passes

#### **Excavators and Front Shovels:**

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

Track Loaders – Material Description: \_\_\_\_\_

#### **Cycle Time Elements (min.):**

Load: NA      Maneuver: NA      Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.080	minutes
Adjusted Loader Cycle Time:		<b>0.403</b>	minutes
Net Load Time per Truck:		<b>1.308</b>	minutes

### **Truck Cycle Time:**

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time:  
penetration 5.0

Road Condition: Rutted dirt, little maintenance, no water, 2" tire

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	490.00	3.00	5.00	8.00	1381	0.397

Haul Time: **0.397** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	490.00	-3.00	5.00	2.00	2905	0.204

Return Time: **0.204** minutes

Total Truck Cycle Time: **3.309** minutes

Loading Tool unit Production 504.90 LCY/Hour      Adjusted for job efficiency: 419.06 LCY/Hour  
 Truck Unit Production 275.83 LCY/Hour      Adjusted for job efficiency: 228.94 LCY/Hour  
 Optimal No. of Trucks: 2 Truck(s)      Selected Number of Trucks: 2 Truck(s)  
 Adjusted hourly truck team production: 457.89 LCY/Hour  
 Adjusted single truck/loader team production: 419.06 LCY/Hour  
 Adjusted multiple truck/loader team production: **419.06** LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: **50.64** Hours

Unit cost: \$0.926 /LCY      Total job cost: **\$19,660**

## BULLDOZER WORK

Task description: King II - grade portal cuts, access roads, water tank pad

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 304

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-304

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$199.38	
Total Fleet Cost/Hour:	<b>\$199.38</b>	

### MATERIAL QUANTITIES

Initial Volume: 16,562

Swell factor: 1.165

Loose volume: **19,295** LCY

Source of estimated volume: Map King II-007C

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 50 feet

Unadjusted hourly  
production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %

Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

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

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr  
Adjusted fleet production: **499.24** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.399/LCY

Total job time: **38.65** Hours  
Total job cost: **\$7,705**

## COMPACTION WORK

Task description: King II-Compact fill on portal cuts/access rd/water tank pad

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 305

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-305

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Compactor Type: Soil - tamping foot

Horsepower: 354

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$103.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$74.57</u>	<u>100</u>
Operator Cost/Hour:	<u>\$26.32</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$203.90</u>	
Total Fleet Cost/Hour:	<u>\$203.90</u>	

### MATERIAL QUANTITIES

Loose volume: 22,821

LCY

Shrinkage factor: 0.750

Compacted volume: 17,116

CCY

Source of estimated volume: Tasks 302 and 303

Source of estimated shrinkage factor: Cat Handbook

### HOURLY PRODUCTION

Unadjusted hourly production =  $(W \times S \times L \times C) / P$

Compacted width per pass (W):	<u>7.34</u>	feet
Average Compactor Speed (S):	<u>5.00</u>	mph
Compacted thickness of each lift (L):	<u>10.00</u>	inches
Conversion Constant (C):	<u>16.3</u>	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	<u>5</u>	passes
Unadjusted Hourly Unit Production:	<u>1,196.42</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 7,300 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.8300</u>	multiplier

Adjusted Hourly Unit Production: 993.03 CCY/Hour

Adjusted Hourly Fleet Production: 993.03 CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: 17.24 Hours

Unit cost: \$0.205 per CCY

Total job cost: \$3,514

## BULLDOZER RIPPING WORK

Task description: King II - Rip portal, access rd., coal sales areas

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 306

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-306

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper Ownership Cost/Hour:	\$7.55	NA
Ripper Operating Cost/Hour:	\$7.21	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$206.59	
Total Fleet Cost/Hour:	<b>\$206.59</b>	

**MATERIAL QUANTITIES**Selected estimating method: Area**Alternate Methods:**

Seismic: NA  
Area: 16.98 acres

Bank Volume: NA BCY  
Rip Depth (ft): 2.00 Volume: 54,789 BCY or CCY

Source of estimated quantity: Page 2.05.3-3**HOURLY PRODUCTION****Seismic:**Seismic Velocity: NA feet/second**Area:**

Average Ripping Depth:	<u>1.00</u>	mph
Average Ripping Width:	<u>7.08</u>	degrees
Average Ripping Length:	<u>50.00</u>	feet
Average Dozer Speed:	<u>88.00</u>	feet
Average Maneuver Time:	<u>0.25</u>	feet
Production per unit area:	<u>0.596</u>	acres/hour

