



STATE OF  
COLORADO

Zuber - DNR, Rob <rob.zuber@state.co.us>

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## MT5 RCE for Bowie 2

1 message

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**Zuber - DNR, Rob** <rob.zuber@state.co.us>

Thu, Oct 3, 2019 at 12:17 PM

To: Tamme Bishop <tamme.jestover@bresnan.net>, Basil Bear <basilbear@wolverinefuels.com>

Tamme and Basil -

Attached is the full RCE for the Bowie No. 2 midterm (MT-05). I will be sending the findings to you both later today or tomorrow. The findings have some explanation of the changes to the RCE, but if you need additional information, please contact me.

Regards,  
Rob

Rob Zuber, P.E.  
Environmental Protection Specialist II  
Coal Regulatory Program



**COLORADO**  
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Mining and Safety  
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**DRMS\_RCE\_for\_MT05.pdf**  
5497K

## COST SUMMARY WORK

Task description: Midterm Review Cost Summary

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-000

User: ZTT

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Pull back and Haul Portal Bench Fill Material to Cut Slope	TRUCK1	1	609.56	\$456,542
002	Regrade D-Portal Bench	DOZER	4	158.03	\$200,513
005	Rip and Regrade Material Storage Area at Gob Pile	DOZER	4	1.73	\$2,196
006	Pull Back Material @ Old Truck Loadout Material Storage Area	EXCAVATE	2	21.27	\$12,072
007	Regrade Old Truck Loadout Material Storage Area	DOZER	4	8.21	\$10,415
008	Pull Back Material at Truck Loadout/Coal Stockpile	EXCAVATE	2	147.57	\$83,755
009	Regrade New Truck Loadout and Coal Stockpile	DOZER	4	32.38	\$41,085
010	Pull Material Back onto Train L/O Facil. and Railbed Benches	EXCAVATE	2	431.74	\$245,035
011	Regrade Train Loadout Facilities and Railbed Benches	DOZER	4	171.56	\$217,672
012	Backfill and Regrade Train L/O Overland Conveyor Corridor	DOZER	4	5.62	\$7,124
013	Haul Fill from Upper Mat'l Strge Area to B-Seam Portal Bench	SCRAPER1	1	60.63	\$37,237
014	Haul Fill fr Adj. Mat'l Storage Area to B-Seam Portal Bench	TRUCK1	1	89.33	\$61,925
015	Backfill and Regrade B-Seam Portal Bench	DOZER	4	38.70	\$53,616
019	Regrade Drill Pads from MRs and TRs	DOZER	4	8.01	\$10,165
020	Regrade Material Storage Area from TR-29	DOZER	4	0.48	\$609
021	Backfill and Regrade New Prep Plant Bench	DOZER	4	36.99	\$46,936
022	Replace Fill from Material Storage Area to Water Tank Bench	SCRAPER1	1	1.51	\$928
023	Regrade Borrow Area	DOZER	4	19.14	\$24,289
025	Regrade Upper Parking Lot Expansion Area	EXCAVATE	1	3.65	\$1,038
027	Haul Rock to Vent Shafts for Disposal	TRUCK1	1	10.50	\$3,842
036	Spread Uncompacted Refuse on Gob Pile #2	DOZER	4	89.54	\$113,605
037	Spread Uncompacted Refuse at Gob Pile #3	DOZER	4	100.73	\$127,806
038	Compact Material Hauled to Gob Pile #1	COMPACT	1	11.85	\$2,697
039	Compact Refuse on Gob Pile #2	COMPACT	1	135.94	\$30,927
040	Haul refuse out of Gob Pile #2/#3 drying areas for placement	TRUCK1	1	909.13	\$299,539
041	Compact Refuse at Gob Pile #3	COMPACT	1	147.84	\$33,633
042	Haul Topsoil from Stockpile Area to Gob Pile #1	SCRAPER1	1	2.18	\$1,341
043	Place 3.5' of Coverfill on Gob Pile #1	SCRAPER1	1	15.80	\$9,706
044	Place Coverfill from Stockpiles on Gob Pile #2	SCRAPER1	1	173.74	\$106,704

045	Haul Cover Material from Gob Pile #3 to Gob Pile #2	TRUCK1	1	235.64	\$86,227
046	Place 2.5' of Coverfill on Gob Pile #3, from stockpile	SCRAPER1	1	196.56	\$120,714
047	Push temp coverfill mat. to face of Gob pile #3	DOZER	1	16.77	\$4,505
050	Compact Backfilled D-Portal Bench, Roads, & Utility Corridor	COMPACT	1	511.43	\$116,345
051	Compact Backfilled Material at Truck Loadout/Coal Stockpile	COMPACT	1	56.10	\$12,764
052	Compact Backfilled Train Loadout	COMPACT	1	191.23	\$43,503
053	Compact B-Seam Portal Bench	COMPACT	1	113.99	\$25,933
060	Rip Utility Bench	RIPPER	4	0.30	\$429
061	Rip D-Portal Bench	RIPPER	4	3.71	\$5,146
062	Rip Truck Loadout/Coal Stockpile Area	RIPPER	4	2.06	\$2,859
063	Rip Regraded Mine Area Prior to Topsoil Replacement	RIPPER	4	59.09	\$81,865
064	Rip Train Loadout Facilities and Railbed Benches	RIPPER	4	7.69	\$10,657
065	Rip B-Seam Portal Bench	RIPPER	4	3.71	\$5,146
066	Rip Rock Laydown Pad Topsoil	RIPPER	1	0.43	\$149
070	Rip Haul Roads (Portion Being Reclaimed) & Old Truck Loadout	RIPPER	4	116.47	\$162,613
071	Remove Haul Road Subbase and Place on Gob Pile #1	SCRAPER1	1	30.54	\$18,756
072	Rip Truck Loadout Road	RIPPER	4	2.14	\$2,997
073	Haul Truck Loadout Subbase to Gob Pile #1	SCRAPER1	1	12.75	\$7,828
074	Rip Upper Haul Road Asphalt Prior to Road Narrowing	RIPPER	4	2.95	\$4,120
075	Pull Back/Haul Fill Mat'l from Upper Haul Rd Narrowing	TRUCK1	1	141.47	\$105,958
076	Regrade Narrowed Section of Haul Road	DOZER	4	26.11	\$33,127
077	Rip Gob Pile #1 Road	RIPPER	4	2.35	\$3,294
078	Regrade Gob Pile #1 Road	DOZER	4	5.17	\$6,156
079	Rip Access Road	RIPPER	4	0.73	\$1,029
080	Haul Access Road Surface to Gob Pile #1	SCRAPER1	1	4.86	\$2,984
081	Regrade Access Road	DOZER	4	1.79	\$2,276
083	Backfill and Regrade Haul Road to Gob Pile #2	DOZER	4	0.44	\$607
084	Rip Lower Haul Road	RIPPER	4	0.95	\$1,322
085	Regrade Lower Haul Road	DOZER	4	36.46	\$50,503
086	Regrade Light Use Roads from MRs and TRs	DOZER	4	60.96	\$84,454
090	Finish Grade Disturbed Mine Area	GRADER	1	129.92	\$19,907
091	Finish Grade Train Loadout	GRADER	1	16.91	\$2,591
092	Finish Grade B-Seam Portal Bench	GRADER	1	6.91	\$1,060
093	Finish Grade Gob Piles #1, #2, #3, and #4	GRADER	1	50.64	\$7,760
095	Backfill and Regrade Pond B	DOZER	1	7.63	\$2,641
096	Backfill and Regrade Pond C	DOZER	1	11.61	\$3,896
097	Backfill and Regrade Gob Pile Pond D	DOZER	1	8.18	\$2,746
098	Backfill and Regrade Pond F	DOZER	1	10.87	\$3,647
099	Backfill and Regrade Pond J	DOZER	1	24.64	\$8,269
100	Backfill and Regrade Pond K	DOZER	1	1.52	\$511
101	Excavate for Post-mining Channel at B-Seam Portals	EXCAVATE	2	0.63	\$358
102	Install Riprap, Gravel, and Geotextile in B-Seam Channel	POSTMINING	1	43.66	\$7,080
106ag	Plug and seal AW-15	BOREHOLE	1	6.00	\$1,250
106ah	Plug and seal AW16	BOREHOLE	1	6.00	\$1,244
106ai	Plug and seal AW-17	BOREHOLE	1	6.00	\$1,237

106aj	Plug and seal BD-101	BOREHOLE	1	4.00	\$816
106ak	Plug and seal BD-103	BOREHOLE	1	6.00	\$1,216
106al	Plug and seal BD-105	BOREHOLE	1	7.00	\$1,424
106am	Plug and seal BD-105A	BOREHOLE	1	6.00	\$1,213
106an	Plug and seal BD-102	BOREHOLE	1	6.00	\$1,210
106ao	Plug and seal BL-101A	BOREHOLE	1	6.00	\$1,210
106ap	Plug and seal BL-102	BOREHOLE	1	6.00	\$1,211
106aq	Plug and seal BL-102A	BOREHOLE	1	6.00	\$1,210
106bb	Plug and seal GVB-6A	BOREHOLE	1	11.00	\$4,784
106cn	Plug and seal MR133 Utility Hole #1	BOREHOLE	1	10.00	\$5,320
106co	Plug and seal MR133 Utility Hole #2	BOREHOLE	1	10.00	\$5,320
106cp	Plug and seal MR133 Utility Hole #3	BOREHOLE	1	10.00	\$5,320
106cq	Plug and seal MR133 Utility Hole #4	BOREHOLE	1	10.00	\$5,320
106cy	Plug and seal GVB-D-3A (aka GVB-D3-A)	BOREHOLE	1	12.00	\$4,248
106db	Plug and seal GVB-D-7A (aka GVB-D7-A)	BOREHOLE	1	10.00	\$2,916
106dd	Plug and seal GVB-D-5A	BOREHOLE	1	9.00	\$2,472
106do	Plug and seal GVB-D-6A (aka GVB-D6-A)	BOREHOLE	1	10.00	\$2,909
106dp	Plug and seal GVB-D-6B (aka GVB-D6-B)	BOREHOLE	1	6.00	\$4,121
106dq	Plug and seal GVB-D-7B (aka GVB-D7-B)	BOREHOLE	1	11.00	\$3,589
106du	Plug and seal GVB-D-8C (aka GVB-D8-C)	BOREHOLE	1	12.00	\$4,308
106ed	Plug and seal P-TC-03-01 (aka TC-03-01)	BOREHOLE	1	10.00	\$3,338
106ee	Plug and seal P-TC-03-02 (aka TC-03-02)	BOREHOLE	1	10.00	\$3,338
106gb	Plug and seal GVB-17C (aka GVB-B17C)	BOREHOLE	1	12.00	\$8,389
106gc	Plug and seal GVB-17D (aka GVB-B17D)	BOREHOLE	1	12.00	\$9,566
106gd	Plug and seal GVB-17E (aka GVB-B17E)	BOREHOLE	1	12.00	\$11,308
106gi	Plug and seal GVB-17F (aka GVB-B17F)	BOREHOLE	1	12.00	\$11,526
106gn	Plug and seal AW-1	BOREHOLE	1	7.00	\$1,518
106go	Plug and seal AW-2	BOREHOLE	1	6.00	\$1,264
106gp	Plug and seal AW-3	BOREHOLE	1	7.00	\$1,548
106gq	Plug and seal AW-4	BOREHOLE	1	6.00	\$1,264
106gr	Plug and seal AW-5	BOREHOLE	1	6.00	\$1,304
106gs	Plug and seal AW-6	BOREHOLE	1	7.00	\$1,511
106gt	Plug and seal AW-7	BOREHOLE	1	8.00	\$1,668
106gu	Plug and seal AW-8	BOREHOLE	1	6.00	\$1,226
106gv	Plug and seal AW-9	BOREHOLE	1	6.00	\$1,234
106gw	Plug and seal AW-11	BOREHOLE	1	6.00	\$1,223
106gx	Plug and seal AW-12	BOREHOLE	1	6.00	\$1,218
106gy	Plug and seal AW-13	BOREHOLE	1	6.00	\$1,223
106gz	Plug and seal AW-14	BOREHOLE	1	6.00	\$1,210
106hd	Plug and seal DH-13	BOREHOLE	1	12.00	\$3,398
106he	Plug and seal DH-15	BOREHOLE	1	8.00	\$1,808
106hf	Plug and seal DH-15	BOREHOLE	1	9.00	\$2,213
106hg	Plug and seal DH-25	BOREHOLE	1	9.00	\$2,152
106hq	Plug and seal DH-34C	BOREHOLE	1	7.00	\$1,555
106hr	Plug and seal DH-38	BOREHOLE	1	10.00	\$2,434
106hs	Plug and seal DH-39	BOREHOLE	1	8.00	\$1,773
106hv	Plug and seal CWI-DH-47	BOREHOLE	1	12.00	\$4,158
106hw	Plug and seal CWI-DH-48	BOREHOLE	1	12.00	\$4,554
106hx	Plug and seal DH-49	BOREHOLE	1	9.00	\$2,109
106if	Plug and seal DH-57B (aka 98-57B)	BOREHOLE	1	12.00	\$3,248
106ii	Plug and seal DH-58B (aka DH-58A)	BOREHOLE	1	12.00	\$3,316
106ij	Plug and seal CWI-DH-60 (aka Mon Well)	BOREHOLE	1	12.00	\$2,638
106ip	Plug and seal DH-67B	BOREHOLE	1	10.00	\$2,261

106iq	Plug and seal DH-67-D	BOREHOLE	1	9.00	\$1,940
106ir	Plug and seal DH-67-Abv	BOREHOLE	1	8.00	\$1,683
106is	Plug and seal DH-67-Blw	BOREHOLE	1	9.00	\$1,927
106it	Plug and seal CWI-DH-69 (aka B-1 Mon Well)	BOREHOLE	1	12.00	\$2,856
106iu	Plug and seal CWI-DH-70 (aka B-1 Mon Well)	BOREHOLE	1	11.00	\$2,868
106iy	Plug and seal 2010-1B	BOREHOLE	1	12.00	\$3,583
106iz	Plug and seal 2010-1SS	BOREHOLE	1	12.00	\$3,504
110	Replace Topsoil from Stockpile A to Portal/Utility Bench	SCRAPER1	1	652.39	\$400,661
111	Replace Topsoil from Stockpile A to Truck Loadout/Coal Stkpl	SCRAPER1	1	45.95	\$28,218
112	Replace Topsoil from Stockpile F to Train Loadout	SCRAPER1	1	39.98	\$24,553
113	Replace Topsoil from Stockpile A to B-Seam Portal Bench	SCRAPER1	1	87.66	\$53,835
115	Replace Topsoil fm Stockpiles C/D to Pond C and Gob Pond D	SCRAPER1	1	13.12	\$8,055
116	Replace topsoil from Stockpile to Pond F	DOZER	1	3.95	\$1,370
117	Replace topsoil from Stockpile F to Pond J	SCRAPER1	1	2.85	\$1,752
118	Replace topsoil from Stockpile F to Pond K	SCRAPER1	1	1.92	\$1,178
119	Replace topsoil fm stockpile to MR/TR Light-Use Roads	DOZER	4	25.96	\$35,960
120	Replace topsoil from stockpiles to MR/TR drill pads	DOZER	4	27.04	\$36,297
121	Replace topsoil from Stockpile A to Prep Plant Bench	SCRAPER1	1	22.41	\$13,763
122	Replace topsoil from stockpile to Material Storage Area	DOZER	4	0.18	\$254
123	Replace topsoil from Stockpile E to Gob Pile #2	SCRAPER1	1	83.69	\$51,400
124	Replace Topsoil from Stockpile D to Gob Pile #4	SCRAPER1	1	7.01	\$4,306
125	Replace topsoil from stockpile to Gob Pile #3	SCRAPER1	1	85.33	\$52,406
126	Replace topsoil from stockpile to Haul Road	DOZER	4	0.17	\$232
127	Replace topsoil from stockpile to Water Tank Bench	SCRAPER1	1	1.71	\$1,051
128	Replace topsoil from Stockpile G to TR35 road/pad	SCRAPER1	1	5.01	\$3,079
129	Replace topsoil from stockpile to Borrow Area	DOZER	4	5.44	\$7,539
130	Replace topsoil fm stockpile to Upper Parking Lot Expansion	DOZER	1	0.46	\$147
140	Seal Portals and Shafts	MINESEAL	1	40.00	\$229,819
150	Drill Seed Mix 3 on Disturbed Area	REVEGE	1	225.02	\$505,123
151	Drill Seed Drill Pads	REVEGE	1	82.97	\$114,100
152	Drill Seed Lt-Use Roads to Drill Pads and Terror Creek	REVEGE	1	62.01	\$85,276
154	Broadcast Seed Mix 3 on Gob Pile #3	REVEGE	1	60.63	\$112,160
155	Drill seed Hubbard Creek Vent Shaft Pad	REVEGE	1	1.20	\$1,650
156	Drill Seed Rock Laydown Area	REVEGE	1	0.50	\$275
157	Weed Control Over 10-Year Liability Period	REVEGE	1	400.00	\$57,403
165	Demolish and Remove all Structures	DEMOLISH	1	160.00	\$1,598,336
170	Proctor Testing of Backfill (5 tests)	SITEMAINT ENANCE	1	0.00	\$675
171	Nuclear Density Testing of Backfill	SITEMAINT ENANCE	1	0.00	\$128,709
172	Water Truck for Moisture Augmentation of Backfill Material	MISCTRUK	1	1,437.02	\$127,148
173	Site Maintenance - Ten Years	SITEMAINT ENANCE	1	292.00	\$242,813

174	Support Equipment for Scraper Hauling	SITEMAINT ENANCE	1	449.16	\$108,805
180	Mobilize/Demobilize Equipment for First Construction Season	MOBILIZE	1	12.00	\$52,331
181	Mobilize/Demobilize Equipment for Second Construction Season	MOBILIZE	1	12.00	\$52,331
182	Mobilize/Demobilize Equipment for Pond Removal	MOBILIZE	1	6.50	\$4,965
183	Mobilize/Demobilize Equipment for Yearly Site Maintenance	MOBILIZE	1	14.00	\$28,469
241	Regrade Terror Creek Light-Use Road	DOZER	1	29.73	\$7,985
242	Replace Topsoil from Stockpile to Terror Creek Lt-Use Road	DOZER	1	22.45	\$6,029
261	Concrete Plug and Backfill Terror Creek Vent Shaft	MINESEAL	1	40.00	\$105,205
301	Reseed Add'l Disturbance from Utility Boreholes at Fan Bench	REVEGE	1	1.00	\$536
302	Regrade Fan Bench - Utility Borehole Mudpit Add'l Dist.	DOZER	1	4.06	\$1,089
352	Re-topsoil Pitkin Mesa Pipeline corridor	DOZER	1	10.60	\$2,848
353	Reseed Pitkin Mesa Pipeline Corridor	REVEGE	1	2.00	\$2,750
369	Seal Well DH-67blw	BOREHOLE	1	12.00	\$5,302
374	Seal CWI-DH-58A	BOREHOLE	1	12.00	\$6,159
379	Regrade Section 5 Road	DOZER	1	12.88	\$3,458
380	Re-topsoil Section 5 Road	DOZER	1	5.46	\$1,467
381	Reseed Section 5 road	REVEGE	1	2.00	\$1,678
45A	Distribute Gob Pile #2 cover hauled by T/L	DOZER	1	375.26	\$119,033
45B	Haul Cover Material from Borrow Area #1 to Gob Pile #2	TRUCK1	1	50.03	\$8,398
45C	Haul Cover Material from Borrow Area #2 to Gob Pile #2	TRUCK1	1	228.88	\$38,420
45D	Haul Cover Material from Borrow Area #3 to Gob Pile #2	TRUCK1	1	41.55	\$6,974
45E	Haul Cover Material from B Portal Storage to Gob Pile #2	TRUCK1	1	108.83	\$39,824
<b><u>SUBTOTALS:</u></b>				<b>11479.3</b>	<b>\$8,026,005</b>

## **INDIRECT COSTS**

### **OVERHEAD AND PROFIT:**

Liability insurance:	2.02	Total =	\$162,125
Performance bond:	1.05	Total =	\$84,273
Job superintendent:	5,739.65	Total =	\$398,274
Profit:	10.00	Total =	\$802,600
		TOTAL O & P =	\$1,447,273
		CONTRACT AMOUNT (direct + O & P) =	\$9,473,278

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

Financial warranty processing (legal/related costs):	\$500	Total =	\$500
Engineering work and/or contract/bid preparation:	4.00	Total =	\$378,931
Reclamation management and/or administration:	3.13		\$296,514
CONTINGENCY:	0.00	Total =	\$0

**TOTAL INDIRECT COST = \$2,123,218**

**TOTAL BOND AMOUNT (direct + indirect) =    \$10,149,223**

## TRUCK/LOADER TEAM WORK

Task description: Pull back and Haul Portal Bench Fill Material to Cut Slope

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-001

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Cat 773F
-Loader:	Cat 365C L 13'-7" Stick
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	Excavator	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$105.90	\$121.37	NA	NA	NA	NA
Operating cost/hour:	\$93.41	\$125.13	NA	NA	NA	NA
%Utilization-riper:	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:	\$33.29	\$37.27	NA	NA	NA	NA
Unit Subtotals:	\$232.60	\$283.77	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$748.97		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$748.97

### MATERIAL QUANTITIES

Initial volume: 260,953

CCY

Swell factor: 1.165

Loose volume: 304,010

LCY

Source of estimated volume: Operator Estimate

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	122,520	Pounds
Payload Capacity:	42.25	LCY

#### Truck Bed (volume) Basis:

Struck Volume:	35.00	LCY
Heaped Volume:	46.50	LCY
Average Volume:	40.75	LCY
Adjusted Volume:	42.25	LCY

Final Truck Volume Based on Number of Loader Passes: 42.26 LCY

#### Loading Tool Capacity

Bucket Size Class: Large

Rated Capacity:	6.900	LCY (heaped)
Bucket Fill Factor:	0.875	Loose material - 1" and over (85 - 90%) 0.875
Adjusted Capacity:	<b>6.038</b>	LCY

### Job Condition Corrections:

Site Altitude (ft.): 6900 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: 7 passes

#### Excavators and Front Shovels:

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

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): NA minutes

Cycle Time Factors		Factor (min.)	Source
Material:	NA	NA	(Cat HB)
Stockpile:	NA	NA	(Cat HB)
Truck Ownership:	NA	NA	(Cat HB)
Operation:	NA	NA	(Cat HB)
Dump Target:	NA	NA	(Cat HB)

Net Cycle Time Adjustment:	<u>NA</u>	minutes
Adjusted Loader Cycle Time:	<b>0.570</b>	minutes
Net Load Time per Truck:	<b>3.520</b>	minutes

### Truck Cycle Time:

Truck Exchange Time:	<u>0.70</u>	Minutes	Adjusted for site altitude:	<u>0.700</u>	Minutes
Truck Load Time:	<u>3.520</u>	Minutes	Adjusted for site altitude:	<u>3.520</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.10</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	17.00	3.00	20.00	379	1.588

Haul Time: 1.588 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	-17.00	3.00	-14.00	1377	0.566

Return Time: 0.566 minutes

Total Truck Cycle Time: 7.474 minutes

Loading Tool unit

Production 600.89 LCY/Hour

Adjusted for job efficiency: 498.74 LCY/Hour

Truck Unit Production

339.28 LCY/Hour

Adjusted for job efficiency: 281.60 LCY/Hour

Optimal No. of Trucks: 2 Truck(s)

Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 563.20 LCY/Hour

Adjusted single truck/loader team production: 498.74 LCY/Hour

Adjusted multiple truck/loader team production: 498.74 LCY/Hour

### **JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: 609.56 Hours

Unit cost: \$1.502 /LCY

Total job cost: \$456,542

## BULLDOZER WORK

Task description: Regrade D-Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 002

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-002

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 260,593

Swell factor: 1.165

Loose volume: 303,591 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 10 %

Average site altitude: 6,900 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:	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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2794

Adjusted unit  
production: 480.26 LCY/hr  
Adjusted fleet  
production: **1921.04** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.660/LCY

Total job time: **158.03** Hours  
Total job cost: **\$200,513**

## BULLDOZER WORK

Task description: Rip and Regrade Material Storage Area at Gob Pile

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 005

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-005

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 3,630

Swell factor: 1.165

Loose volume: 4,229 LCY

Source of estimated volume: Map 15-1

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,000 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **2443.6** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.519/LCY

Total job time: **1.73** Hours  
Total job cost: **\$2,196**

## HYDRAULIC EXCAVATOR WORK

Task description: Pull Back Material @ Old Truck Loadout Material Storage Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 006

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-006

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 365C L 13'-7" Stick

Attachment 1: ROPS Cab

Horsepower: 404

Weight (MT): 70.51

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.37	NA
Operating Cost/Hour:	\$125.13	100
Operator Cost/Hour:	\$37.27	NA
Total Unit Cost/Hour:	\$283.77	

Total Fleet Cost/Hour: \$567.54

### MATERIAL QUANTITIES

Initial volume: 9,790

CCY

Swell factor: 1.165

Loose volume: 11,405

LCY

Source of estimated volume: Page 3.02-2

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: SEVERE

Secondary Job Condition within Basic Description: SEVERE

Cycle Time Value: 0.570 minutes

#### Load Bucket Capacity

Bucket Size Class: Small

Rated Capacity: 3.61 LCY (heaped)

Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850

Adjusted Capacity: 3.07 LCY

#### Job Condition Correction Factors

Site Altitude: 6500 feet

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

Unadjusted Hourly Unit Production: 323.00 LCY/Hour

Adjusted Hourly Unit Production: 268.09 LCY/Hour

Adjusted Hourly Fleet Production: 536.18 LCY/Hour

### JOB TIME AND COST

Fleet size: 2

Excavator

Total job time: 21.27

Hours

Unit cost:           \$1.058           /LCY

Total job cost:           \$12,072



## BULLDOZER WORK

Task description: Regrade Old Truck Loadout Material Storage Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 007

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-007

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 9,790

Swell factor: 1.165

Loose volume: 11,405 LCY

Source of estimated volume: Page 3.02-2

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 150 feet

Unadjusted hourly  
production: 1,243.2 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 10 %

Average site altitude: 6,500 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:	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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2794

Adjusted unit  
production: 347.35 LCY/hr

---

Adjusted fleet  
production: **1389.4** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)

---

Unit cost: \$0.913/LCY

Total job time: **8.21** Hours

---

Total job cost: **\$10,415**

## HYDRAULIC EXCAVATOR WORK

Task description: Pull Back Material at Truck Loadout/Coal Stockpile

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 008

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C-86-083

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 365C L 13'-7" Stick

Attachment 1: ROPS Cab

Horsepower: 404

Weight (MT): 70.51

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.37	NA
Operating Cost/Hour:	\$125.13	100
Operator Cost/Hour:	\$37.27	NA
Total Unit Cost/Hour:	\$283.77	

Total Fleet Cost/Hour: \$567.54

### MATERIAL QUANTITIES

Initial volume: 67,920

CCY

Swell factor: 1.165

Loose volume: 79,127

LCY

Source of estimated volume: Operator Estimate

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: SEVERE

Secondary Job Condition within Basic Description: SEVERE

Cycle Time Value: 0.570 minutes

#### Load Bucket Capacity

Bucket Size Class: Small

Rated Capacity: 3.61 LCY (heaped)

Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850

Adjusted Capacity: 3.07 LCY

#### Job Condition Correction Factors

Site Altitude: 6000 feet

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

Unadjusted Hourly Unit Production: 323.00 LCY/Hour

Adjusted Hourly Unit Production: 268.09 LCY/Hour

Adjusted Hourly Fleet Production: 536.18 LCY/Hour

### JOB TIME AND COST

Fleet size: 2

Excavator

Total job time: 147.58

Hours

Unit cost:           \$1.058           /LCY

Total job cost:           \$83,755

## BULLDOZER WORK

Task description: Regrade New Truck Loadout and Coal Stockpile

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 009

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C-83-009

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 67,920

Swell factor: 1.165

Loose volume: 79,127 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,000 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **2443.6** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.519/LCY

Total job time: **32.38** Hours  
Total job cost: **\$41,085**

## HYDRAULIC EXCAVATOR WORK

Task description: Pull Material Back onto Train L/O Facil. and Railbed Benches

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 010

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C83-010

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 365C L 13'-7" Stick

Attachment 1: ROPS Cab

Horsepower: 404

Weight (MT): 70.51

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.37	NA
Operating Cost/Hour:	\$125.13	100
Operator Cost/Hour:	\$37.27	NA
Total Unit Cost/Hour:	\$283.77	

Total Fleet Cost/Hour: \$567.54

### MATERIAL QUANTITIES

Initial volume: 231,495

CCY

Swell factor: 1.000

Loose volume: 231,495

LCY

Source of estimated volume: Operator Estimate

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: SEVERE

Secondary Job Condition within Basic Description: SEVERE

Cycle Time Value: 0.570 minutes

#### Load Bucket Capacity

Bucket Size Class: Small

Rated Capacity: 3.61 LCY (heaped)

Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850

Adjusted Capacity: 3.07 LCY

#### Job Condition Correction Factors

Site Altitude: 5900 feet

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

Unadjusted Hourly Unit Production: 323.00 LCY/Hour

Adjusted Hourly Unit Production: 268.09 LCY/Hour

Adjusted Hourly Fleet Production: 536.18 LCY/Hour

### JOB TIME AND COST

Fleet size: 2

Excavator

Total job time: 431.75

Hours

Unit cost: \$1.058 /LCY

Total job cost: \$245,035



## BULLDOZER WORK

Task description: Regrade Train Loadout Facilities and Railbed Benches

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 011

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-011

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 231,495

Swell factor: 1.000

Loose volume: 231,495 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 946.0 LCY/hr

Materials consistency  
description: Consolidated stockpile 1.0

Average push  
gradient: 5 %

Average site altitude: 5,900 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: 337.34 LCY/hr  
Adjusted fleet  
production: **1349.36** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.940/LCY

Total job time: **171.56** Hours  
Total job cost: **\$217,672**

## BULLDOZER WORK

Task description: Backfill and Regrade Train L/O Overland Conveyor Corridor

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 012

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-012

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 9,259

Swell factor: 1.165

Loose volume: 10,787 LCY

Source of estimated volume: Division Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 10 %

Average site altitude: 5,900 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:	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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2794

Adjusted unit  
production: 480.26 LCY/hr  
Adjusted fleet  
production: **1921.04** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.660/LCY

Total job time: **5.62** Hours  
Total job cost: **\$7,124**

## SCRAPER TEAM WORK

Task description: Haul Fill from Upper Mat'l Strge Area to B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 013

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-013

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 39,000

CCY

Swell factor: 1.165

Loose volume: **45,435**

LCY

Source of estimated volume: Operator Estimate, minus 14,000 cy TR79/TR84 to Gob Pile

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<b><u>18.21</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.90 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6750 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	0.00	3.00	3.00	2824	0.52

Haul Time: 0.52 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	0.00	3.00	3.00	2874	0.40

Return Time: 0.40 minutesTotal Scraper team cycle time: 2.42 minutesAdjusted for job conditions: 749.34 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 749.34 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 749.34 LCY/HourUnadjusted unit production/hour: 902.82 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 60.63 HoursUnit cost: \$0.820 /LCYTotal job cost: \$37,237

## TRUCK/LOADER TEAM WORK

Task description: Haul Fill fr Adj. Mat'l Storage Area to B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 014

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-014

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Cat 773F
-Loader:	CAT 988H
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:	\$105.90	\$91.83	NA	NA	NA	NA
Operating cost/hour:	\$93.41	\$95.52	NA	NA	NA	NA
%Utilization-riper:	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:	\$33.29	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$232.60	\$228.00	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	\$693.20	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: \$693.20

### MATERIAL QUANTITIES

Initial volume: 53,000

CCY

Swell factor: 1.165

Loose volume: 61,745

LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	122,520	Pounds
Payload Capacity:	42.25	LCY

#### Truck Bed (volume) Basis:

Struck Volume:	35.00	LCY
Heaped Volume:	46.50	LCY
Average Volume:	40.75	LCY
Adjusted Volume:	42.25	LCY

Final Truck Volume Based on Number of Loader Passes: **40.25** LCY

#### Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	9.200	LCY (heaped)
Bucket Fill Factor:	0.875	Loose material - 1" and over (85 - 90%) 0.875
Adjusted Capacity:	<b>8.050</b>	LCY

### Job Condition Corrections:

Site Altitude (ft.): 6900 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: 5 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): 0.575 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 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:	-0.050	minutes
Adjusted Loader Cycle Time:	<b>0.525</b>	minutes
Net Load Time per Truck:	<b>2.200</b>	minutes



**Truck Cycle Time:**

Truck Exchange Time:	<u>0.70</u>	Minutes	Adjusted for site altitude:	<u>0.700</u>	Minutes
Truck Load Time:	<u>2.200</u>	Minutes	Adjusted for site altitude:	<u>2.200</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.10</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes

Truck Travel (Haul & Return) Time:  
maintained 3.0

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	0.00	3.00	3.00	2983	0.764

Haul Time: **0.764** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	0.00	3.00	3.00	3569	0.381

Return Time: **0.381** minutes

Total Truck Cycle Time: **5.145** minutes

Loading Tool unit

Production	<u>832.76</u>	LCY/Hour	Adjusted for job efficiency:	<u>691.19</u>	LCY/Hour
Truck Unit Production	<u>469.39</u>	LCY/Hour	Adjusted for job efficiency:	<u>389.59</u>	LCY/Hour

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

Adjusted hourly truck team production:	<u>779.18</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>691.19</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u><b>691.19</b></u>	LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s)      Total job time: **89.33** Hours

Unit cost: \$1.003 /LCY      Total job cost: **\$61,925**

## BULLDOZER WORK

Task description: Backfill and Regrade B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 015

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-015

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$346.33

Total Fleet Cost/Hour: \$1,385.33

### MATERIAL QUANTITIES

Initial Volume: 32,000

Swell factor: 1.165

Loose volume: 37,280 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 150 feet

Unadjusted hourly  
production: 1,243.2 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 20 %

Average site altitude: 6,750 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:	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:	0.545	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.1937

Adjusted unit  
production: 240.81 LCY/hr  
Adjusted fleet  
production: **963.24** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$1.438/LCY

Total job time: **38.70** Hours  
Total job cost: **\$53,616**

## BULLDOZER WORK

Task description: Regrade Drill Pads from MRs and TRs

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 019

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-019

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 15,173

Swell factor: 1.165

Loose volume: 17,677 LCY

Source of estimated volume: 6.27 acres, 1.5' depth

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

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

Net correction: 0.3209

Adjusted unit  
production: 551.60 LCY/hr

Adjusted fleet  
production: **2206.4** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)

Unit cost: \$0.575/LCY

Total job time: **8.01** Hours

Total job cost: **\$10,165**

## BULLDOZER WORK

Task description: Regrade Material Storage Area from TR-29

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 020

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-020

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 500

Swell factor: 1.165

Loose volume: 583 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 946.0 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 5 %

Average site altitude: 6,000 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:	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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3209

Adjusted unit  
production: 303.57 LCY/hr  
Adjusted fleet  
production: **1214.28** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$1.045/LCY

Total job time: **0.48** Hours  
Total job cost: **\$609**

## BULLDOZER WORK

Task description: Backfill and Regrade New Prep Plant Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 021

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-021

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 61,000

Swell factor: 1.165

Loose volume: 71,065 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 10 %

Average site altitude: 6,050 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:	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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2794

Adjusted unit  
production: 480.26 LCY/hr  
Adjusted fleet  
production: **1921.04** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.660/LCY

Total job time: **36.99** Hours  
Total job cost: **\$46,936**

## SCRAPER TEAM WORK

Task description: Replace Fill from Material Storage Area to Water Tank Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 022