**Job Condition Correction Factors**Unadjusted Hourly Unit Production: 0.596 Acres/hrSite Altitude: 7,400 feetAltitude Adj: 1.00 (CAT HB)Job Efficiency: 0.83 (1 shift/day)Net Correction: 0.83 multiplierAdjusted Hourly Unit Production: 0.49 Acres/hrAdjusted Hourly Fleet Production: **0.49** Acres/hr**JOB TIME AND COST**Fleet size: 1 Grader(s) Total job time: **34.33** HoursUnit cost: \$417.652 Per acre Total job cost: **\$7,092**



## BULLDOZER WORK

Task description: King II - grade portal cuts, access roads, water tank pad

Site: King Coal Mine Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 307 State: Colorado Abbreviation: None  
Date: 2/11/2015 County: La Plata Filename: C035-307  
User: SLB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$199.38	
Total Fleet Cost/Hour:	<b>\$199.38</b>	

### MATERIAL QUANTITIES

Initial Volume: 54,789  
Swell factor: 1.000  
Loose volume: **54,789** LCY

Source of estimated volume: Page 2.05.3-3, 16.98 ac x 2' depth  
Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

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

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %  
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

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

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr

Adjusted fleet production: **499.24** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.399/LCY

Total job time: **109.74** Hours  
Total job cost: **\$21,880**

### **BULLDOZER WORK**

Task description: **King II - remove east and west cleanwater ditches**

Site: **King Coal Mine** Permit Action: **RN7** Permit/Job#: **C1981035**

### **PROJECT IDENTIFICATION**

Task #: 308 State: Colorado Abbreviation: None  
Date: 5/8/2017 County: La Plata Filename: C035-308  
User: JHB

Agency or organization name: **DRMS**

### **HOURLY EQUIPMENT COST**

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

#### **Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: **\$199.38**

### **MATERIAL QUANTITIES**

Initial Volume: 3,235  
Swell factor: 1.330  
Loose volume: **4,303** LCY

Source of estimated volume: **West:4x3x2480 - East: 10x3x1920**

Source of estimated swell factor: Cat Handbook

### **HOURLY PRODUCTION**

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

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %  
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

<u>Job Condition</u>	<u>Correction Factor</u>	<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr  
Adjusted fleet production: **499.24 LCY/hr**

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.399/LCY

Total job time: **8.62 Hours**  
Total job cost: **\$1,718**

## BULLDOZER WORK

Task description: King II - construct drainage channel in Cochrane Canyon

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 309

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-309

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$199.38	
Total Fleet Cost/Hour:	<b>\$199.38</b>	

### MATERIAL QUANTITIES

Initial Volume: 2,133

Swell factor: 1.000

Loose volume: **2,133** LCY

Source of estimated volume: Mp King II-011A, Post-Mining X-Section Plan

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 50 feet

Unadjusted hourly  
production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %

Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

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

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr

Adjusted fleet production: **608.16** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.328/LCY

Total job time: **3.51** Hours  
Total job cost: **\$699**

### **BULLDOZER WORK**

Task description: **King II - construct channel in office drainage**

Site: **King Coal Mine** Permit Action: **RN7** Permit/Job#: **C1981035**

### **PROJECT IDENTIFICATION**

Task #: 310 State: Colorado Abbreviation: None  
Date: 5/8/2017 County: La Plata Filename: C035-310  
User: JHB

Agency or organization name: **DRMS**

### **HOURLY EQUIPMENT COST**

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

#### **Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: **\$199.38**

### **MATERIAL QUANTITIES**

Initial Volume: 2,756  
Swell factor: 1.000  
Loose volume: **2,756** LCY

Source of estimated volume: **Mp King II-011A, Post-Mining X-Section Plan,**

Source of estimated swell factor: 10x3x2480  
Cat Handbook

### **HOURLY PRODUCTION**

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

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %  
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

<u>Job Condition Correction Factor</u>		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr  
Adjusted fleet production: **608.16** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.328/LCY

Total job time: **4.53** Hours  
Total job cost: **\$904**

## BULLDOZER WORK

Task description: King II - backfill pond

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 311

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-311

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$199.38	
Total Fleet Cost/Hour:	<b>\$199.38</b>	

### MATERIAL QUANTITIES

Initial Volume: 9,993

Swell factor: 1.125

Loose volume: **11,242 LCY**

Source of estimated volume: Pond design

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 50 feet

Unadjusted hourly  
production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %

Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: User Provided

#### Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

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

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr  
Adjusted fleet production: **608.16** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.328/LCY