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-022

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 700

CCY

Swell factor: 1.165

Loose volume: **816**

LCY

Source of estimated volume: Operator Estimate

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<b><u>18.21</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.90 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6750 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-15.00	5.00	-10.00	1749	0.69

Haul Time: 0.69 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	15.00	5.00	20.00	868	1.17

Return Time: 1.17 minutesTotal Scraper team cycle time: 3.36 minutesAdjusted for job conditions: 539.70 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 539.70 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 539.70 LCY/HourUnadjusted unit production/hour: 650.25 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 1.51 HoursUnit cost: \$1.138 /LCYTotal job cost: \$928

## BULLDOZER WORK

Task description: Regrade Borrow Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 023

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-023

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 25,600

Swell factor: 1.250

Loose volume: 32,000 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 175 feet

Unadjusted hourly  
production: 1,074.3 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,200 feet

Material weight: 2,650 lbs/LCY

Weight description: Decomposed rock - 25% Rock, 75% Earth

Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(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:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3890

Adjusted unit  
production: 417.90 LCY/hr  
Adjusted fleet  
production: **1671.6 LCY/hr**

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.759/LCY

Total job time: **19.14 Hours**  
Total job cost: **\$24,289**

## HYDRAULIC EXCAVATOR WORK

Task description: Regrade Upper Parking Lot Expansion Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 025

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-025

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 365C L 13'-7" Stick

Attachment 1: ROPS Cab

Horsepower: 404

Weight (MT): 70.51

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.37	NA
Operating Cost/Hour:	\$125.13	100
Operator Cost/Hour:	\$37.27	NA
Total Unit Cost/Hour:	\$283.77	
Total Fleet Cost/Hour:	\$283.77	

### MATERIAL QUANTITIES

Initial volume: 1,500

CCY

Swell factor: 1.250

Loose volume: 1,875

LCY

Source of estimated volume: Opeator Estimate

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: SEVERE

Secondary Job Condition within Basic Description: SEVERE

Cycle Time Value: 0.570 minutes

#### Load Bucket Capacity

Bucket Size Class: Large

Rated Capacity: 6.90 LCY (heaped)

Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850

Adjusted Capacity: 5.87 LCY

#### Job Condition Correction Factors

Site Altitude: 6900 feet

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

Unadjusted Hourly Unit Production: 617.37 LCY/Hour

Adjusted Hourly Unit Production: 512.42 LCY/Hour

Adjusted Hourly Fleet Production: 512.42 LCY/Hour

### JOB TIME AND COST

Fleet size: 1

Excavator

Total job time: 3.66

Hours

Unit cost:           \$0.554           /LCY

Total job cost:           **\$1,038**

## TRUCK/LOADER TEAM WORK

Task description: Haul Rock to Vent Shafts for Disposal

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 027

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-027

User: ZTT

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:	CAT 950H
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:	\$19.51	\$27.37	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$33.82	NA	NA	NA	NA
%Utilization-riper:	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	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$101.84	NA	NA	NA	NA
Number of Units:	4	1	0	0	0	0
Group Subtotals:	Work:	\$365.92	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$365.92**

### MATERIAL QUANTITIES

Initial volume: 2,000

CCY

Swell factor: 1.000

Loose volume: **2,000**

LCY

Source of estimated volume: Operator Estimate

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:	2,950	Pounds/LCY
Description:	Traprock - broken	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.00	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: **11.61** LCY

#### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.675	Blasted rock - poorly blasted (60 - 75%) 0.675
Adjusted Capacity:	<b>2.903</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 7100 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(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:	Fragile target 0.05	0.050	(Cat HB)

Net Cycle Time Adjustment:	<u>0.030</u>	minutes
Adjusted Loader Cycle Time:	<b><u>0.530</u></b>	minutes
Net Load Time per Truck:	<b><u>1.690</u></b>	minutes

### **Truck Cycle Time:**

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.690</u>	Minutes	Adjusted for site altitude:	<u>1.690</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: 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	5280.00	10.00	5.00	15.00	734	7.199

Haul Time: 7.199 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	5280.00	-10.00	5.00	-5.00	2938	1.853

Return Time: 1.853 minutes

Total Truck Cycle Time: 12.142 minutes

Loading Tool unit

Production 318.08 LCY/Hour

Adjusted for job efficiency: 264.01 LCY/Hour

Truck Unit Production

57.37 LCY/Hour

Adjusted for job efficiency: 47.62 LCY/Hour

Optimal No. of Trucks: 6 Truck(s)

Selected Number of Trucks: 4 Truck(s)

Adjusted hourly truck team production: 190.47 LCY/Hour

Adjusted single truck/loader team production: 190.47 LCY/Hour

Adjusted multiple truck/loader team production: 190.47 LCY/Hour

### JOB TIME AND COST

Fleet size: 1 Team(s)

Total job time: 10.50 Hours

Unit cost: \$1.921 /LCY

Total job cost: \$3,842

## BULLDOZER WORK

Task description: Spread Uncompacted Refuse on Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 036

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-036

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 200,000

Swell factor: 1.000

Loose volume: 200,000 LCY

Source of estimated volume: TR-44 Submittal Page 4

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 946.0 LCY/hr

Materials consistency  
description: Partly consolidated stockpile 1.1

Average push  
gradient: 0 %

Average site altitude: 6,100 feet

Material weight: 2,667 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:	1.000	(DOZ-OC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.862	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5903

Adjusted unit  
production: 558.42 LCY/hr  
Adjusted fleet  
production: **2233.68** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.568/LCY

Total job time: **89.54** Hours  
Total job cost: **\$113,605**

## BULLDOZER WORK

Task description: Spread Uncompacted Refuse at Gob Pile #3

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 037

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-037

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 225,000

Swell factor: 1.000

Loose volume: 225,000 LCY

Source of estimated volume: TR-44 Submittal Page 4

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 946.0 LCY/hr

Materials consistency  
description: Partly consolidated stockpile 1.1

Average push  
gradient: 0 %

Average site altitude: 6,100 feet

Material weight: 2,667 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:	1.000	(DOZ-OC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.862	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5903

Adjusted unit  
production: 558.42 LCY/hr  
Adjusted fleet  
production: **2233.68** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.568/LCY

Total job time: **100.73** Hours  
Total job cost: **\$127,806**

## COMPACTION WORK

Task description: Compact Material Hauled to Gob Pile #1

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 038

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-038

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	<b>\$227.49</b>		

### MATERIAL QUANTITIES

Loose volume: 14,349

LCY

Shrinkage factor: 0.875

Compacted volume: **12,555**

CCY

Source of estimated volume: Total of all material hauled to Gob Pile

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>4.00</u>	mph
Compacted thickness of each lift (L):	<u>8.00</u>	inches
Conversion Constant (C):	<u>16.3</u>	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	<u>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,276.18</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 6,400 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: 1,059.23 CCY/Hour

Adjusted Hourly Fleet Production: **1,059.23** CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: **11.85** Hours

Unit cost: \$0.215 per CCY

Total job cost: **\$2,697**

## COMPACTION WORK

Task description: Compact Refuse on Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 039

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-039

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	<b>\$227.49</b>		

### MATERIAL QUANTITIES

Loose volume: 200,000

LCY

Shrinkage factor: 0.900

Compacted volume: 180,000

CCY

Source of estimated volume: Page 2.05-45

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>4.00</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>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,595.23</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 6,100 feet

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

Adjusted Hourly Unit Production: 1,324.04 CCY/Hour

Adjusted Hourly Fleet Production: 1,324.04 CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: 135.95 Hours

Unit cost: \$0.172 per CCY

Total job cost: \$30,927



## TRUCK/LOADER TEAM WORK

Task description: Haul refuse out of Gob Pile #2/#3 drying areas for placement

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 040

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-040

User: ZTT

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:		Cat 345D L 12'-10" Stick
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	Excavator	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$19.51	\$72.53	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$87.65	NA	NA	NA	NA
%Utilization-riper:	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	\$37.27	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$197.44	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$329.48		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: **\$329.48**

### MATERIAL QUANTITIES

Initial volume: 325,000

CCY

Swell factor: 1.000

Loose volume: **325,000**

LCY

Source of estimated volume: Vol XI, p. 4a, Vol IX p 12-all 225k yds @ #3, 100k yds @ #2

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:	Coal - Bituminous, Raw	
Rated Payload:	35,400	Pounds
Payload Capacity:	22.13	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: **9.18** LCY

#### Loading Tool Capacity

Bucket Size Class: Medium

Rated Capacity:	3.140	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	<b>3.062</b>	LCY

### Job Condition Corrections:

Site Altitude (ft.): 6900 feet

	Truck	Loader	Source
Altitude Adj:	1.000	0.960	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	<b>0.830</b>	<b>0.797</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: ABOVE AVERAGE  
Selected Value within this Basic Rating: AVERAGE

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): NA minutes

Cycle Time Factors		Factor (min.)	Source
Material:	NA	NA	(Cat HB)
Stockpile:	NA	NA	(Cat HB)
Truck Ownership:	NA	NA	(Cat HB)
Operation:	NA	NA	(Cat HB)
Dump Target:	NA	NA	(Cat HB)

Net Cycle Time Adjustment:	<u>NA</u>	minutes
Adjusted Loader Cycle Time:	<b>0.273</b>	minutes
Net Load Time per Truck:	<b>0.646</b>	minutes

### Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.646	Minutes	Adjusted for site altitude:	0.673	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, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	4.00	4.00	2665	0.285

Haul Time: **0.285** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	4.00	4.00	2849	0.201

Return Time: **0.201** minutes

Total Truck Cycle Time: **2.559** minutes

Loading Tool unit					
Production	469.83	LCY/Hour	Adjusted for job efficiency:	389.96	LCY/Hour
Truck Unit Production	215.35	LCY/Hour	Adjusted for job efficiency:	178.74	LCY/Hour
Optimal No. of Trucks:	2	Truck(s)	Selected Number of Trucks:	2	Truck(s)
	Adjusted hourly truck team production:	357.49	LCY/Hour		
	Adjusted single truck/loader team production:	357.49	LCY/Hour		
	Adjusted multiple truck/loader team production:	<b>357.49</b>	LCY/Hour		

### **JOB TIME AND COST**

Fleet size:	1	Team(s)	Total job time:	<b>909.13</b>	Hours
Unit cost:	\$0.922	/LCY	Total job cost:	<b>\$299,539</b>	

## COMPACTION WORK

Task description: Compact Refuse at Gob Pile #3

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 041

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-041

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	\$227.49		

### MATERIAL QUANTITIES

Loose volume: 225,000

LCY

Shrinkage factor: 0.870

Compacted volume: 195,750

CCY

Source of estimated volume: Volume XI, Page 1

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>4.00</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>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,595.23</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 5,900 feet

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

Adjusted Hourly Unit Production: 1,324.04 CCY/Hour

Adjusted Hourly Fleet Production: 1,324.04 CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: 147.84 Hours

Unit cost: \$0.172 per CCY

Total job cost: \$33,633

## SCRAPER TEAM WORK

Task description: Haul Topsoil from Stockpile Area to Gob Pile #1

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 042

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-042

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 966

CCY

Swell factor: 1.000

Loose volume: **966**

LCY

Source of estimated volume: Volume IX, Appendix A

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>User Provided</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<b><u>18.21</u></b>	LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3200.00	0.00	3.00	3.00	2824	1.37

Haul Time: 1.37 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3200.00	0.00	3.00	3.00	2874	1.23

Return Time: 1.23 minutes

Total Scraper team cycle time: 4.10 minutes  
 Adjusted for job conditions: 442.29 LCY/Hour  
 Selected Number of Scrapers: 2 Scraper(s)  
 Adjusted single scraper team (unit) hourly production: 442.29 LCY/Hour  
 Adjusted multiple scraper team (fleet) hourly production: 442.29 LCY/Hour

Unadjusted unit production/hour: 532.88 LCY/Hour  
 Optimal Number of Scrapers per push  
 dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 2.18 HoursUnit cost: \$1.389 /LCY Total job cost: \$1,341

## SCRAPER TEAM WORK

Task description: Place 3.5' of Coverfill on Gob Pile #1

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 043

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-043

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 6,324

CCY

Swell factor: 1.165

Loose volume: **7,367**

LCY

Source of estimated volume: Volume IX, Appendix A

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<b><u>18.21</u></b>	LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes

Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	10.00	3.00	13.00	834	1.82

Haul Time: 1.82 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	-10.00	3.00	-7.00	2938	0.57

Return Time: 0.57 minutes

Total Scraper team cycle time: 3.89 minutes

Adjusted for job conditions: 466.17 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 466.17 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 466.17 LCY/Hour

Unadjusted unit production/hour: 561.65 LCY/Hour

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

**JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: 15.80 Hours

Unit cost: \$1.317 /LCY

Total job cost: \$9,706



## SCRAPER TEAM WORK

Task description: Place Coverfill from Stockpiles on Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 044

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-044

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 92,937

CCY

Swell factor: 1.165

Loose volume: **108,272**

LCY

Source of estimated volume: Volume IX, Appendix A

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<b><u>18.21</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.90 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6750 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	5.00	5.00	10.00	1068	0.97

Haul Time: 0.97 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-5.00	5.00	0.00	2921	0.44

Return Time: 0.44 minutesTotal Scraper team cycle time: 2.91 minutesAdjusted for job conditions: 623.16 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 623.16 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 623.16 LCY/HourUnadjusted unit production/hour: 750.80 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 173.74 HoursUnit cost: \$0.986 /LCYTotal job cost: \$106,704

## TRUCK/LOADER TEAM WORK

Task description: Haul Cover Material from Gob Pile #3 to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 045

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-045

User: ZTT

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:		CAT 950H
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:	\$19.51	\$27.37	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$33.82	NA	NA	NA	NA
%Utilization-riper:	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	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$101.84	NA	NA	NA	NA
Number of Units:	4	1	0	0	0	0
Group Subtotals:	Work:	\$365.92	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$365.92**

### MATERIAL QUANTITIES

Initial volume: 58,943

CCY

Swell factor: 1.165

Loose volume: **68,669**

LCY

Source of estimated volume: Volume IX, Appendix A

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.21	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: **10.64** LCY

#### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	<b>3.548</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 6300 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: 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter	0.00	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less	0.01	(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:	-0.070	minutes
Adjusted Loader Cycle Time:	<b>0.430</b>	minutes
Net Load Time per Truck:	<b>0.960</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>0.960</u>	Minutes	Adjusted for site altitude:	<u>0.960</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:**  
**maintained 3.0**

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	0.00	3.00	3.00	2824	0.810
2	4000.00	0.00	3.00	3.00	2824	1.416
3	1000.00	10.00	3.00	13.00	834	0.191

Haul Time: **2.417** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-10.00	3.00	-7.00	2938	0.410
2	4000.00	0.00	3.00	3.00	2874	1.392
3	2000.00	0.00	3.00	3.00	2874	0.696

Return Time: **2.498** minutes

Total Truck Cycle Time: **7.275** minutes

Loading Tool unit					
Production	<u>437.36</u>	LCY/Hour	Adjusted for job efficiency:	<u>363.01</u>	LCY/Hour
Truck Unit Production	<u>87.77</u>	LCY/Hour	Adjusted for job efficiency:	<u>72.85</u>	LCY/Hour
Optimal No. of Trucks:	<u>5</u>	Truck(s)	Selected Number of Trucks:	<u>4</u>	Truck(s)
			Adjusted hourly truck team production:	<u>291.41</u>	LCY/Hour
			Adjusted single truck/loader team production:	<u>291.41</u>	LCY/Hour
			Adjusted multiple truck/loader team production:	<u><b>291.41</b></u>	LCY/Hour

**JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: **235.64** Hours

Unit cost: \$1.256 /LCY Total job cost: **\$86,227**

## SCRAPER TEAM WORK

Task description: Place 2.5' of Coverfill on Gob Pile #3, from stockpile

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 046

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-046

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 78,050

CCY

Swell factor: 1.165

Loose volume: **90,928**

LCY

Source of estimated volume: Volume XI, Appendix A

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<b><u>18.21</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.90 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6100 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2600.00	0.00	5.00	5.00	2218	1.35

Haul Time: 1.35 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2600.00	0.00	5.00	5.00	2814	1.07

Return Time: 1.07 minutesTotal Scraper team cycle time: 3.92 minutesAdjusted for job conditions: 462.60 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 462.60 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 462.60 LCY/HourUnadjusted unit production/hour: 557.35 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 196.56 HoursUnit cost: \$1.328 /LCYTotal job cost: \$120,714

## BULLDOZER WORK

Task description: Push temp coverfill mat. to face of Gob pile #3

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 047

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-047

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: \$268.57

### MATERIAL QUANTITIES

Initial Volume: 5,500

Swell factor: 1.000

Loose volume: 5,500 LCY

Source of estimated volume: MR199 app.