Total job time: **18.49** Hours  
Total job cost: **\$3,686**



## BULLDOZER RIPPING WORK

Task description: King II - Rip coal sales area

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 312 State: Colorado Abbreviation: None  
Date: 5/8/2017 County: La Plata Filename: C035-312  
User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

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

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper Ownership Cost/Hour:	\$7.55	NA
Ripper Operating Cost/Hour:	\$7.21	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$206.59	
Total Fleet Cost/Hour:	<b>\$206.59</b>	

**MATERIAL QUANTITIES**Selected estimating method: Area**Alternate Methods:**

Seismic: NA  
Area: 1.70 acres      Bank Volume: NA BCY      NA  
Rip Depth (ft): 2.00 Volume: 5,485 BCY or CCY

Source of estimated quantity: Map King II-007**HOURLY PRODUCTION****Seismic:**Seismic Velocity: NA feet/second**Area:**

Average Ripping Depth: 1.00 mph  
Average Ripping Width: 7.08 degrees  
Average Ripping Length: 50.00 feet  
Average Dozer Speed: 88.00 feet  
Average Maneuver Time: 0.25 feet  
Production per unit area: 0.596 acres/hour

**Job Condition Correction Factors**

Unadjusted Hourly Unit Production: 0.596 Acres/hr  
Site Altitude: 7,400 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.49 Acres/hr  
Adjusted Hourly Fleet Production: **0.49** Acres/hr

**JOB TIME AND COST**Fleet size: 1 Grader(s)      Total job time: **3.44** HoursUnit cost: \$417.652 Per acre      Total job cost: **\$710****BULLDOZER WORK**

Task description: King II - Grade haul road

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### **PROJECT IDENTIFICATION**

Task #: 313

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-313

User: JHB

Agency or organization name: DRMS

### **HOURLY EQUIPMENT COST**

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### **Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper own. Cost/Hour:	\$7.55	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$199.38

Total Fleet Cost/Hour: \$199.38

### **MATERIAL QUANTITIES**

Initial Volume: 5,485

Swell factor: 1.330

Loose volume: 7,295 LCY

Source of estimated volume: 1.7 acres x 2' depth

Source of estimated swell  
factor: Cat Handbook

### **HOURLY PRODUCTION**

Average push distance: 50 feet

Unadjusted hourly  
production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %

Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### **Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)

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

Net correction: 0.3949

Adjusted unit production: 552.86 LCY/hr

Adjusted fleet production: **552.86** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.361/LCY

Total job time: **13.20** Hours  
Total job cost: **\$2,631**

## MISCELLANEOUS TRUCK WORK

Task description: Water truck for dust control

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 314 State: Colorado Abbreviation: None  
Date: 5/8/2017 County: La Plata Filename: C035-314  
User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Make and Model: Water Tanker, 2,500 Gal. Horsepower: 150  
Attachment 1: \_\_\_\_\_ Shift Basis: 1 per day  
Attachment 2: \_\_\_\_\_ Weight: 5.25  
Labor Unit 1: Tanker Driver - 1 rear axle (US Tons)  
Labor Unit 2: \_\_\_\_\_

### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$7.88	NA
Operating Cost/Hour:	\$14.74	100
Operator Cost/Hour:	\$21.39	NA
Total Unit Cost/Hour:	\$44.01	
Total Fleet Cost/Hour:	\$44.01	

### JOB TIME AND COST

Fleet size: 1 Truck(s) Total job time: 240.00 Hours  
Unit cost: \$44.01 /Hour Total job cost: \$10,562

## TRUCK/LOADER TEAM WORK

Task description: King II - distribute topsoil from Cochrane stockpile

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 401

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-401

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

		Equipment Description
Truck Loader Team -Truck:		Generic 12-18 cy, 6x4
-Loader:		OBSOLETE - CAT 938H
Support Equipment -Load Area:		NA
-Dump Area:		OBSOLETE - CAT 938H
Road Maintenance -Motor Grader:		NA
-Water Truck:		NA

#### Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	\$22.16	\$25.66	NA	\$25.66	NA	NA
Operating cost/hour:	\$42.40	\$32.31	NA	\$32.31	NA	NA
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	NA	NA
Operator cost/hour:	\$30.37	\$41.20	NA	\$41.20	NA	NA
Unit Subtotals:	\$94.93	\$99.17	NA	\$99.17	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	\$289.03	Support:	\$99.17	Maint:	\$0.00

Total work team cost/hour: \$388.20

### MATERIAL QUANTITIES

Initial volume: 27,699

CCY

Swell factor: 1.215

Loose volume: 33,654

LCY

Source of estimated volume: 22.36 ac - 1.5 ponds

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:	1,600	Pounds/LCY
Description:	Top Soil	
Rated Payload:	50,300	Pounds
Payload Capacity:	31.44	LCY

#### Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: 15.21 LCY

### Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.803</b>	LCY

### Job Condition Corrections:

Site Altitude (ft.): 7500 feet

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

### Loading Tool Cycle Time:

Number of Loading Tool Passes Required to Fill  
Truck: 4 passes

#### Excavators and Front Shovels:

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

Track Loaders – Material Description: \_\_\_\_\_

#### Cycle Time Elements (min.):

Load: NA      Maneuver: NA      Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.080	minutes
Adjusted Loader Cycle Time:		<b>0.403</b>	minutes
Net Load Time per Truck:		<b>1.308</b>	minutes

### Truck Cycle Time:

Truck Exchange Time: 0.50 Minutes      Adjusted for site altitude: 0.500 Minutes

Truck Load Time:	<u>1.308</u>	Minutes	Adjusted for site altitude:	<u>1.308</u>	Minutes
Truck Maneuver and Dump Time:	<u>0.90</u>	Minutes	Adjusted for site altitude:	<u>0.900</u>	Minutes

Truck Travel (Haul & Return) Time:  
penetration 4.0

Road Condition: Rutted dirt, little maintenance, no water, 1" tire



Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	2.00	4.00	6.00	1855	1.158

Haul Time: **1.158** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	-2.00	4.00	2.00	2905	0.723

Return Time: **0.723** minutes

Total Truck Cycle Time: **4.589** minutes

Loading Tool unit  
 Production 504.90 LCY/Hour  
 Truck Unit Production 198.89 LCY/Hour  
 Adjusted for job efficiency: 419.06 LCY/Hour  
 Adjusted for job efficiency: 165.08 LCY/Hour

Optimal No. of Trucks: 3 Truck(s)  
 Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 330.15 LCY/Hour  
 Adjusted single truck/loader team production: 330.15 LCY/Hour  
 Adjusted multiple truck/loader team production: **330.15** LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: **101.93** Hours

Unit cost: \$1.176 /LCY Total job cost: **\$39,571**

## MOTOR GRADER WORK

Task description: King II - finish grade topsoil area

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 402

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-402

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 12M

Ripper Attachment: Multi-Shank Ripper

Horsepower: 158

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$28.02	NA
Operating Cost/Hour:	\$28.28	100
Ripper Ownership Cost/Hour:	\$1.99	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.90	NA
Total Unit Cost/Hour:	\$87.19	
Total Fleet Cost/Hour:	<b>\$87.19</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 22.36 acres

Source of estimated acreage: Section 2.05.3 of permit application

### HOURLY PRODUCTION

Average Grader Speed:	<u>1.25</u>	mph
Selected Application:	<u>Production Deration - 1.25</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>1.2727</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 7400 feet

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

Adjusted Hourly Unit Production: 1.0818 acres/Hour

Adjusted Hourly Fleet Production: **1.0818** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 20.67 Hours

Unit cost: \$80.60 per acre Total job cost: **\$1,802**



## REVEGETATION WORK

Task description: King II revegetate Rangeland Areas (19.36 acres)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 403

State: Colorado

Abbreviation: None

Date: 5/8/2017

County: La Plata

Filename: C035-403

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Native	0.60	9.79	\$8.70
Indian Ricegrass - Native	1.45	4.69	\$10.15
Mountain Brome - Bromar	1.74	2.80	\$7.57
Sideoats Grama - Butte	1.00	3.28	\$9.67
Burnett, Small (or Little) - Delar	2.90	3.66	\$7.25
Slender Wheatgrass - Native	1.24	4.53	\$3.50
Western Wheatgrass - Native	2.18	5.51	\$15.26
Globemallow, Scarlet (or copper)	0.44	4.98	\$59.62
<b>Totals Seed Mix</b>	<b>11.55</b>	<b>39.24</b>	<b>\$121.72</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	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

### **Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$165.34</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:	19.36	Cost /Acre:	\$1,236.68
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,236.68
*Selected Replanting Work Items:	FERTILIZING,SEEDING,MULCHING		

Initial Job Cost:	<b>\$23,942.12</b>
Reseeding Job Cost:	<b>\$11,971.06</b>
Total Job Cost:	<b>\$35,913</b>
Job Hours:	<b>20.00</b>