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 700.0 LCY/hr

Materials consistency  
description: Loose stockpile 1.2

Average push  
gradient: 5 %

Average site altitude: 5,900 feet

Material weight: 2,650 lbs/LCY

Weight description: Decomposed rock - 25% Rock, 75% Earth



Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	0.800	(POOR)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4684

Adjusted unit  
production: 327.88 LCY/hr

Adjusted fleet  
production: **327.88** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.819/LCY

Total job time: **16.77** Hours

Total job cost: **\$4,505**

## COMPACTION WORK

Task description: Compact Backfilled D-Portal Bench,Roads, & Utility Corridor

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 050

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-050

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	<b>\$227.49</b>		

### MATERIAL QUANTITIES

Loose volume: 619,112

LCY

Shrinkage factor: 0.875

Compacted volume: **541,723**

CCY

Source of estimated volume: Total of All Backfilling Tasks

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>4.00</u>	mph
Compacted thickness of each lift (L):	<u>8.00</u>	inches
Conversion Constant (C):	<u>16.3</u>	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	<u>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,276.18</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 6,500 feet

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

Adjusted Hourly Unit Production: 1,059.23 CCY/Hour

Adjusted Hourly Fleet Production: **1,059.23** CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: **511.43** Hours

Unit cost: \$0.215 per CCY

Total job cost: **\$116,345**

## COMPACTION WORK

Task description: Compact Backfilled Material at Truck Loadout/Coal Stockpile

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 051

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-051

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	\$227.49		

### MATERIAL QUANTITIES

Loose volume: 67,920

LCY

Shrinkage factor: 0.875

Compacted volume: 59,430

CCY

Source of estimated volume: Operator Estimate

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>4.00</u>	mph
Compacted thickness of each lift (L):	<u>8.00</u>	inches
Conversion Constant (C):	<u>16.3</u>	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	<u>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,276.18</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 6,000 feet

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

Adjusted Hourly Unit Production: 1,059.23 CCY/Hour

Adjusted Hourly Fleet Production: 1,059.23 CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: 56.11 Hours

Unit cost: \$0.215 per CCY

Total job cost: \$12,764

## COMPACTION WORK

Task description: Compact Backfilled Train Loadout

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 052

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-052

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	<b>\$227.49</b>		

### MATERIAL QUANTITIES

Loose volume: 231,495

LCY

Shrinkage factor: 0.875

Compacted volume: **202,558**

CCY

Source of estimated volume: Operator Estimate

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>4.00</u>	mph
Compacted thickness of each lift (L):	<u>8.00</u>	inches
Conversion Constant (C):	<u>16.3</u>	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	<u>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,276.18</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 5,900 feet

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

Adjusted Hourly Unit Production: 1,059.23 CCY/Hour

Adjusted Hourly Fleet Production: **1,059.23** CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: **191.23** Hours

Unit cost: \$0.215 per CCY

Total job cost: **\$43,503**

## COMPACTION WORK

Task description: Compact B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 053

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-053

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 825H

Horsepower: 354

Compactor Type: Soil - tamping foot

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

Ownership Cost/Hour:	\$113.26	Utilization %	NA
Operating Cost/Hour:	\$88.24		100
Operator Cost/Hour:	\$25.99		NA
Total Unit Cost/Hour:	\$227.49		
Total Fleet Cost/Hour:	<b>\$227.49</b>		

### MATERIAL QUANTITIES

Loose volume: 138,000

LCY

Shrinkage factor: 0.875

Compacted volume: **120,750**

CCY

Source of estimated volume: Operator Estimate

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>4.00</u>	mph
Compacted thickness of each lift (L):	<u>8.00</u>	inches
Conversion Constant (C):	<u>16.3</u>	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	<u>3</u>	passes
Unadjusted Hourly Unit Production:	<u>1,276.18</u>	CCY/hour

#### Job Condition Correction Factors

Site Altitude: 6,750 feet

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

Adjusted Hourly Unit Production: 1,059.23 CCY/Hour

Adjusted Hourly Fleet Production: **1,059.23** CCY/Hour

### JOB TIME AND COST

Fleet size: 1 Compactor(s)

Total job time: **114.00** Hours

Unit cost: \$0.215 per CCY

Total job cost: **\$25,933**

## BULLDOZER RIPPING WORK

Task description: Rip Utility Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 060

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-060

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 0.75 acres

Rip Depth (ft): 2.63

Volume: 3,182

BCY or CCY

Source of estimated quantity: Map 15-2

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	<u>2.88</u>	feet/pass
Average Ripping Width:	<u>8.67</u>	feet/pass
Average Ripping Length:	<u>50.00</u>	feet/pass
Average Dozer Speed:	<u>88.00</u>	feet/minute
Average Maneuver Time:	<u>0.25</u>	minutes/pass
Production per unit area:	<u>0.730</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.730 Acres/hr

Site Altitude: 6,800 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.61 Acres/hr

Adjusted Hourly Fleet Production: **2.42** Acres/hr

### JOB TIME AND COST

Fleet size: 4 Grader(s)

Total job time: **0.31** Hours

\$571.754

**\$429**

## BULLDOZER RIPPING WORK

Task description: Rip D-Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 061

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-061

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 9.00 acres

Rip Depth (ft): 2.63

Volume: 38,188

BCY or CCY

Source of estimated quantity: Map 15-2

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	<u>2.88</u>	feet/pass
Average Ripping Width:	<u>8.67</u>	feet/pass
Average Ripping Length:	<u>50.00</u>	feet/pass
Average Dozer Speed:	<u>88.00</u>	feet/minute
Average Maneuver Time:	<u>0.25</u>	minutes/pass
Production per unit area:	<u>0.730</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.730 Acres/hr

Site Altitude: 6,800 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.61 Acres/hr

Adjusted Hourly Fleet Production: **2.42** Acres/hr

### JOB TIME AND COST

Fleet size: 4 Grader(s)

Total job time: **3.71** Hours



Unit cost:           \$571.754           Per acre

Total job cost:                   \$5,146

## BULLDOZER RIPPING WORK

Task description: Rip Truck Loadout/Coal Stockpile Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 062

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-062

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 5.00 acres

Rip Depth (ft): 2.63

Volume: 21,215

BCY or CCY

Source of estimated quantity: Map 15-1

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	<u>2.88</u>	feet/pass
Average Ripping Width:	<u>8.67</u>	feet/pass
Average Ripping Length:	<u>50.00</u>	feet/pass
Average Dozer Speed:	<u>88.00</u>	feet/minute
Average Maneuver Time:	<u>0.25</u>	minutes/pass
Production per unit area:	<u>0.730</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.730 Acres/hr

Site Altitude: 6,000 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.61 Acres/hr

Adjusted Hourly Fleet Production: **2.42** Acres/hr

### JOB TIME AND COST

Fleet size: 4 Grader(s)

Total job time: **2.06** Hours

Unit cost:           \$571.754           Per acre

Total job cost:                   **\$2,859**

## BULLDOZER RIPPING WORK

Task description: Rip Regraded Mine Area Prior to Topsoil Replacement

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 063 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-063  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU Horsepower: 574  
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 169.00 acres Rip Depth (ft): 2.63 Volume: 717,078 BCY or CCY

Source of estimated quantity: Total Regraded Area (Ripping per Page 2.05-48)

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 2.88 feet/pass  
Average Ripping Width: 8.67 feet/pass  
Average Ripping Length: 100.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.861 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.861 Acres/hr  
Site Altitude: 6,500 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.71 Acres/hr  
Adjusted Hourly Fleet Production: 2.86 Acres/hr

### JOB TIME AND COST

Fleet size: 4 Grader(s) Total job time: 59.09 Hours

Unit cost:	<u>          \$484.403          </u>	Per acre	Total job cost:	<u>          <b>\$81,865</b>          </u>
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## BULLDOZER RIPPING WORK

Task description: Rip Train Loadout Facilities and Railbed Benches

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 064 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-064  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU Horsepower: 574  
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 22.00 acres Rip Depth (ft): 2.63 Volume: 93,347 BCY or CCY

Source of estimated quantity: Division Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 2.88 feet/pass  
Average Ripping Width: 8.67 feet/pass  
Average Ripping Length: 100.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.861 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.861 Acres/hr  
Site Altitude: 5,900 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.71 Acres/hr  
Adjusted Hourly Fleet Production: 2.86 Acres/hr

### JOB TIME AND COST

Fleet size: 4 Grader(s) Total job time: 7.69 Hours

Unit cost:	<u>          \$484.403          </u>	Per acre	Total job cost:	<u>          <b>\$10,657</b>          </u>
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## BULLDOZER RIPPING WORK

Task description: Rip B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 065

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-065

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 9.00 acres

Rip Depth (ft): 2.63

Volume: 38,188

BCY or CCY

Source of estimated quantity: Operator Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	<u>2.88</u>	feet/pass
Average Ripping Width:	<u>8.67</u>	feet/pass
Average Ripping Length:	<u>50.00</u>	feet/pass
Average Dozer Speed:	<u>88.00</u>	feet/minute
Average Maneuver Time:	<u>0.25</u>	minutes/pass
Production per unit area:	<u>0.730</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.730 Acres/hr

Site Altitude: 6,750 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.61 Acres/hr

Adjusted Hourly Fleet Production: **2.42** Acres/hr

### JOB TIME AND COST

Fleet size: 4 Grader(s)

Total job time: **3.71** Hours



\$571.754

**\$5,146**

## BULLDOZER RIPPING WORK

Task description: Rip Rock Laydown Pad Topsoil

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 066

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-066

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$18.34	NA
Ripper Operating Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$346.33</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 0.20 acres

Rip Depth (ft): 2.00

Volume: 645

BCY or CCY

Source of estimated quantity: Operator Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	2.88	feet/pass
Average Ripping Width:	8.67	feet/pass
Average Ripping Length:	25.00	feet/pass
Average Dozer Speed:	88.00	feet/minute
Average Maneuver Time:	0.25	minutes/pass
Production per unit area:	0.559	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.559 Acres/hr

Site Altitude: 7,100 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.46 Acres/hr

Adjusted Hourly Fleet Production: **0.46** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: **0.43** Hours

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\$746.457

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**\$149**

## BULLDOZER RIPPING WORK

Task description: Rip Haul Roads (Portion Being Reclaimed) & Old Truck Loadout

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 070 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-070  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU Horsepower: 574  
Ripper Attachment: 1-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$20.29	NA
Ripper Operating Cost/Hour:	\$11.54	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$349.03	
Total Fleet Cost/Hour:	<b>\$1,396.11</b>	

### MATERIAL QUANTITIES

Selected estimating method: Seismic

#### Alternate Methods:

Seismic: 260,481 BCY Bank Volume: 260,481 BCY Adverse  
Area: NA acres Rip Depth (ft): NA Volume: NA BCY or CCY

Source of estimated quantity: Operator Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: 5,000 feet/second

#### Area:

Average Ripping Depth: NA feet/pass  
Average Ripping Width: NA feet/pass  
Average Ripping Length: NA feet/pass  
Average Dozer Speed: NA feet/minute  
Average Maneuver Time: NA minutes/pass  
Production per unit area: NA acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 673.60 Cu. yds./hr  
Site Altitude: 6,500 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 559.09 Cu. yds./hr  
Adjusted Hourly Fleet Production: 2,236.35 Cu. yds./hr

### JOB TIME AND COST

Fleet size: 4 Grader(s) Total job time: 116.48 Hours

Unit cost:	<u>          \$0.624          </u>	Per cu. yd.	Total job cost:	<u>          <b>\$162,613</b>          </u>
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## SCRAPER TEAM WORK

Task description: Remove Haul Road Subbase and Place on Gob Pile #1

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 071

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-071

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 7,484

CCY

Swell factor: 1.000

Loose volume: **7,484**

LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,850 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Gravel - Dry (1/4"-2" diam.)</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.53 LCY</u>	Adjusted Capacity:	<b><u>18.53</u></b>	LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	6850.00	-6.00	3.00	-3.00	2938	2.40

Haul Time: 2.40 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	6850.00	6.00	3.00	9.00	1930	3.63

Return Time: 3.63 minutes

Total Scraper team cycle time: 7.53 minutes

Adjusted for job conditions: 245.05 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 245.05 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 245.05 LCY/Hour

Unadjusted unit production/hour: 295.24 LCY/Hour

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

### JOB TIME AND COST

Fleet size: 1 Team(s)

Total job time: 30.54 Hours

Unit cost: \$2.506 /LCY

Total job cost: \$18,756

## BULLDOZER RIPPING WORK

Task description: Rip Truck Loadout Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 072

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-072

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 1-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$20.29	NA
Ripper Operating Cost/Hour:	\$11.54	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$349.03	
Total Fleet Cost/Hour:	<b>\$1,396.11</b>	

### MATERIAL QUANTITIES

Selected estimating method: Seismic

#### Alternate Methods:

Seismic: 4,800 BCY      Bank Volume: 4,800 BCY      Adverse  
Area: NA acres      Rip Depth (ft): NA      Volume: NA BCY or CCY

Source of estimated quantity: Division Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: 5,000 feet/second

#### Area:

Average Ripping Depth:	<u>NA</u>	feet/pass
Average Ripping Width:	<u>NA</u>	feet/pass
Average Ripping Length:	<u>NA</u>	feet/pass
Average Dozer Speed:	<u>NA</u>	feet/minute
Average Maneuver Time:	<u>NA</u>	minutes/pass
Production per unit area:	<u>NA</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 673.60 Cu. yds./hr

Site Altitude: 6,000 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 559.09 Cu. yds./hr

Adjusted Hourly Fleet Production: **2,236.35** Cu. yds./hr

### JOB TIME AND COST

Fleet size: 4 Grader(s)      Total job time: **2.15** Hours



Unit cost:	<u>          \$0.624          </u>	Per cu. yd.	Total job cost:	<u>          <b>\$2,997</b>          </u>
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## SCRAPER TEAM WORK

Task description: Haul Truck Loadout Subbase to Gob Pile #1

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 073

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-073

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 6,000

CCY

Swell factor: 1.000

Loose volume: **6,000**

LCY

Source of estimated volume: Page 2.08-18

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>2,850 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Gravel - Dry (1/4"-2" diam.)</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>18.53 LCY</u>	Adjusted Capacity:	<b><u>18.53</u></b>	LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2600.00	0.00	5.00	5.00	2218	1.35

Haul Time: 1.35 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2600.00	0.00	5.00	5.00	2814	1.07

Return Time: 1.07 minutes

Total Scraper team cycle time: 3.92 minutes  
 Adjusted for job conditions: 470.72 LCY/Hour  
 Selected Number of Scrapers: 2 Scraper(s)  
 Adjusted single scraper team (unit) hourly production: 470.72 LCY/Hour  
 Adjusted multiple scraper team (fleet) hourly production: 470.72 LCY/Hour

Unadjusted unit production/hour: 567.13 LCY/Hour  
 Optimal Number of Scrapers per push  
 dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 12.75 HoursUnit cost: \$1.305 /LCY Total job cost: \$7,828

## BULLDOZER RIPPING WORK

Task description: Rip Upper Haul Road Asphalt Prior to Road Narrowing

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 074

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-074

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 1-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$20.29	NA
Ripper Operating Cost/Hour:	\$11.54	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$349.03	
Total Fleet Cost/Hour:	<b>\$1,396.11</b>	

### MATERIAL QUANTITIES

Selected estimating method: Seismic

#### Alternate Methods:

Seismic: 6,600 BCY      Bank Volume: 6,600 BCY      Adverse  
Area: NA acres      Rip Depth (ft): NA      Volume: NA BCY or CCY

Source of estimated quantity: Division Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: 5,000 feet/second

#### Area:

Average Ripping Depth:	<u>NA</u>	feet/pass
Average Ripping Width:	<u>NA</u>	feet/pass
Average Ripping Length:	<u>NA</u>	feet/pass
Average Dozer Speed:	<u>NA</u>	feet/minute
Average Maneuver Time:	<u>NA</u>	minutes/pass
Production per unit area:	<u>NA</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 673.60 Cu. yds./hr

Site Altitude: 6,800 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 559.09 Cu. yds./hr

Adjusted Hourly Fleet Production: **2,236.35** Cu. yds./hr

### JOB TIME AND COST

Fleet size: 4 Grader(s)      Total job time: **2.95** Hours

Unit cost:	<u>          \$0.624          </u>	Per cu. yd.	Total job cost:	<u>          <b>\$4,120</b>          </u>
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## TRUCK/LOADER TEAM WORK

Task description: Pull Back/Haul Fill Mat'l from Upper Haul Rd Narrowing

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 075

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-075

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Cat 773F
-Loader:	Cat 365C L 13'-7" Stick
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	Excavator	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$105.90	\$121.37	NA	NA	NA	NA
Operating cost/hour:	\$93.41	\$125.13	NA	NA	NA	NA
%Utilization-riper:	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:	\$33.29	\$37.27	NA	NA	NA	NA
Unit Subtotals:	\$232.60	\$283.77	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work: \$748.97		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$748.97

### MATERIAL QUANTITIES

Initial volume: 60,564

CCY

Swell factor: 1.165

Loose volume: 70,557

LCY

Source of estimated volume: Operator Estimate

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	122,520	Pounds
Payload Capacity:	42.25	LCY

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

Struck Volume:	35.00	LCY
Heaped Volume:	46.50	LCY
Average Volume:	40.75	LCY
Adjusted Volume:	42.25	LCY

Final Truck Volume Based on Number of Loader Passes: **42.26** LCY

#### **Loading Tool Capacity**

Bucket Size Class: Large

Rated Capacity:	6.900	LCY (heaped)
Bucket Fill Factor:	0.875	Loose material - 1" and over (85 - 90%) 0.875
Adjusted Capacity:	<b>6.038</b>	LCY

#### **Job Condition Corrections:**

Site Altitude (ft.): 6900 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: 7 passes

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

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

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): NA minutes

Cycle Time Factors		Factor (min.)	Source
Material:	NA	NA	(Cat HB)
Stockpile:	NA	NA	(Cat HB)
Truck Ownership:	NA	NA	(Cat HB)
Operation:	NA	NA	(Cat HB)
Dump Target:	NA	NA	(Cat HB)
Net Cycle Time Adjustment:		NA	minutes
Adjusted Loader Cycle Time:		<b>0.570</b>	minutes
Net Load Time per Truck:		<b>3.520</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	<u>0.70</u>	Minutes	Adjusted for site altitude:	<u>0.700</u>	Minutes
Truck Load Time:	<u>3.520</u>	Minutes	Adjusted for site altitude:	<u>3.520</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.10</u>	Minutes	Adjusted for site altitude:	<u>1.100</u>	Minutes

Truck Travel (Haul & Return) Time: \_\_\_\_\_ Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	10.00	3.00	13.00	678	1.135

Haul Time: 1.135 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	-10.00	3.00	-7.00	3512	0.267

Return Time: 0.267 minutes

Total Truck Cycle Time: 6.722 minutes

Loading Tool unit Production	<u>600.89</u>	LCY/Hour	Adjusted for job efficiency:	<u>498.74</u>	LCY/Hour
Truck Unit Production	<u>377.23</u>	LCY/Hour	Adjusted for job efficiency:	<u>313.10</u>	LCY/Hour
Optimal No. of Trucks:	<u>2</u>	Truck(s)	Selected Number of Trucks:	<u>2</u>	Truck(s)