## REVEGETATION WORK

Task description: King II revegetate Pinyon-Juniper areas (3 acres)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 404

State: Colorado

Abbreviation: None

Date: 5/9/2017

County: La Plata

Filename: C035-404

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>

#### **Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bitterbrush, Antelope	8.71	2.68	\$169.85
Blue Grama - Native	0.60	9.79	\$8.70
Indian Ricegrass - Native	1.45	4.69	\$10.15
Mountain Brome - Bromar	1.74	2.80	\$7.57
Sideoats Grama - Butte	1.00	3.28	\$9.67
Burnett, Small (or Little) - Delar	2.90	3.66	\$7.25
Slender Wheatgrass - Native	1.24	4.53	\$3.50
Mahogany, Mountain	4.84	6.56	\$178.16
Western Wheatgrass - Native	2.18	5.51	\$15.26
Globemallow, Scarlet (or copper)	0.44	4.98	\$59.62
Sumac, Skunkbrush	4.36	2.04	\$91.56
Winter Fat	1.94	4.94	\$39.77

<b>Totals Seed Mix</b>	31.40	55.46	<b>\$601.05</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	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

#### **Application**

<b>Description</b>	<b>Cost /Acre</b>
Crimping, with tractor {DMG survey data}	\$66.02
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$165.34</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:	3	Cost /Acre:	\$1,716.01
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,716.01

\*Selected Replanting Work Items: FERTILIZING,SEEDING,MULCHING

Initial Job Cost:	<b>\$5,148.03</b>
Reseeding Job Cost:	<b>\$2,574.02</b>
Total Job Cost:	<b>\$7,722</b>
Job Hours:	<b>3.00</b>

## REVEGETATION WORK

Task description: King II-seed water line corridor (0.47 ac)

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 406 State: Colorado Abbreviation: None  
Date: 5/9/2017 County: La Plata Filename: C035-406  
User: JHB

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>
10-34-0, 18-46-0, 5-10-5	150.00	pound	\$0.34	\$51.00
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$51.00</b>



**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

**TILLING**

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	\$13.35
Switchgrass - Pathfinder	0.75	6.70	\$7.48
Mountain Brome - Bromar	1.82	2.92	\$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	\$6.53
Sheep Fescue - Bighorn	0.31	4.84	\$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	\$6.66
Western Wheatgrass - Native	2.54	6.41	\$17.78
Flax, Lewis Blue	0.46	3.05	\$7.59
<b>Totals Seed Mix</b>	<b>11.39</b>	<b>36.92</b>	<b>\$68.76</b>

**Application**

Description	Cost /Acre
Tractor spreader (MEANS 32 92 19.14 0100)	\$548.86
<b>Total Seed Application Cost/Acre</b>	<b>\$548.86</b>

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

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

**Application**

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	\$99.32
<b>Total Mulch Application Cost/Acre</b>	<b>\$99.32</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres:	0.47	Cost /Acre:	\$1,434.56
Estimated Failure Rate:	50%	Cost /Acre*:	\$617.62
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$674.24
Reseeding Job Cost:	\$145.14
Total Job Cost:	\$819
Job Hours:	1.25



## BOREHOLE SEALING WORK

Task description: Seal Boreholes CO-14-01 through CO-14-09

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 409

State: Colorado

Abbreviation: None

Date: 5/9/2017

County: La Plata

Filename: C035-409

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plugs	Stainless steel plug - 6 in. diameter borehole	6	NA	18.00	EA	\$140.75	\$2,533.50
Seal Holes	Portland cement grout ( Bag, material cost only...94 lb. bag)	6	27	27.45	bag	\$10.55	\$289.60
Cut Casing	Exposed casing removal - Calculate Circumference in Linear Feet	6	14.14	14.14	LF	\$1.77	\$25.03
Hole Marker	Borehole location/identification marker (EA, material cost only)	NA	NA	9.00	EA	\$3.67	\$33.03
Drill Rig Time	GENERIC 3.0 in. - 1, 700 ft. capy.	NA	NA	36.00	EA	\$26.04	\$937.44
Water Truck Time	Water Tanker, 2,500 Gal.	NA	NA	36.00	EA	\$22.62	\$814.32