Adjusted hourly truck team production:	<u>626.20</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>498.74</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u>498.74</u>	LCY/Hour

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<u>141.47</u>	Hours
Unit cost:	<u>\$1.502</u>	/LCY	Total job cost:	<u>\$105,958</u>	



## BULLDOZER WORK

Task description: Regrade Narrowed Section of Haul Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 076

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-076

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own.		
Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: \$1,268.79

### MATERIAL QUANTITIES

Initial Volume: 60,564

Swell factor: 1.165

Loose volume: 70,557 LCY

Source of estimated volume: Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 75 feet

Unadjusted hourly  
production: 2,105.3 LCY/hr

Materials consistency description:                      Compacted fill or embankment 0.9

---

Average push gradient:                      5 %

Average site altitude:                      6,500 feet

---

Material weight:                      2,900 lbs/LCY

---

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

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**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction:                      0.3209

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Adjusted unit production:                      675.59 LCY/hr

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Adjusted fleet production:                      **2702.36** LCY/hr

---

**JOB TIME AND COST**

Fleet size:                      4 Dozer(s)

Unit cost:                      \$0.470/LCY

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Total job time:                      **26.11** Hours

Total job cost:                      **\$33,127**

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### BULLDOZER RIPPING WORK

Task description: Rip Gob Pile #1 Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 077

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-077

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Ripper Attachment: 1-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$20.29	NA
Ripper Operating Cost/Hour:	\$11.54	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$349.03	
Total Fleet Cost/Hour:	<b>\$1,396.11</b>	

### MATERIAL QUANTITIES

Selected estimating method: Seismic

#### Alternate Methods:

Seismic: 5,277

BCY

Bank Volume: 5,277

BCY

Adverse

Area: NA acres

Rip Depth (ft): NA

Volume: NA

BCY or CCY

Source of estimated quantity: Page 3.02-2

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: 5,000 feet/second

#### Area:

Average Ripping Depth:	NA	feet/pass
Average Ripping Width:	NA	feet/pass
Average Ripping Length:	NA	feet/pass
Average Dozer Speed:	NA	feet/minute
Average Maneuver Time:	NA	minutes/pass
Production per unit area:	NA	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production:	673.60	Cu. yds./hr
Site Altitude:	6,000	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production:	559.09	Cu. yds./hr
Adjusted Hourly Fleet Production:	<b>2,236.35</b>	Cu. yds./hr

#### JOB TIME AND COST

Fleet size:	4	Grader(s)	Total job time:	<b>2.36</b>	Hours
Unit cost:	\$0.624	Per cu. yd.	Total job cost:	<b>\$3,294</b>	

#### BULLDOZER WORK

Task description: **Regrade Gob Pile #1 Road**

Site: **Bowie No. 2 Mine** Permit Action: **MT5** Permit/Job#: **C1996083**

#### PROJECT IDENTIFICATION

Task #:	078	State:	Colorado	Abbreviation:	None
Date:	9/30/2019	County:	Delta	Filename:	C083-078
User:	ZTT				

Agency or organization name: **DRMS**

#### HOURLY EQUIPMENT COST

Basic Machine:	Cat D10T - 10SU
Horsepower:	574
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

#### MATERIAL QUANTITIES

Initial Volume: 5,963  
Swell factor: 1.165  
Loose volume: **6,947** LCY

Source of estimated volume: Page 3.02-2  
Source of estimated swell factor: Cat Handbook

### **HOURLY PRODUCTION**

Average push distance: 200 feet  
Unadjusted hourly production: 946.0 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %  
Average site altitude: 6,000 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:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>0.900</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>0.800</u>	<u>(FND-RF)</u>
Push gradient:	<u>1.000</u>	<u>(CAT HB)</u>
Altitude:	<u>1.000</u>	<u>(CAT HB)</u>
Material Weight:	<u>0.793</u>	<u>(CAT HB)</u>
Blade type:	<u>1.000</u>	<u>(PAT)</u>

Net correction: 0.3554

Adjusted unit production: 336.21 LCY/hr  
Adjusted fleet production: **1344.84** LCY/hr

### **JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$1.030/LCY

Total job time: **5.17** Hours  
Total job cost: **\$7,156**

### BULLDOZER RIPPING WORK

Task description: Rip Access Road

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 079 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-079  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU Horsepower: 574  
Ripper Attachment: 1-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper Ownership Cost/Hour:	\$20.29	NA
Ripper Operating Cost/Hour:	\$11.54	100
Operator Cost/Hour:	\$41.24	NA
Total Unit Cost/Hour:	\$349.03	

Total Fleet Cost/Hour: \$1,396.11

### **MATERIAL QUANTITIES**

Selected estimating method: Seismic

#### Alternate Methods:

Seismic: 1,648 BCY Bank Volume: 1,648 BCY Adverse  
Area: NA acres Rip Depth (ft): NA Volume: NA BCY or CCY

Source of estimated quantity: Division Estimate

### **HOURLY PRODUCTION**

#### Seismic:

Seismic Velocity: 5,000 feet/second

#### Area:

Average Ripping Depth: NA feet/pass  
Average Ripping Width: NA feet/pass  
Average Ripping Length: NA feet/pass  
Average Dozer Speed: NA feet/minute  
Average Maneuver Time: NA minutes/pass  
Production per unit area: NA acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 673.60 Cu. yds./hr  
Site Altitude: 6,500 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 559.09 Cu. yds./hr  
Adjusted Hourly Fleet Production: 2,236.35 Cu. yds./hr

### **JOB TIME AND COST**

Fleet size: 4 Grader(s) Total job time: 0.74 Hours

Unit cost: \$0.624 Per cu. yd. Total job cost: \$1,029

### **SCRAPER TEAM WORK**

Task description: Haul Access Road Surface to Gob Pile #1

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 080 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-080  
User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT**

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	<u>Cat 627G w/push-pull</u>
-Dozer:	<u>NA</u>

Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

<b>Cost Breakdown:</b>	<b>Scraper Work Team</b>		<b>Support Equipment</b>		<b>Maintenance Equipment</b>	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### **MATERIAL QUANTITIES**

Initial volume: 1,928 CCY      Swell factor: 1.000  
Loose volume: **1,928** LCY

Source of estimated volume: Division of Reclamation, Mining & Safety  
Source of estimated swell factor: Cat Handbook

### **HOURLY PRODUCTION**

		<b>Scraper Bowl (volume) Basis:</b>	
Material weight:	<u>2,900 lbs/LCY</u>	Struck Volume:	<u>15.70</u> LCY
Material description:	<u>Decomposed rock - 50% Rock, 50% Earth</u>	Heaped Volume:	<u>22.00</u> LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u> LCY
Payload Capacity:	<u>18.21 LCY</u>	Adjusted Capacity:	<u><b>18.21</b></u> LCY

### **Cycle Time:**

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

### **Job Condition Correction:**

Site Altitude: 6750 feet

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

### **Travel Time:**

Road Condition: Firm, smooth, rolling, dirt/lr. surfaced, watered, maintained 3.0



Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3900.00	-2.50	3.00	0.50	2921	1.50

Haul Time: 1.50 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3900.00	2.50	3.00	5.50	2736	1.57

Return Time: 1.57 minutes

Total Scraper team cycle time: 4.57 minutes

Adjusted for job conditions: 396.81 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 396.81 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 396.81 LCY/Hour

Unadjusted unit production/hour: 478.08 LCY/Hour

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

### **JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: 4.86 Hours

Unit cost: \$1.548 /LCY Total job cost: \$2,984

### **BULLDOZER WORK**

Task description: Regrade Access Road

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 081 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-081

User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT COST**

Basic Machine: Cat D10T - 10SU  
Horsepower: 574  
Blade Type: Semi-Universal  
Attachment: NA  
Shift Basis: 1 per day  
Data Source: (CRG)

#### **Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$317.20	
Total Fleet Cost/Hour:	<b>\$1,268.79</b>	

### **MATERIAL QUANTITIES**

Initial Volume: 3,296  
Swell factor: 1.330  
Loose volume: **4,384 LCY**

Source of estimated volume: Division of Reclamation, Mining & Safety  
Source of estimated swell  
factor: Cat Handbook

### **HOURLY PRODUCTION**

Average push distance: 100 feet  
Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %  
Average site altitude: 6,500 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **2443.6** LCY/hr

### **JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.519/LCY

Total job time: **1.79** Hours  
Total job cost: **\$2,276**

## BULLDOZER WORK

Task description: Backfill and Regrade Haul Road to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 083

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-083

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Initial Volume: 600

Swell factor: 1.165

Loose volume: **699 LCY**

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 150 feet

Unadjusted hourly  
production: 1,243.2 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 5 %

Average site altitude: 6,100 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:	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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3209

Adjusted unit  
production: 398.94 LCY/hr  
Adjusted fleet  
production: **1595.76** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.868/LCY

Total job time: **0.44** Hours  
Total job cost: **\$607**

## BULLDOZER RIPPING WORK

Task description: Rip Lower Haul Road

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 084 State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-084  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU Horsepower: 574  
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$140.61</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.35</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$18.34</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$10.80</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.24</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$346.33</u>	
Total Fleet Cost/Hour:	<u>\$1,385.33</u>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 3.00 acres Rip Depth (ft): 2.00 Volume: 9,680 BCY or CCY

Source of estimated quantity: Division Estimate

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 2.88 feet/pass  
Average Ripping Width: 8.67 feet/pass  
Average Ripping Length: 200.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.947 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.947 Acres/hr  
Site Altitude: 6,500 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier  
Adjusted Hourly Unit Production: 0.79 Acres/hr  
Adjusted Hourly Fleet Production: 3.14 Acres/hr

**JOB TIME AND COST**

Fleet size: 4 Grader(s)

Total job time: 0.95 Hours

Unit cost: \$440.727 Per acre

Total job cost: \$1,322

## BULLDOZER WORK

Task description: Regrade Lower Haul Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 085

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-085

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Initial Volume: 37,998

Swell factor: 1.165

Loose volume: **44,268 LCY**

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 946.0 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 5 %

Average site altitude: 6,500 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:	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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3209

Adjusted unit  
production: 303.57 LCY/hr  
Adjusted fleet  
production: **1214.28** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$1.141/LCY

Total job time: **36.46** Hours  
Total job cost: **\$50,503**

## BULLDOZER WORK

Task description: Regrade Light Use Roads from MRs and TRs

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 086

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-086

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

### MATERIAL QUANTITIES

Initial Volume: 115,458

Swell factor: 1.165

Loose volume: **134,509** LCY

Source of estimated volume: 46.71 acres, 1.5' depth

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

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

Net correction: 0.3209

Adjusted unit  
production: 551.60 LCY/hr  
Adjusted fleet  
production: **2206.4** LCY/hr

**JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.628/LCY

Total job time: **60.96** Hours  
Total job cost: **\$84,454**

## MOTOR GRADER WORK

Task description: Finish Grade Disturbed Mine Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 090

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-090

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 14M

Horsepower: 259

Ripper Attachment: Multi-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$64.10	NA
Operating Cost/Hour:	\$56.17	100
Ripper Ownership Cost/Hour:	\$4.44	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.52	NA
Total Unit Cost/Hour:	\$153.22	
Total Fleet Cost/Hour:	<b>\$153.22</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 169.00 acres

Source of estimated acreage: Total of all disturbed areas

### 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>12.10</u>	feet
Width of blade overlap per pass:	<u>2.00</u>	feet
Net grading or ripping width per pass:	<u>10.10</u>	feet
Unadjusted Hourly Unit Production:	<u>1.5303</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 6500 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: 1.3008 acres/Hour

Adjusted Hourly Fleet Production: **1.3008** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: **129.92** Hours

Unit cost:     \$117.79     per acre

Total job cost:     **\$19,907**

## MOTOR GRADER WORK

Task description: Finish Grade Train Loadout

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 091

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-091

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 14M

Horsepower: 259

Ripper Attachment: Multi-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$64.10	NA
Operating Cost/Hour:	\$56.17	100
Ripper Ownership Cost/Hour:	\$4.44	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.52	NA
Total Unit Cost/Hour:	\$153.22	
Total Fleet Cost/Hour:	<b>\$153.22</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 22.00 acres

Source of estimated acreage: Operator estimate

### 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>12.10</u>	feet
Width of blade overlap per pass:	<u>2.00</u>	feet
Net grading or ripping width per pass:	<u>10.10</u>	feet
Unadjusted Hourly Unit Production:	<u>1.5303</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 5900 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: 1.3008 acres/Hour

Adjusted Hourly Fleet Production: **1.3008** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: **16.91** Hours

Unit cost:     \$117.79     per acre

Total job cost:     **\$2,591**

## MOTOR GRADER WORK

Task description: Finish Grade B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 092

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-092

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 14M

Horsepower: 259

Ripper Attachment: Multi-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$64.10	NA
Operating Cost/Hour:	\$56.17	100
Ripper Ownership Cost/Hour:	\$4.44	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.52	NA
Total Unit Cost/Hour:	\$153.22	
Total Fleet Cost/Hour:	<b>\$153.22</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 9.00 acres

Source of estimated acreage: Operator Estimate

### 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>12.10</u>	feet
Width of blade overlap per pass:	<u>2.00</u>	feet
Net grading or ripping width per pass:	<u>10.10</u>	feet
Unadjusted Hourly Unit Production:	<u>1.5303</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 6750 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: 1.3008 acres/Hour

Adjusted Hourly Fleet Production: **1.3008** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: **6.92** Hours



Unit cost:     \$117.79     per acre

Total job cost:     **\$1,060**

## MOTOR GRADER WORK

Task description: Finish Grade Gob Piles #1, #2, #3, and #4

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 093

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-093

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: CAT 14M

Horsepower: 259

Ripper Attachment: Multi-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$64.10	NA
Operating Cost/Hour:	\$56.17	100
Ripper Ownership Cost/Hour:	\$4.44	NA
Ripper Operating Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$28.52	NA
Total Unit Cost/Hour:	\$153.22	
Total Fleet Cost/Hour:	<b>\$153.22</b>	

### MATERIAL QUANTITIES

Total Area to be graded or ripped: 65.88 acres

Source of estimated acreage: Permit Volume IX

### 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>12.10</u>	feet
Width of blade overlap per pass:	<u>2.00</u>	feet
Net grading or ripping width per pass:	<u>10.10</u>	feet
Unadjusted Hourly Unit Production:	<u>1.5303</u>	acres/hour

#### Job Condition Correction Factors

Site Altitude: 6100 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: 1.3008 acres/Hour

Adjusted Hourly Fleet Production: **1.3008** acres/Hour

### JOB TIME AND COST

Fleet size: 1 Grader(s)

Total job time: **50.65** Hours

Unit cost:     \$117.79     per acre

Total job cost:     **\$7,760**

## BULLDOZER WORK

Task description: Backfill and Regrade Pond B

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 095

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-095

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$346.33</b>	

### MATERIAL QUANTITIES

Initial Volume: 4,290

Swell factor: 1.330

Loose volume: **5,706** LCY

Source of estimated volume: Map 22B; Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 75 feet

Unadjusted hourly  
production: 2,105.3 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,000 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:	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: 748.22 LCY/hr  
Adjusted fleet  
production: **748.22** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.463/LCY

Total job time: **7.63** Hours  
Total job cost: **\$2,641**

## BULLDOZER WORK

Task description: Backfill and Regrade Pond C

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 096

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-096

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$140.61</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.35</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$18.34</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.24</u>	<u>NA</u>
Total unit Cost/Hour:	<u>\$335.53</u>	
Total Fleet Cost/Hour:	<u><b>\$335.53</b></u>	

### MATERIAL QUANTITIES

Initial Volume: 5,334

Swell factor: 1.330

Loose volume: **7,094** LCY

Source of estimated volume: Map 22C; Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,000 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **610.9** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.549/LCY

Total job time: **11.61** Hours  
Total job cost: **\$3,896**

## BULLDOZER WORK

Task description: Backfill and Regrade Gob Pile Pond D

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 097

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-097

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$335.53	
Total Fleet Cost/Hour:	<b>\$335.53</b>	

### MATERIAL QUANTITIES

Initial Volume: 3,759

Swell factor: 1.330

Loose volume: **4,999** LCY

Source of estimated volume: Map 95266-04; Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,000 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **610.9** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.549/LCY

Total job time: **8.18** Hours  
Total job cost: **\$2,746**

## BULLDOZER WORK

Task description: Backfill and Regrade Pond F

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 098

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-098

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$335.53	
Total Fleet Cost/Hour:	<b>\$335.53</b>	

### MATERIAL QUANTITIES

Initial Volume: 5,700

Swell factor: 1.165

Loose volume: **6,641** LCY

Source of estimated volume: Appendix B-4; Division Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 6,100 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **610.9** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.549/LCY

Total job time: **10.87** Hours  
Total job cost: **\$3,647**

## BULLDOZER WORK

Task description: Backfill and Regrade Pond J

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 099

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-099

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$335.53	
Total Fleet Cost/Hour:	<b>\$335.53</b>	

### MATERIAL QUANTITIES

Initial Volume: 11,320

Swell factor: 1.330

Loose volume: **15,056** LCY

Source of estimated volume: Map 22J; Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 5,900 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **610.9** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.549/LCY

Total job time: **24.64** Hours  
Total job cost: **\$8,269**

## BULLDOZER WORK

Task description: Backfill and Regrade Pond K

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 100

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-100

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$335.53	
Total Fleet Cost/Hour:	<b>\$335.53</b>	

### MATERIAL QUANTITIES

Initial Volume: 700

Swell factor: 1.330

Loose volume: 931 LCY

Source of estimated volume: Map 22K; Operator Estimate

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,718.9 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 0 %

Average site altitude: 5,900 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:	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: 610.90 LCY/hr  
Adjusted fleet  
production: **610.9** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.549/LCY