Job Hours: 36.00

Total Cost: \$4,633.00



## BULLDOZER WORK

Task description: Regrade drill pads and pits CO-14-01 through CO-14-09

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #:	<u>410</u>	State:	<u>Colorado</u>	Abbreviation:	<u>None</u>
Date:	<u>5/9/2017</u>	County:	<u>La Plata</u>	Filename:	<u>C035-410</u>
User:	<u>JHB</u>				
Agency or organization name: <u>DRMS</u>					

### HOURLY EQUIPMENT COST

Basic Machine:	<u>Cat D5K XL - 5P</u>
Horsepower:	<u>96</u>
Blade Type:	<u>Power Angle Tilt</u>
Attachment:	<u>NA</u>
Shift Basis:	<u>1 per day</u>
Data Source:	<u>(CRG)</u>

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$22.82</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$22.47</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.85</u>	<u>NA</u>

Total unit Cost/Hour:	<u>\$87.14</u>
Total Fleet Cost/Hour:	<u><b>\$87.14</b></u>

### MATERIAL QUANTITIES

Initial Volume:	<u>833</u>
Swell factor:	<u>1.165</u>
Loose volume:	<u><b>971</b> LCY</u>

Source of estimated volume:	<u>9 pads, 50' x 50', 1' depth</u>
Source of estimated swell factor:	<u>Cat Handbook</u>

### HOURLY PRODUCTION

Average push distance:	<u>50 feet</u>
Unadjusted hourly production:	<u>464.3 LCY/hr</u>

Materials consistency description: Consolidated stockpile 1.0

Average push gradient:	<u>0 %</u>
Average site altitude:	<u>7,500 feet</u>

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

<u>Job Condition Correction Factor</u>		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.000</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>
Job efficiency:	<u>0.830</u>	<u>(1 SHIFT/DAY)</u>
Spoil pile:	<u>0.600</u>	<u>(FND-SF)</u>

Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2962

Adjusted unit production: 137.53 LCY/hr

Adjusted fleet production: **137.53** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.634/LCY

Total job time: **7.06** Hours

Total job cost: **\$615**

## BULLDOZER WORK

Task description: Replace topsoil on CO-14-01 through CO-14-09 disturbance

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 411 State: Colorado Abbreviation: None  
Date: 5/9/2017 County: La Plata Filename: C035-411  
User: JHB  
Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D5K XL - 5P  
Horsepower: 96  
Blade Type: Power Angle Tilt  
Attachment: NA  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$22.82	NA
Operating Cost/Hour:	\$22.47	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$87.14  
Total Fleet Cost/Hour: **\$87.14**

### MATERIAL QUANTITIES

Initial Volume: 417  
Swell factor: 1.125  
Loose volume: **469 LCY**

Source of estimated volume: 9 pads, 50' x 50', 0.5' depth  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 50 feet  
Unadjusted hourly production: 464.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %  
Average site altitude: 7,500 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

<u>Job Condition Correction Factor</u>		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.600	(FND-SF)



Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3369

Adjusted unit production: 156.42 LCY/hr

Adjusted fleet production: **156.42** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.557/LCY

Total job time: **3.00** Hours

Total job cost: **\$261**

## REVEGETATION WORK

Task description: King II-Broadcast seed CO-14-01 thru CO-09 disturbance

Site: King Coal Mine Permit Action: RN7 Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 412 State: Colorado Abbreviation: None  
Date: 5/9/2017 County: La Plata Filename: C035-412  
User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

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

#### **Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

### TILLING

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	3.48	11.18	\$26.69
Switchgrass - Pathfinder	1.50	13.40	\$14.96
Mountain Brome - Bromar	3.64	5.85	\$15.83
Burnett, Small (or Little) - Delar	5.22	6.59	\$13.05
Sheep Fescue - Bighorn	0.62	9.68	\$2.93
Thickspike Wheatgrass - Critana	2.32	8.20	\$13.32
Western Wheatgrass - Native	5.08	12.83	\$35.56
Flax, Lewis Blue	0.92	6.10	\$15.18
<b>Totals Seed Mix</b>	<b>22.78</b>	<b>73.83</b>	<b>\$137.52</b>

#### **Application**

Description	Cost /Acre
Broadcast seeding [DMG]	\$267.22
<b>Total Seed Application Cost/Acre</b>	<b>\$267.22</b>

## **MULCHING and MISCELLANEOUS**

### **Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

### **Application**

Description	Cost /Acre
Hand spread, 1" deep (MEANS 32 91 13.16 0200)	\$3,097.60
<b>Total Mulch Application Cost/Acre</b>	<b>\$3,097.60</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:	0.52	Cost /Acre:	\$4,024.34
Estimated Failure Rate:	50%	Cost /Acre*:	\$404.74
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost: **\$2,092.66**  
 Reseeding Job Cost: **\$105.23**  
 Total Job Cost: **\$2,198**  
 Job Hours: **9.00**