Total job time: **1.52** Hours  
Total job cost: **\$511**

## HYDRAULIC EXCAVATOR WORK

Task description: Excavate for Post-mining Channel at B-Seam Portals

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 101

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-101

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat 365C L 13'-7" Stick

Horsepower: 404

Attachment 1: ROPS Cab

Weight (MT): 70.51

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$121.37	NA
Operating Cost/Hour:	\$125.13	100
Operator Cost/Hour:	\$37.27	NA
Total Unit Cost/Hour:	\$283.77	
Total Fleet Cost/Hour:	\$567.54	

### MATERIAL QUANTITIES

Initial volume: 290

CCY

Swell factor: 1.165

Loose volume: 338

LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

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

Basic Job Condition Description: SEVERE

Secondary Job Condition within Basic Description: SEVERE

Cycle Time Value: 0.570 minutes

#### Load Bucket Capacity

Bucket Size Class: Small

Rated Capacity: 3.61 LCY (heaped)

Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850

Adjusted Capacity: 3.07 LCY

#### Job Condition Correction Factors

Site Altitude: 6650 feet

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

Unadjusted Hourly Unit Production: 323.00 LCY/Hour

Adjusted Hourly Unit Production: 268.09 LCY/Hour

Adjusted Hourly Fleet Production: 536.18 LCY/Hour

### JOB TIME AND COST



Fleet size: 2 Excavator Total job time: 0.63 Hours  
 Unit cost: \$1.058 /LCY Total job cost: \$358

**Post-Mining Drainage Channel Construction (Ditches)**

Task description: **Install Riprap, Gravel, and Geotextile in B-Seam Channel**

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

**PROJECT IDENTIFICATION**

Task #: 102 State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-102  
 User: ZTT

Agency or organization name: DRMS

Channel	Length (ft)	Depth (ft)	Width (bottom) (ft)	Side Slopes (XH:1V)	Width (top) (ft)	Excavated Vol./LF (CY)	Excavated Vol. (total) (CY)
C/F	150	6.00	5.00	5.00	65.00	7.7778	1,167
Totals:	150						1,167

Riprap	Riprap Thickness (2xD50) (ft)	Perimeter, P (ft)	Area for Geotextile (excl. anchor trenches) (sf)	Riprap Vol. (CY)
	0.00	66.19	9,928	0
Totals:			9,928	0

Materials Needed:

Geotextile (SY incl. 15% wastage):	<u>1,269</u>
Riprap (CY):	<u>0</u>
Excavation (CY):	<u>1,167</u>

Costs:

Material Costs:	Geotextile (SY):	<u>\$1.77</u>	Riprap (CY):	<u>\$31.50</u>	Excavation (CY):	<u>\$0.00</u>
Labor Cost:		<u>\$0.27</u>		<u>\$12.70</u>		<u>\$2.46</u>
Equipment Cost:		<u>\$0.00</u>		<u>\$14.65</u>		<u>\$1.39</u>
Means Reference	31 32 1916 1510		31 37 1310 0100		31 23 1642 0310	

Totals:

Geotextile (SY):	<u>\$2,587.96</u>
Riprap (CY):	<u>\$0.00</u>
Excavation (CY):	<u>\$4,491.67</u>

Hours:

Geotextile (SY):	
87.50 SY/HR	<u>14.50</u>
Riprap (CY):	
7.75 CY/HR	<u>0.00</u>
Excavation (CY):	
40.00 CY/HR	<u>29.17</u>

Total Post-Mining Channel Reconstruction hours:	<u>43.67</u>	Hours
Total Post-Mining Channel Reconstruction Cost:	<u>\$7,080</u>	

BOREHOLE SEALING WORK

Task description: Plug and seal AW-15

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106AG State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106ag  
User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	3	86	3.58	bag	\$13.40	\$47.97
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	3	NA	0.30	LF	\$3.26	\$0.98
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,250.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal AW16

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106AH State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-106ah  
 User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	3	75	3.12	bag	\$13.40	\$41.81
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	3	NA	0.30	LF	\$3.26	\$0.98
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,244.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal AW-17

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106AI State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-106ai

User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	3	62	2.58	bag	\$13.40	\$34.57
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	3	NA	0.30	LF	\$3.26	\$0.98
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,237.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal BD-101

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106AJ

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106aj

User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	16.5	0.31	bag	\$13.40	\$4.15
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.20	LF	\$3.26	\$0.65
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	4.00	EA	\$131.35	\$525.40
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	4.00	EA	\$63.55	\$254.20

Job Hours: 4.00

Total Cost: \$816.00

## BOREHOLE SEALING WORK

Task description: Plug and seal BD-103

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## PROJECT IDENTIFICATION

Task #: 106AK State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106ak  
User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	53	0.98	bag	\$13.40	\$13.13
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,216.00

### BOREHOLE SEALING WORK

Task description: Plug and seal BD-105

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106AL State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106al  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit		Total Cost
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						<b>Unit Cost</b>	
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	107	1.98	bag	\$13.40	\$26.53
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	7.00	EA	\$131.35	\$919.45
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	7.00	EA	\$63.55	\$444.85

**Job Hours:** 7.00

**Total Cost:** \$1,424.00

### BOREHOLE SEALING WORK

Task description: Plug and seal BD-105A

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106AM State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106am  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
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Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	38.5	0.71	bag	\$13.40	\$9.51
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,213.00

### BOREHOLE SEALING WORK

Task description: Plug and seal BD-102

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106AN State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106an  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	30	0.55	bag	\$13.40	\$7.37

Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,210.00

### BOREHOLE SEALING WORK

Task description: Plug and seal BL-101A

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106AO State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106ao  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	29	0.54	bag	\$13.40	\$7.24
Cut casings	Exposed casing removal - Calculate	2	NA	0.50	LF	\$3.26	\$1.63

	Circumference in Linear Feet						
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,210.00

### BOREHOLE SEALING WORK

Task description: Plug and seal BL-102

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106AP State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106ap  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	34	0.63	bag	\$13.40	\$8.44
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63

Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,211.00

### BOREHOLE SEALING WORK

Task description: Plug and seal BL-102A

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106AQ State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106aq  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	29	0.54	bag	\$13.40	\$7.24
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification	NA	NA	1.00	EA	\$32.00	\$32.00

	marker (EA, material cost only)						
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,210.00

### BOREHOLE SEALING WORK

Task description: Plug and seal GVB-6A

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106BB State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106bb  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 8 in. diameter borehole	7.625	NA	1.00	EA	\$80.77	\$80.77
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	7.625	700	188.11	bag	\$13.40	\$2,520.67
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	7.625	NA	2.00	LF	\$3.26	\$6.52
Borehole markers	Borehole location/identification	NA	NA	1.00	EA	\$32.00	\$32.00

	marker (EA, material cost only)						
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	11.00	EA	\$131.35	\$1,444.85
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	11.00	EA	\$63.55	\$699.05

**Job Hours:** 11.00

**Total Cost:** \$4,784.00

### BOREHOLE SEALING WORK

Task description: Plug and seal MR133 Utility Hole #1

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106CN

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106cn

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 10 in. diameter borehole	10	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	10	520	240.35	bag	\$13.40	\$3,220.69
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	10	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00

Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

**Job Hours:** 10.00

**Total Cost:** \$5,320.00

### BOREHOLE SEALING WORK

Task description: Plug and seal MR133 Utility Hole #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106CO

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106co

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 10 in. diameter borehole	10	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	10	520	240.35	bag	\$13.40	\$3,220.69
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	10	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50

WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50
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**Job Hours:** 10.00

**Total Cost:** \$5,320.00

### BOREHOLE SEALING WORK

Task description: Plug and seal MR133 Utility Hole #3

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106CP

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106cp

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 10 in. diameter borehole	10	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	10	540	240.35	bag	\$13.40	\$3,220.69
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	10	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50



Job Hours: 10.00

Total Cost: \$5,320.00

### BOREHOLE SEALING WORK

Task description: Plug and seal MR133 Utility Hole #4

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106CQ

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106cq

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 10 in. diameter borehole	10	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	10	520	240.35	bag	\$13.40	\$3,220.69
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	10	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

Job Hours: 10.00

Total Cost: \$5,320.00

### BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-3A (aka GVB-D3-A)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106CY

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106cy

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 8 in. diameter borehole	7.625	NA	1.00	EA	\$80.77	\$80.77
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	7.625	870	133.56	bag	\$13.40	\$1,789.70
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	7.625	NA	2.00	LF	\$3.26	\$6.52
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$4,248.00

## BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-7A (aka GVB-D7-A)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106DB

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: 106db

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	5.5	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	5.5	465	65.02	bag	\$13.40	\$871.27
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	5.5	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

Job Hours: 10.00

Total Cost: \$2,916.00

## BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-5A

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106DD

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106dd

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	5.5	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	5.5	332	46.42	bag	\$13.40	\$622.03
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	5.5	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	9.00	EA	\$131.35	\$1,182.15
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	9.00	EA	\$63.55	\$571.95

Job Hours: 9.00

Total Cost: \$2,472.00

## BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-6A (aka GVB-D6-A)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106DO

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106do

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	5.5	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	5.5	461	64.46	bag	\$13.40	\$863.76
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	5.5	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

Job Hours: 10.00

Total Cost: \$2,909.00

## BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-6B (aka GVB-D6-B)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106DP  
Date: 9/30/2019  
User: ZTT

State: Colorado  
County: Delta

Abbreviation: None  
Filename: C083-106dp

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	5.5	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	5.5	900	125.84	bag	\$13.40	\$1,686.26
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	5.5	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 6.00

Total Cost: \$4,121.00

## BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-7B (aka GVB-D7-B)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106DQ  
Date: 9/30/2019  
User: ZTT

State: Colorado  
County: Delta

Abbreviation: None  
Filename: C083-106dq

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	5.5	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	5.5	720	100.67	bag	\$13.40	\$1,348.98
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	5.5	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	11.00	EA	\$131.35	\$1,444.85
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	11.00	EA	\$63.55	\$699.05

Job Hours: 11.00

Total Cost: \$3,589.00

BOREHOLE SEALING WORK

Task description: Plug and seal GVB-D-8C (aka GVB-D8-C)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106DU

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106du

User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	5.5	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	5.5	1000	139.82	bag	\$13.40	\$1,873.59
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	5.5	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$4,308.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal P-TC-03-01 (aka TC-03-01)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083



## **PROJECT IDENTIFICATION**

Task #: 106ED State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106ed  
User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Bottom Plug	PVC plug - 6 in. diameter borehole	6	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	6	580	96.51	bag	\$13.40	\$1,293.23
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	6	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

**Job Hours:** 10.00

**Total Cost:** \$3,338.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal P-TC-03-02 (aka TC-03-02)

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106EE State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-106ee  
 User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 6 in. diameter borehole	6	NA	1.00	EA	\$58.97	\$58.97
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	6	580	96.51	bag	\$13.40	\$1,293.23
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	6	NA	1.50	LF	\$3.26	\$4.89
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

Job Hours: 10.00

Total Cost: \$3,338.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal GVB-17C (aka GVB-B17C)

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106GB State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-106gb

User: ZTT

Agency or organization name: DRMS

## **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Bottom Plug	PVC plug - 10 in. diameter borehole	9.375	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	9.375	1090	442.81	bag	\$13.40	\$5,933.65
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	9.375	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	GENERIC 3.0 in. - 1, 700 ft. capy.	NA	NA	12.00	EA	\$128.48	\$1,541.76
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

**Job Hours:** 12.00

**Total Cost:** \$8,389.00

## **BOREHOLE SEALING WORK**

Task description: Plug and seal GVB-17D (aka GVB-B17D)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

## **PROJECT IDENTIFICATION**

Task #: 106GC

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gc

User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 10 in. diameter borehole	9.375	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	9.375	1300	528.12	bag	\$13.40	\$7,076.81
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	9.375	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$9,566.00

## BOREHOLE SEALING WORK

Task description: Plug and seal GVB-17E (aka GVB-B17E)

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## PROJECT IDENTIFICATION

Task #: 106GD State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gd  
User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 10 in. diameter borehole	9.375	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	9.375	1620	658.12	bag	\$13.40	\$8,818.81
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	9.375	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$11,308.00

### BOREHOLE SEALING WORK

Task description: Plug and seal GVB-17F (aka GVB-B17F)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GI

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gi

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit		Total Cost
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						<b>Unit Cost</b>	
Bottom Plug	PVC plug - 10 in. diameter borehole	9.375	NA	1.00	EA	\$110.66	\$110.66
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	9.375	1660	674.37	bag	\$13.40	\$9,036.56
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	9.375	NA	2.50	LF	\$3.26	\$8.15
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

**Job Hours:** 12.00

**Total Cost:** \$11,526.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-1

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GN State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gn  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
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Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	120	8.87	bag	\$13.40	\$118.86
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	7.00	EA	\$131.35	\$919.45
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	7.00	EA	\$63.55	\$444.85

**Job Hours:** 7.00 **Total Cost:** \$1,518.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-2

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GO State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106go  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	60	4.43	bag	\$13.40	\$59.36

Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,264.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-3

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GP State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gp  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	150	11.09	bag	\$13.40	\$148.61
Cut casings	Exposed casing removal - Calculate	4	NA	1.00	LF	\$3.26	\$3.26



	Circumference in Linear Feet						
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	7.00	EA	\$131.35	\$919.45
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	7.00	EA	\$63.55	\$444.85

**Job Hours:** 7.00

**Total Cost:** \$1,548.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-4

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GQ State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gq  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	60	4.44	bag	\$13.40	\$59.50
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26

Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,264.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-5

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GR State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gr  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	100	7.40	bag	\$13.40	\$99.16
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification	NA	NA	1.00	EA	\$32.00	\$32.00

	marker (EA, material cost only)						
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

**Job Hours:** 6.00

**Total Cost:** \$1,304.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-6

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GS State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gs  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	112	8.28	bag	\$13.40	\$110.95
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00

Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	7.00	EA	\$131.35	\$919.45
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	7.00	EA	\$63.55	\$444.85

**Job Hours:** 7.00

**Total Cost:** \$1,511.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-7

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GT

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gt

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.5	193	5.58	bag	\$13.40	\$74.77
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2.5	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	8.00	EA	\$131.35	\$1,050.80

WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	8.00	EA	\$63.55	\$508.40
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**Job Hours:** 8.00

**Total Cost:** \$1,668.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-8

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GU State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gu  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.5	60	1.73	bag	\$13.40	\$23.18
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2.5	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,226.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-9

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GV State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106gv  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.5	80	2.31	bag	\$13.40	\$30.95
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2.5	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,234.00

### BOREHOLE SEALING WORK

Task description: Plug and seal AW-11

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GW

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gw

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	80	1.48	bag	\$13.40	\$19.83
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,223.00

## BOREHOLE SEALING WORK

Task description: Plug and seal AW-12

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GX

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gx

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	60	1.11	bag	\$13.40	\$14.87
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,218.00



### BOREHOLE SEALING WORK

Task description: Plug and seal AW-13

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GY

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gy

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	80	1.48	bag	\$13.40	\$19.83
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,223.00

## BOREHOLE SEALING WORK

Task description: Plug and seal AW-14

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106GZ

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106gz

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	30	0.55	bag	\$13.40	\$7.37
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	6.00	EA	\$131.35	\$788.10
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	6.00	EA	\$63.55	\$381.30

Job Hours: 6.00

Total Cost: \$1,210.00

## BOREHOLE SEALING WORK

Task description: Plug and seal DH-13

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106HD

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106hd

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 4 in. diameter borehole	4	NA	1.00	EA	\$32.62	\$32.62
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	1000	73.95	bag	\$13.40	\$990.93
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$3,398.00

## BOREHOLE SEALING WORK

Task description: Plug and seal DH-15

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106HE

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106he

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	216	15.97	bag	\$13.40	\$214.00
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	8.00	EA	\$131.35	\$1,050.80
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	8.00	EA	\$63.55	\$508.40

Job Hours: 8.00

Total Cost: \$1,808.00

## BOREHOLE SEALING WORK

Task description: Plug and seal DH-15

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106HF

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106hf

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 4 in. diameter borehole	4	NA	1.00	EA	\$32.62	\$32.62
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	395	29.21	bag	\$13.40	\$391.41
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	9.00	EA	\$131.35	\$1,182.15
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	9.00	EA	\$63.55	\$571.95

Job Hours: 9.00

Total Cost: \$2,213.00

## BOREHOLE SEALING WORK

Task description: Plug and seal DH-25

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106HG

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106hg

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 4 in. diameter borehole	4	NA	1.00	EA	\$32.62	\$32.62
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	333	24.63	bag	\$13.40	\$330.04
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	9.00	EA	\$131.35	\$1,182.15
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	9.00	EA	\$63.55	\$571.95

Job Hours: 9.00

Total Cost: \$2,152.00

BOREHOLE SEALING WORK

Task description: Plug and seal DH-34C

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 106HQ

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106hq

User: ZTT

Agency or organization name: DRMS

### **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Bottom Plug	PVC plug - 4 in. diameter borehole	4	NA	1.00	EA	\$32.62	\$32.62
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	124	9.17	bag	\$13.40	\$122.88
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	7.00	EA	\$131.35	\$919.45
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	7.00	EA	\$63.55	\$444.85

**Job Hours:** 7.00

**Total Cost:** \$1,555.00

### **BOREHOLE SEALING WORK**

Task description: Plug and seal DH-38

Site: Bowie No. 2 MinePermit Action: MT5Permit/Job#: C1996083**PROJECT IDENTIFICATION**Task #: 106HR  
Date: 9/30/2019  
User: ZTTState: Colorado  
County: DeltaAbbreviation: None  
Filename: C083-106hrAgency or organization name: DRMS**UNIT COSTS**

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	454	33.58	bag	\$13.40	\$449.97
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

Job Hours: 10.00Total Cost: \$2,434.00**BOREHOLE SEALING WORK**Task description: Plug and seal DH-39Site: Bowie No. 2 MinePermit Action: MT5Permit/Job#: C1996083



**PROJECT IDENTIFICATION**

Task #: 106HS State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106hs  
User: ZTT

Agency or organization name: DRMS

**UNIT COSTS**

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	180	13.31	bag	\$13.40	\$178.35
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	8.00	EA	\$131.35	\$1,050.80
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	8.00	EA	\$63.55	\$508.40