## BOREHOLE SEALING WORK

Task description: King II - seal downgradient monitoring well

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 500

State: Colorado

Abbreviation: None

Date: 5/9/2017

County: La Plata

Filename: C035-500

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal Hole	Granular bentonite (Bag, material cost only...50 lb. bag)	4	15	10.00	bag	\$18.60	\$186.00
Cut Casing	Exposed casing removal - Calculate Circumference in Linear Feet	4	1.05	1.05	LF	\$1.77	\$1.86
Mark Hole	Borehole location/identification marker (EA, material cost only)	4	1	1.00	EA	\$3.67	\$3.67
Drill Rig Time	GENERIC 3.0 in. - 1, 700 ft. capy.	4	15	4.00	EA	\$26.04	\$104.16
Water Truck Time	Water Tanker, 2,500 Gal.	4	15	4.00	EA	\$22.62	\$90.48

Job Hours: 4.00

Total Cost: \$386.00

## BOREHOLE SEALING WORK

Task description: Plug and Seal MW-1, 2, 3 and 4 Clusters (12 Wells) TR26

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 501  
Date: 5/9/2017  
User: JHB

State: Colorado  
County: La Plata

Abbreviation: None  
Filename: C035-501

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Install Plugs, Cliffhouse SS, 4 x 6" wells	PVC plug - 6 in. diameter borehole	6	NA	4.00	EA	\$54.14	\$216.56
Install Plugs, "A: Coal Seam and Menefee Interburden, 8 x 2" Wells	PVC plug - 2 in. diameter borehole	2	NA	8.00	EA	\$21.67	\$173.36
Seal Wells	Portland cement grout ( Bag, material cost only...94 lb. bag)	4x6" & 8x2"	1031	68.00	bag	\$10.55	\$717.40
Cut Casings	Exposed casing removal - Calculate Circumference in Linear Feet	7"	4 x 7"	7.30	LF	\$1.77	\$12.92
Cut Casings	Exposed casing removal - Calculate Circumference in Linear Feet	6"	8x6"	12.60	LF	\$1.77	\$22.30
Install Markers	Borehole location/identification marker (EA, material cost only)	NA	NA	12.00	EA	\$3.67	\$44.04
Drill Rig	ATLAS COPCO ROC D7-11,4.0 in.	NA	NA	53.00	EA	\$130.16	\$6,898.48
Water Truck	Water Tanker, 2,500 Gal.	NA	NA	53.00	EA	\$22.62	\$1,198.86

Job Hours: 53.00

Total Cost: \$9,284.00

## DEMOLITION WORK

Task description: Remove MW-1,2,3,4 Well Clusters Cement Pads/Poles TR26

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 502

State: Colorado

Abbreviation: None

Date: 5/10/2017

County: La Plata

Filename: C035-502

User: JHB

Agency or organization name: DRMS

### UNIT COSTS

Location adjustment: 93.10 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Cement Pads 3'x3'x4" Pads x 6 Pads	3'x3'x4" Pad/well	Demo. and on-site disposal in existing pit, 4 in. thick - Max. 50 ft. push	72.00	SF	\$0.40	\$28.66
4" x 6' Steel poles	48(4" dia. X 6' poles)	Pipe, steel, welded connections - 4 in. diameter pipe	288.00	LF	\$1.16	\$334.08
disposal of poles	48 poles	Dump fees - Rubbish only	2.10	CY	\$9.45	\$19.85

<b>Job Hours:</b>	<u>0.00</u>	<b>Subtotal (unadjusted):</b>	<u>\$382.59</u>	<b>Total Cost (adjusted for location):</b>	<u>\$356.19</u>
-------------------	-------------	-----------------------------------	-----------------	--	-----------------

## BULLDOZER WORK

Task description: Regrade drill pads and pits (MW-1, 2, 3, 4)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 503

State: Colorado

Abbreviation: None

Date: 5/10/2017

County: La Plata

Filename: C035-503

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D6T XL

Horsepower: 185

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$46.87	NA
Operating Cost/Hour:	\$41.52	100
Ripper own. Cost/Hour:	\$3.40	NA
Ripper op. Cost/Hour:	\$1.00	50
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$134.64

Total Fleet Cost/Hour: **\$134.64**

### MATERIAL QUANTITIES

Initial Volume: 370

Swell factor: 1.165

Loose volume: **431 LCY**

Source of estimated volume: 4 Clusters, 50' x50', 1' depth

Source of estimated swell Cat Handbook

factor: \_\_\_\_\_

### HOURLY PRODUCTION

Average push distance: 50 feet

Unadjusted hourly 444.6 LCY/hr

production: \_\_\_\_\_

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %

Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

#### Job Condition Correction Factor

Operator Skill: 0.750

Material consistency: 0.900

Source

(AVG.)