Job Hours: 8.00

Total Cost: \$1,773.00

**BOREHOLE SEALING WORK**

Task description: Plug and seal CWI-DH-47

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

**PROJECT IDENTIFICATION**

Task #: 106HV State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-106hv  
 User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	1800	133.12	bag	\$13.40	\$1,783.81
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00 Total Cost: \$4,158.00

## BOREHOLE SEALING WORK

Task description: Plug and seal CWI-DH-48

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## PROJECT IDENTIFICATION

Task #: 106HW State: Colorado Abbreviation: None  
 Date: 9/30/2019 County: Delta Filename: C083-106hw  
 User: ZTT

Agency or organization name: DRMS

### **UNIT COSTS**

<b>Borehole Description</b>	<b>Sealing/Item Method</b>	<b>Diameter</b>	<b>Length</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	2200	162.70	bag	\$13.40	\$2,180.18
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

**Job Hours:** 12.00

**Total Cost:** \$4,554.00

### **BOREHOLE SEALING WORK**

Task description: Plug and seal DH-49

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 106HX

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106hx

User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	323	23.89	bag	\$13.40	\$320.13
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	9.00	EA	\$131.35	\$1,182.15
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	9.00	EA	\$63.55	\$571.95

Job Hours: 9.00

Total Cost: \$2,109.00

## BOREHOLE SEALING WORK

Task description: Plug and seal DH-57B (aka 98-57B)

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## PROJECT IDENTIFICATION

Task #: 106IF State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106if  
User: ZTT

Agency or organization name: DRMS

## UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 4 in. diameter borehole	3	NA	1.00	EA	\$32.62	\$32.62
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	3	1512	62.90	bag	\$13.40	\$842.86
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	3	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$3,248.00

### BOREHOLE SEALING WORK

Task description: Plug and seal DH-58B (aka DH-58A)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106II

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106ii

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plug	PVC plug - 4 in. diameter borehole	3	NA	1.00	EA	\$32.62	\$32.62
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	3	1634	67.97	bag	\$13.40	\$910.80
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	3	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$3,316.00

### BOREHOLE SEALING WORK

Task description: Plug and seal CWI-DH-60 (aka Mon Well)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IJ

State: Colorado

Abbreviation: None

Date: 9/30/2019

County: Delta

Filename: C083-106ij

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
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Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	1073	19.84	bag	\$13.40	\$265.86
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

**Job Hours:** 12.00 **Total Cost:** \$2,638.00

### BOREHOLE SEALING WORK

Task description: Plug and seal DH-67B

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IP State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106ip  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.75	594	20.76	bag	\$13.40	\$278.18

Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2.75	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	10.00	EA	\$131.35	\$1,313.50
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	10.00	EA	\$63.55	\$635.50

**Job Hours:** 10.00

**Total Cost:** \$2,261.00

### BOREHOLE SEALING WORK

Task description: Plug and seal DH-67-D

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IQ State: Colorado Abbreviation: None  
Date: 9/30/2019 County: Delta Filename: C083-106iq  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.75	325	11.36	bag	\$13.40	\$152.22
Cut casings	Exposed casing removal - Calculate	2.75	NA	0.50	LF	\$3.26	\$1.63



	Circumference in Linear Feet						
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	9.00	EA	\$131.35	\$1,182.15
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	9.00	EA	\$63.55	\$571.95

**Job Hours:** 9.00

**Total Cost:** \$1,940.00

### BOREHOLE SEALING WORK

Task description: Plug and seal DH-67-Abv

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IR State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-106ir  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.75	193	6.75	bag	\$13.40	\$90.45
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2.75	NA	0.50	LF	\$3.26	\$1.63

Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	8.00	EA	\$131.35	\$1,050.80
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	8.00	EA	\$63.55	\$508.40

**Job Hours:** 8.00

**Total Cost:** \$1,683.00

### BOREHOLE SEALING WORK

Task description: Plug and seal DH-67-Blw

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IS State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-106is  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2.5	360	10.40	bag	\$13.40	\$139.36
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2.5	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification	NA	NA	1.00	EA	\$32.00	\$32.00

	marker (EA, material cost only)						
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	9.00	EA	\$131.35	\$1,182.15
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	9.00	EA	\$63.55	\$571.95

**Job Hours:** 9.00

**Total Cost:** \$1,927.00

### BOREHOLE SEALING WORK

Task description: Plug and seal CWI-DH-69 (aka B-1 Mon Well)

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IT State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-106it  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	2	1950	36.05	bag	\$13.40	\$483.07
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	2	NA	0.50	LF	\$3.26	\$1.63
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00

Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

**Job Hours:** 12.00

**Total Cost:** \$2,856.00

### BOREHOLE SEALING WORK

Task description: Plug and seal CWI-DH-70 (aka B-1 Mon Well)

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IU State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-106iu  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	695	51.40	bag	\$13.40	\$688.76
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	11.00	EA	\$131.35	\$1,444.85

WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	11.00	EA	\$63.55	\$699.05
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**Job Hours:** 11.00

**Total Cost:** \$2,868.00

### BOREHOLE SEALING WORK

Task description: Plug and seal 2010-1B

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IY State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-106iy  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	1220	90.22	bag	\$13.40	\$1,208.95
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$3,583.00

### BOREHOLE SEALING WORK

Task description: Plug and seal 2010-1SS

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 106IZ State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-106iz  
User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Fill holes with cement	Portland cement grout ( Bag, material cost only...94 lb. bag)	4	1140	84.31	bag	\$13.40	\$1,129.75
Cut casings	Exposed casing removal - Calculate Circumference in Linear Feet	4	NA	1.00	LF	\$3.26	\$3.26
Borehole markers	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig time	Truck Mounted - 3.0 in. - 1,700 ft. capy.	NA	NA	12.00	EA	\$131.35	\$1,576.20
WaterTruck	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$3,504.00

## SCRAPER TEAM WORK

Task description: Replace Topsoil from Stockpile A to Portal/Utility Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 110

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C85110

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

#### Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

##### Scraper Work Team

##### Support Equipment

##### Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

## **MATERIAL QUANTITIES**

Initial volume: 91,800 CCY  
Loose volume: **103,275** LCY

Swell factor: 1.125

Source of estimated volume: Page 2.05-35  
Source of estimated swell factor: Cat Handbook

## **HOURLY PRODUCTION**

### Scraper Bowl (volume) Basis:

Material weight:	2,550 lbs/LCY	Struck Volume:	15.70	LCY
Material description:	Earth - Dry packed	Heaped Volume:	22.00	LCY
Rated Payload:	52,800 pounds	Average Volume:	18.85	LCY
Payload Capacity:	20.71 LCY	Adjusted Capacity:	<b>18.85</b>	LCY

### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

### Job Condition Correction:

Site Altitude: 6750 feet

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

### Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	8000.00	5.00	5.00	10.00	1068	7.53

Haul Time: **7.53** minutes

### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	8000.00	-5.00	5.00	0.00	2921	2.83

Return Time: **2.83** minutes

Total Scraper team cycle time: **11.86** minutes  
Adjusted for job conditions: 158.30 LCY/Hour  
Selected Number of Scrapers: 2 Scraper(s)  
Adjusted single scraper team (unit) hourly production: 158.30 LCY/Hour  
Adjusted multiple scraper team (fleet) hourly production: **158.30** LCY/Hour

Unadjusted unit production/hour: 190.73 LCY/Hour  
Optimal Number of Scrapers per push dozer: \_\_\_\_\_

## **JOB TIME AND COST**

Fleet size:	1	Team(s)	Total job time:	<b>652.39</b>	Hours
Unit cost:	\$3.880	/LCY	Total job cost:	<b>\$400,661</b>	



## SCRAPER TEAM WORK

Task description: Replace Topsoil from Stockpile A to Truck Loadout/Coal Stkpl

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 111 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-111  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

#### Scraper Work Team

#### Support Equipment

#### Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	N
Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: \$614.14

### MATERIAL QUANTITIES

Initial volume: 21,722 CCY Swell factor: 1.125

Loose volume: 24,437 LCY

Source of estimated volume: Page 2.05-35, plus 800 yds MR151, 710 yds MR153  
Source of estimated swell factor: Cat Handbook

## **HOURLY PRODUCTION**

### Scraper Bowl (volume) Basis:

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

### Job Condition Correction:

Site Altitude: 6750 feet

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

### Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	-5.00	5.00	0.00	2921	0.83

Haul Time: 0.83 minutes

### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	5.00	5.00	10.00	1768	1.20

Return Time: 1.20 minutes

Total Scraper team cycle time:	<u>3.53</u>	minutes
Adjusted for job conditions:	<u>531.86</u>	LCY/Hour
Selected Number of Scrapers:	<u>2</u>	Scraper(s)
Adjusted single scraper team (unit) hourly production:	<u>531.86</u>	LCY/Hour
Adjusted multiple scraper team (fleet) hourly production:	<u>531.86</u>	LCY/Hour

Unadjusted unit production/hour: 640.79 LCY/Hour  
Optimal Number of Scrapers per push dozer: \_\_\_\_\_

## **JOB TIME AND COST**

Fleet size: <u>1</u> Team(s)	Total job time: <u>45.95</u> Hours
Unit cost: <u>\$1.155</u> /LCY	Total job cost: <u>\$28,218</u>

## SCRAPER TEAM WORK

Task description: Replace Topsoil from Stockpile F to Train Loadout

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 112

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-112

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

#### Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

##### Scraper Work Team

##### Support Equipment

##### Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 24,000

CCY

Swell factor: 1.125

Loose volume: 27,000

LCY

Source of estimated volume: Page 2.05-36; Page 2.05-48; Map 32

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	2,550 lbs/LCY	Struck Volume:	15.70	LCY
Material description:	Earth - Dry packed	Heaped Volume:	22.00	LCY
Rated Payload:	52,800 pounds	Average Volume:	18.85	LCY
Payload Capacity:	20.71 LCY	Adjusted Capacity:	<b>18.85</b>	LCY

Cycle Time:

Scraper Loading Time:	<u>0.90</u> Minutes
Maneuver and Spread Time:	<u>0.60</u> Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	5.00	5.00	2218	0.71

Haul Time: **0.71** minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	5.00	5.00	2814	0.57

Return Time: **0.57** minutes

Total Scraper team cycle time:	<b>2.78</b>	minutes
Adjusted for job conditions:	675.35	LCY/Hour
Selected Number of Scrapers:	2	Scraper(s)
Adjusted single scraper team (unit) hourly production:	675.35	LCY/Hour
Adjusted multiple scraper team (fleet) hourly production:	<b>675.35</b>	LCY/Hour

Unadjusted unit production/hour: 813.67 LCY/Hour

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

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<b>39.98</b>	Hours
Unit cost:	<u>\$0.909</u>	/LCY	Total job cost:	<b>\$24,553</b>	

## SCRAPER TEAM WORK

Task description: Replace Topsoil from Stockpile A to B-Seam Portal Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 113

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-113

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

#### Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

<u>Cost Breakdown:</u>	Scraper Work Team	Support Equipment	Maintenance Equipment			
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: \$614.14

### MATERIAL QUANTITIES

Initial volume: 20,489

CCY

Swell factor: 1.125

Loose volume: 23,050

LCY

Source of estimated volume: Operator Estimate

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

#### Scraper Bowl (volume) Basis:

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3900.00	9.00	3.00	12.00	918	4.27

Haul Time: 4.27 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3900.00	-9.00	3.00	-6.00	2938	1.37

Return Time: 1.37 minutes

Total Scraper team cycle time: 7.14 minutes  
Adjusted for job conditions: 262.95 LCY/Hour  
Selected Number of Scrapers: 2 Scraper(s)  
Adjusted single scraper team (unit) hourly production: 262.95 LCY/Hour  
Adjusted multiple scraper team (fleet) hourly production: 262.95 LCY/Hour

Unadjusted unit production/hour: 316.81 LCY/Hour

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

**JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: 87.66 Hours

Unit cost: \$2.336 /LCY

Total job cost: \$53,835

**SCRAPER TEAM WORK**

Task description: Replace Topsoil fm Stockpiles C/D to Pond C and Gob Pond D

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

## PROJECT IDENTIFICATION

Task #: 115 State: Colorado Abbreviation: None  
 Date: 10/2/2019 County: Delta Filename: C083-113  
 User: ZTT

Agency or organization name: DRMS

## HOURLY EQUIPMENT

COSTShift basis: 1 per day

### Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

### Cost Breakdown:

#### Scraper Work Team

#### Support Equipment

#### Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	N
Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

## MATERIAL QUANTITIES

Initial volume: 5,300 CCY Swell factor: 1.125  
 Loose volume: 5,963 LCY

Source of estimated volume: Page 2.05-35  
 Source of estimated swell factor: Cat Handbook

## HOURLY PRODUCTION

### Scraper Bowl (volume) Basis:

Material weight: 2,550 lbs/LCY Struck Volume: 15.70 LCY  
 Material description: Earth - Dry packed Heaped Volume: 22.00 LCY  
 Rated Payload: 52,800 pounds Average Volume: 18.85 LCY  
 Payload Capacity: 20.71 LCY Adjusted Capacity: **18.85** LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6750 feet

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

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	10.00	5.00	15.00	734	2.06

Haul Time: 2.06 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	-10.00	5.00	-5.00	2938	0.57

Return Time: 0.57 minutes

Total Scraper team cycle time: 4.13 minutes

Adjusted for job conditions: 454.59 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 454.59 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 454.59 LCY/Hour

Unadjusted unit production/hour: 547.70 LCY/Hour

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

## JOB TIME AND COST

Fleet size: 1 Team(s)

Total job time: 13.12 Hours

Unit cost: \$1.351 /LCY

Total job cost: \$8,055

## BULLDOZER WORK

Task description: Replace topsoil from Stockpile to Pond F

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083



## PROJECT IDENTIFICATION

Task #: 116  
Date: 10/2/2019  
User: ZTT

State: Colorado  
County: Delta

Abbreviation: None  
Filename: C083-116

Agency or organization name: DRMS

## HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU  
Horsepower: 574  
Blade Type: Semi-Universal  
Attachment: 3-shank ripper  
Shift Basis: 1 per day  
Data Source: (CRG)

### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$346.33</b>	

## MATERIAL QUANTITIES

Initial Volume: 1,000  
Swell factor: 1.125  
Loose volume: **1,125 LCY**

Source of estimated volume: Division of Reclamation, Mining & Safety  
Source of estimated swell factor: Cat Handbook

## HOURLY PRODUCTION

Average push distance: 300 feet  
Unadjusted hourly production: 633.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %  
Average site altitude: 6,100 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

### Job Condition Correction Factor

		Source
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:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4492

Adjusted unit production: 284.48 LCY/hr  
Adjusted fleet production: **284.48** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$1.217/LCY

Total job time: **3.95** Hours  
Total job cost: **\$1,370**

### **SCRAPER TEAM WORK**

Task description: **Replace topsoil from Stockpile F to Pond J**

Site: **Bowie No. 2 Mine** Permit Action: MT5 Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 117 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-117  
User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT**

COSTShift basis: 1 per day

Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

<b><u>Cost Breakdown:</u></b>	Scraper Work Team	Support Equipment	Maintenance Equipment			
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	N
Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### **MATERIAL QUANTITIES**

Initial volume: 1,190 CCY      Swell factor: 1.125  
Loose volume: 1,339 LCY

Source of estimated volume: Page 2.05-36; Page 2.05-48 and Map 32  
Source of estimated swell factor: Cat Handbook

### **HOURLY PRODUCTION**

#### **Scraper Bowl (volume) Basis:**

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

#### **Cycle Time:**

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

#### **Job Condition Correction:**

Site Altitude: 6750 feet

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

#### **Travel Time:**

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

#### **Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
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1	2700.00	0.00	5.00	5.00	2218	1.39
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Haul Time: **1.39** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2700.00	0.00	5.00	5.00	2814	1.11

Return Time: **1.11** minutes

Total Scraper team cycle time: **4.00** minutes

Adjusted for job conditions: 469.37 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 469.37 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: **469.37** LCY/Hour

Unadjusted unit production/hour: 565.50 LCY/Hour

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

### **JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: **2.85** Hours

Unit cost: \$1.308 /LCY

Total job cost: **\$1,752**

### **SCRAPER TEAM WORK**

Task description: **Replace topsoil from Stockpile F to Pond K**

Site: **Bowie No. 2 Mine**

Permit Action: MT5

Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 118

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-118

User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT**

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA

-Water Truck: NA

<u>Cost Breakdown:</u>	Scraper Work Team	Support Equipment		Maintenance Equipment		
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	N
Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 800 CCY      Swell factor: 1.125  
Loose volume: **900** LCY

Source of estimated volume: Page 2.05-36; Page 2.05-48; Map 32  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

#### Scraper Bowl (volume) Basis:

Material weight:	2,550 lbs/LCY	Struck Volume:	15.70	LCY
Material description:	Earth - Dry packed	Heaped Volume:	22.00	LCY
Rated Payload:	52,800 pounds	Average Volume:	18.85	LCY
Payload Capacity:	20.71 LCY	Adjusted Capacity:	<b>18.85</b>	LCY

#### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

#### Job Condition Correction:

Site Altitude: 6750 feet

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

#### Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2700.00	0.00	5.00	5.00	2218	1.39

Haul Time: **1.39** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2700.00	0.00	5.00	5.00	2814	1.11

Return Time: 1.11 minutes

Total Scraper team cycle time: 4.00 minutes

Adjusted for job conditions: 469.37 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 469.37 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 469.37 LCY/Hour

Unadjusted unit production/hour: 565.50 LCY/Hour

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

### **JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: 1.92 Hours

Unit cost: \$1.308 /LCY

Total job cost: \$1,178

### **BULLDOZER WORK**

Task description: Replace topsoil fm stockpile to MR/TR Light-Use Roads

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 119

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-119

User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT COST**

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### **Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$140.61</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.35</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$18.34</u>	<u>NA</u>

Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

## **MATERIAL QUANTITIES**

Initial Volume:	64,347
Swell factor:	1.125
Loose volume:	<b>72,390 LCY</b>

Source of estimated volume:	53.18 acres, 0.75' depth
Source of estimated swell factor:	Cat Handbook