(CAT HB))



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

Net correction: 0.3554

Adjusted unit production: 158.01 LCY/hr

Adjusted fleet production: **158.01** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.852/LCY

Total job time: **2.73** Hours

Total job cost: **\$367**

## BULLDOZER WORK

Task description: Replace Topsoil on Well Clusters (TR26)

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 504

State: Colorado

Abbreviation: None

Date: 5/10/2017

County: La Plata

Filename: C035-504

User: JHB

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D6T XL

Horsepower: 185

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$46.87	NA
Operating Cost/Hour:	\$41.52	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.85	NA

Total unit Cost/Hour: \$130.24

Total Fleet Cost/Hour: **\$130.24**

### MATERIAL QUANTITIES

Initial Volume: 539

Swell factor: 1.000

Loose volume: **539** LCY

Source of estimated volume: Depths from Section 2.04.9

Source of estimated swell Cat Handbook

factor: \_\_\_\_\_

### HOURLY PRODUCTION

Average push distance: 50 feet

Unadjusted hourly 444.6 LCY/hr

production: \_\_\_\_\_

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %

Average site altitude: 0,050 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

#### Job Condition Correction Factor

Operator Skill: 0.750

Material consistency: 1.100

Source

(AVG.)

(CAT HB)

Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7877

Adjusted unit production: 350.21 LCY/hr

Adjusted fleet production: **350.21** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.372/LCY

Total job time: **1.54** Hours  
Total job cost: **\$200**

## REVEGETATION WORK

Task description: Revegetation; MW-1,2,3,4 Well Cluster Pads

Site: King Coal Mine

Permit Action: RN7

Permit/Job#: C1981035

### PROJECT IDENTIFICATION

Task #: 505

State: Colorado

Abbreviation: None

Date: 5/10/2017

County: La Plata

Filename: C035-505

User: JHB

Agency or organization name: DRMS

### FERTILIZING

#### **Materials**

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

#### **Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

### TILLING

Description	Cost /Acre
Hand raking (MEANS 32 91 13.23 0250)	\$1,328.58
<b>Total Tilling Cost/Acre</b>	<b>\$1,328.58</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Lovington	1.20	19.59	\$19.50
Indian Ricegrass - Paloma	2.90	9.39	\$28.28
Bitterbrush, Antelope	17.42	5.36	\$339.69
Mountain Brome - Bromar	3.48	5.59	\$15.14
Sideoats Grama - Butte	2.00	6.57	\$19.34
Burnett, Small (or Little) - Delar	5.80	7.32	\$14.50
Slender Wheatgrass - San Luis	2.48	9.05	\$8.04
Mahogany, Mountain	9.68	13.11	\$356.32
Western Wheatgrass - Arriba	4.36	11.01	\$35.23
Globemallow, Scarlet (or copper)	0.88	9.96	\$119.24
Sumac, Skunkbrush	8.72	4.08	\$183.12
Winter Fat	3.88	9.89	\$79.54
		110.92	<b>\$1,217.93</b>

<b>Totals Seed Mix</b>	62.80		
------------------------	-------	--	--

#### **Application**

<b>Description</b>	<b>Cost /Acre</b>
Broadcast seeding [DMG]	\$267.22
<b>Total Seed Application Cost/Acre</b>	<b>\$267.22</b>

#### **MULCHING and MISCELLANEOUS**

##### **Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
			\$	\$
<b>Total Mulch Materials Cost/Acre</b>				<b>\$0.00</b>

##### **Application**

<b>Description</b>	<b>Cost /Acre</b>
	\$
<b>Total Mulch Application Cost/Acre</b>	<b>\$0.00</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:	1	Cost /Acre:	\$2,813.73
Estimated Failure Rate:	20%	Cost /Acre*:	\$1,485.15
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$2,813.73</b>
Reseeding Job Cost:	<b>\$297.03</b>
Total Job Cost:	<b>\$3,111</b>
Job Hours:	<b>1.00</b>