## **HOURLY PRODUCTION**

Average push distance:	100 feet
Unadjusted hourly production:	1,718.9 LCY/hr

Materials consistency description:	Consolidated stockpile 1.0
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Average push gradient:	5 %
Average site altitude:	7,500 feet

Material weight:	2,550 lbs/LCY
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Weight description:	Earth - Dry packed
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<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:	0.800 (FND-RF)
Push gradient:	0.903 (CAT HB)
Altitude:	1.000 (CAT HB)
Material Weight:	0.902 (CAT HB)
Blade type:	1.000 (PAT)

Net correction:	0.4056
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Adjusted unit production:	697.19 LCY/hr
Adjusted fleet production:	<b>2788.76 LCY/hr</b>

## **JOB TIME AND COST**

Fleet size:	4 Dozer(s)
Unit cost:	\$0.497/LCY

Total job time:	<b>25.96 Hours</b>
Total job cost:	<b>\$35,960</b>

### BULLDOZER WORK

Task description: Replace topsoil from stockpiles to MR/TR drill pads

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 120 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-120  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU  
Horsepower: 574  
Blade Type: Semi-Universal  
Attachment: 3-shank ripper  
Shift Basis: 1 per day  
Data Source: (CRG)

### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$140.61</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.35</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$18.34</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.24</u>	<u>NA</u>

Total unit Cost/Hour: \$335.53  
Total Fleet Cost/Hour: \$1,342.13

### MATERIAL QUANTITIES

Initial Volume: 58,650  
Swell factor: 1.125



Loose volume: 65,981 LCY

Source of estimated volume: DRMS Estimate  
Source of estimated swell factor: Cat Handbook

## **HOURLY PRODUCTION**

Average push distance: 120 feet  
Unadjusted hourly production: 1,503.8 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %  
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:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4056

Adjusted unit production: 609.94 LCY/hr  
Adjusted fleet production: 2439.76 LCY/hr

## **JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.550/LCY

Total job time: 27.04 Hours  
Total job cost: \$36,297

## SCRAPER TEAM WORK

Task description: Replace topsoil from Stockpile A to Prep Plant Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 121

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-121

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

#### Equipment Description

	-Scraper:	Cat 627G w/push-pull
	-Dozer:	NA
Support Equipment -Load Area:		NA
	-Dump Area:	NA
Road Maintenance -Motor Grader:		NA
	-Water Truck:	NA

#### Cost Breakdown:

##### Scraper Work Team

##### Support Equipment

##### Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: \$614.14

### MATERIAL QUANTITIES

Initial volume: 11,000

CCY

Swell factor: 1.125

Loose volume: 12,375

LCY

Source of estimated volume: Operator Estimate  
Source of estimated swell factor: Cat Handbook

## **HOURLY PRODUCTION**

### Scraper Bowl (volume) Basis:

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<u><b>18.85</b></u>	LCY

### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

### Job Condition Correction:

Site Altitude: 6750 feet

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

### Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-20.00	5.00	-15.00	1295	0.77

Haul Time: **0.77** minutes

### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	20.00	5.00	25.00	712	1.13

Return Time: **1.13** minutes

Total Scraper team cycle time: **3.40** minutes

Adjusted for job conditions: 552.19 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 552.19 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: **552.19** LCY/Hour

Unadjusted unit production/hour: 665.29 LCY/Hour

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

## **JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: **22.41** Hours

Unit cost: \$1.112 /LCY

Total job cost: **\$13,763**

## BULLDOZER WORK

Task description: Replace topsoil from stockpile to Material Storage Area

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 122

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-122

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$346.33

Total Fleet Cost/Hour: \$1,385.33

### MATERIAL QUANTITIES

Initial Volume: 250

Swell factor: 1.125

Loose volume: 281 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly production: 946.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %

Average site altitude: 6,000 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:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4056

Adjusted unit production: 383.70 LCY/hr

Adjusted fleet production: **1534.8** LCY/hr

### **JOB TIME AND COST**

Fleet size: 4 Dozer(s)

Unit cost: \$0.903/LCY

Total job time: **0.18** Hours

Total job cost: **\$254**

## SCRAPER TEAM WORK

Task description: Replace topsoil from Stockpile E to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 123

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-123

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

#### Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

#### Cost Breakdown:

##### Scraper Work Team

##### Support Equipment

##### Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$614.14		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### MATERIAL QUANTITIES

Initial volume: 40,368

CCY

Swell factor: 1.125

Loose volume: **45,414**

LCY

Source of estimated volume: Appendix A

Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

#### Scraper Bowl (volume) Basis:

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<b><u>18.85</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.90 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6100 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	12.00	5.00	17.00	650	1.55

Haul Time: 1.55 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-12.00	5.00	-7.00	2938	0.41

Return Time: 0.41 minutesTotal Scraper team cycle time: 3.46 minutesAdjusted for job conditions: 542.62 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 542.62 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 542.62 LCY/HourUnadjusted unit production/hour: 653.76 LCY/Hour

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

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 83.69 HoursUnit cost: \$1.132 /LCYTotal job cost: \$51,400**SCRAPER TEAM WORK**Task description: Replace Topsoil from Stockpile D to Gob Pile #4Site: Bowie No. 2 MinePermit Action: MT5Permit/Job#: C1996083

## PROJECT IDENTIFICATION

Task #: 124 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-124  
User: ZTT

Agency or organization name: DRMS

## HOURLY EQUIPMENT

COST Shift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	NA
Operating cost/hour:	\$149.69	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$30.86	NA	NA	NA	NA	NA
Unit Subtotals:	\$307.07	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

## MATERIAL QUANTITIES

Initial volume: 4,524 CCY Swell factor: 1.000  
Loose volume: **4,524** LCY

Source of estimated volume: Volume IX, Appendix A

Source of estimated swell factor: Cat Handbook

## HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	2,550 lbs/LCY	Struck Volume:	15.70	LCY
Material description:	Earth - Dry packed	Heaped Volume:	22.00	LCY
Rated Payload:	52,800 pounds	Average Volume:	18.85	LCY
Payload Capacity:	20.71 LCY	Adjusted Capacity:	<b>18.85</b>	LCY

### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes



Job Condition Correction:

Site Altitude: 6750 feet

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

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	5.00	5.00	10.00	1068	0.97

Haul Time: 0.97 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-5.00	5.00	0.00	2921	0.44

Return Time: 0.44 minutes

Total Scraper team cycle time: 2.91 minutes

Adjusted for job conditions: 645.18 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 645.18 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 645.18 LCY/Hour

Unadjusted unit production/hour: 777.32 LCY/Hour

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

### JOB TIME AND COST

Fleet size: 1 Team(s)

Total job time: 7.01 Hours

Unit cost: \$0.952 /LCY

Total job cost: \$4,306

### SCRAPER TEAM WORK

Task description: Replace topsoil from stockpile to Gob Pile #3

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 125

State: Colorado

Abbreviation: None

Date: 10/2/2019  
User: ZTT

County: Delta

Filename: C083-125

Agency or organization name: DRMS

## HOURLY EQUIPMENT

COSTShift basis: 1 per day

### Equipment Description

-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

### Cost Breakdown:

<u>Cost Breakdown:</u>	Scraper Work Team	Support Equipment	Maintenance Equipment			
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	N
Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

## MATERIAL QUANTITIES

Initial volume: 46,708 CCY Swell factor: 1.000  
Loose volume: **46,708** LCY

Source of estimated volume: Operator Estimate  
Source of estimated swell factor: Cat Handbook

## HOURLY PRODUCTION

### Scraper Bowl (volume) Basis:

Material weight:	2,550 lbs/LCY	Struck Volume:	15.70	LCY
Material description:	Earth - Dry packed	Heaped Volume:	22.00	LCY
Rated Payload:	52,800 pounds	Average Volume:	18.85	LCY
Payload Capacity:	20.71 LCY	Adjusted Capacity:	<b>18.85</b>	LCY

### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

### Job Condition Correction:

Site Altitude: 6750 feet

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

Net Correction:	0.830	NA
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Travel 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	2000.00	0.00	5.00	5.00	2218	1.07

Haul Time: 1.07 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	0.00	5.00	5.00	2814	0.86

Return Time: 0.86 minutes

Total Scraper team cycle time: 3.43 minutes

Adjusted for job conditions: 547.36 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 547.36 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 547.36 LCY/Hour

Unadjusted unit production/hour: 659.48 LCY/Hour

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

**JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: 85.33 Hours

Unit cost: \$1.122 /LCY

Total job cost: \$52,406

**BULLDOZER WORK**

Task description: Replace topsoil from stockpile to Haul Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

**PROJECT IDENTIFICATION**

Task #: 126

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-126

User: ZTT

Agency or organization name: DRMS

**HOURLY EQUIPMENT COST**

Basic Machine:	Cat D10T - 10SU
Horsepower:	574
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$18.34	NA
Ripper op. Cost/Hour:	\$10.80	100
Operator Cost/Hour:	\$41.24	NA
Total unit Cost/Hour:	\$346.33	
Total Fleet Cost/Hour:	<b>\$1,385.33</b>	

#### MATERIAL QUANTITIES

Initial Volume:	300
Swell factor:	1.125
Loose volume:	<b>338 LCY</b>

Source of estimated volume:	Division of Reclamation, Mining & Safety
Source of estimated swell factor:	Cat Handbook

#### HOURLY PRODUCTION

Average push distance:	150 feet
Unadjusted hourly production:	1,243.2 LCY/hr

Materials consistency description:	Consolidated stockpile 1.0
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Average push gradient:	5 %
Average site altitude:	6,100 feet

Material weight:	2,550 lbs/LCY
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Weight description:	Earth - Dry packed
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<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:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction:	0.4056
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Adjusted unit production:	504.24 LCY/hr
Adjusted fleet production:	<b>2016.96 LCY/hr</b>

#### JOB TIME AND COST

Fleet size: 4 Dozer(s)  
Unit cost: \$0.687/LCY

Total job time: **0.17** Hours  
Total job cost: **\$232**

### SCRAPER TEAM WORK

Task description: **Replace topsoil from stockpile to Water Tank Bench**

Site: **Bowie No. 2 Mine** Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 127 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-127  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

<b>Cost Breakdown:</b>	Scraper Work Team	Support Equipment		Maintenance Equipment		
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA	N
Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

### **MATERIAL QUANTITIES**

Initial volume: 850 CCY      Swell factor: 1.125  
Loose volume: 956 LCY

Source of estimated volume: Operator Estimate  
Source of estimated swell factor: Cat Handbook

### **HOURLY PRODUCTION**

#### Scraper Bowl (volume) Basis:

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

#### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

#### Job Condition Correction:

Site Altitude: 6750 feet

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

#### Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-15.00	5.00	-10.00	1749	0.69

Haul Time: 0.69 minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	15.00	5.00	20.00	868	1.17

Return Time: 1.17 minutes

Total Scraper team cycle time: 3.36 minutes

Adjusted for job conditions: 558.77 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 558.77 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 558.77 LCY/Hour

Unadjusted unit production/hour: 673.21 LCY/Hour

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

### **JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: 1.71 Hours

Unit cost: \$1.099 /LCY Total job cost: \$1,051

### **SCRAPER TEAM WORK**

Task description: Replace topsoil from Stockpile G to TR35 road/pad

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 128 State: Colorado Abbreviation: None

Date: 10/2/2019 County: Delta Filename: C083-128

User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT**

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

### **Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment		
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck	
%Utilization-machine:	100	NA	NA	NA	NA		N
Ownership cost/hour:	\$126.52	NA	NA	NA	NA		N

Operating cost/hour:	\$149.69	NA	NA	NA	NA	N
%Utilization-ripper:	NA	NA	NA	NA	NA	N
Ripper own. cost/hour:	NA	NA	NA	NA	NA	N
Ripper op. cost/hour:	NA	NA	NA	NA	NA	N
Operator cost/hour:	\$30.86	NA	NA	NA	NA	N
Unit Subtotals:	\$307.07	NA	NA	NA	NA	N
Number of Units:	2	0	0	0	0	
Group Subtotals:	Work:	\$614.14	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$614.14**

## **MATERIAL QUANTITIES**

Initial volume: 1,000 CCY      Swell factor: 1.250  
Loose volume: 1,250 LCY

Source of estimated volume: Operator Estimate  
Source of estimated swell factor: Cat Handbook

## **HOURLY PRODUCTION**

### Scraper Bowl (volume) Basis:

Material weight:	<u>2,550 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Earth - Dry packed</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>20.71 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

### Cycle Time:

Scraper Loading Time: 0.90 Minutes  
Maneuver and Spread Time: 0.60 Minutes

### Job Condition Correction:

Site Altitude: 6750 feet

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

### Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lr. surfaced, watered, maintained 3.0

### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4500.00	8.00	3.00	11.00	1018	4.45

Haul Time: 4.45 minutes

### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4500.00	-8.00	3.00	-5.00	2938	1.58

Return Time: 1.58 minutes

Total Scraper team cycle time: 7.53 minutes  
Adjusted for job conditions: 249.33 LCY/Hour  
Selected Number of Scrapers: 2 Scraper(s)



Adjusted single scraper team (unit) hourly production: 249.33 LCY/Hour  
Adjusted multiple scraper team (fleet) hourly production: **249.33** LCY/Hour

Unadjusted unit production/hour: 300.40 LCY/Hour  
Optimal Number of Scrapers per push dozer: \_\_\_\_\_

### **JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: **5.01** Hours  
Unit cost: \$2.463 /LCY Total job cost: **\$3,079**

### **BULLDOZER WORK**

Task description: **Replace topsoil from stockpile to Borrow Area**  
Site: **Bowie No. 2 Mine** Permit Action: MT5 Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 129 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-129  
User: ZTT

Agency or organization name: DRMS

### **HOURLY EQUIPMENT COST**

Basic Machine: Cat D10T - 10SU  
Horsepower: 574  
Blade Type: Semi-Universal  
Attachment: 3-shank ripper  
Shift Basis: 1 per day  
Data Source: (CRG)

#### **Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$140.61</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.35</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$18.34</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$10.80</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.24</u>	<u>NA</u>

Total unit Cost/Hour: \$346.33  
Total Fleet Cost/Hour: **\$1,385.33**

### **MATERIAL QUANTITIES**

Initial Volume: 7,400

Swell factor: 1.250  
Loose volume: **9,250** LCY

Source of estimated volume: Operator Estimate  
Source of estimated swell factor: Cat Handbook

## **HOURLY PRODUCTION**

Average push distance: 200 feet  
Unadjusted hourly production: 946.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %  
Average site altitude: 6,200 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:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4492

Adjusted unit production: 424.94 LCY/hr  
Adjusted fleet production: **1699.76** LCY/hr

## **JOB TIME AND COST**

Fleet size: 4 Dozer(s)  
Unit cost: \$0.815/LCY

Total job time: **5.44** Hours  
Total job cost: **\$7,539**

## BULLDOZER WORK

Task description: Replace topsoil fm stockpile to Upper Parking Lot Expansion

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 130 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-130  
User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU  
Horsepower: 574  
Blade Type: Semi-Universal  
Attachment: NA  
Shift Basis: 1 per day  
Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$140.61</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.35</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>\$41.24</u>	<u>NA</u>
Total unit Cost/Hour:	<u>\$317.20</u>	
Total Fleet Cost/Hour:	<u>\$317.20</u>	

### MATERIAL QUANTITIES

Initial Volume: 250  
Swell factor: 1.125  
Loose volume: 281 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety  
Source of estimated swell factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet  
Unadjusted hourly production: 1,718.9 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 10 %  
Average site altitude: 6,900 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:	0.800	(FND-RF)
Push gradient:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3531

Adjusted unit production: 606.94 LCY/hr  
Adjusted fleet production: **606.94** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.523/LCY

Total job time: **0.46** Hours  
Total job cost: **\$147**

## SAFEGUARDING UNDERGROUND OPENINGS

Task description: Seal Portals and Shafts

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 140

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-140

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
D Portal Intake, Beltline & Return bulkhead	200 SF x 3	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	600.00	SF	\$171.67	\$103,000.02
- backfill	185 CY x 3	Adit closure - backfilling (per opening)	3.00	EA	\$2,105.30	\$6,315.90
- drainpipe	165 LFX 3	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	495.00	LF	\$11.30	\$5,593.50
B Portal Intake, Beltline & Return bulkhead	200 SF x 3	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	600.00	SF	\$171.67	\$103,000.02
- backfill	185 CY x 3	Adit closure - backfilling (per opening)	3.00	EA	\$2,105.30	\$6,315.90
- drainpipe	165 LF x 3	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	495.00	LF	\$11.30	\$5,593.50

Job Hours: 40.00

Total Cost: \$229,818.84

## REVEGETATION WORK

Task description: Drill Seed Mix 3 on Disturbed Area

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 150 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C83-150  
User: ZTT

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
Chisel plowing {DMG}	\$94.63
<b>Total Tilling Cost/Acre</b>	<b>\$94.63</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	1.30	4.24	\$15.24
Bitterbrush, Antelope	8.30	2.55	\$161.85
Aster, Smooth	0.30	5.22	\$43.95
Great Basin Wildrye - Magnar	1.20	4.88	\$13.86
Kentucky Bluegrass - Ginger	0.10	4.94	\$0.32
Ryegrass, Perennial - Belramo	0.70	3.97	\$1.26
Intermediate Wheatgrass - Oahe	1.80	3.84	\$5.04
Smooth Brome - Manchar	1.20	3.99	\$3.99
Alfalfa - Ranger (inoculated)	0.70	3.37	\$1.79
Burnett, Small (or Little) - Delar	2.80	3.54	\$7.00
Sheep Fescue - Covar	0.20	3.12	\$1.22
Milk Vetch, Cicer - Lutana	1.10	3.66	\$9.02
Tall Wheatgrass - Jose	2.00	3.63	\$6.75
Western Wheatgrass - Arriba	1.40	3.54	\$9.10

Rose, Wood's	2.70	0.00	\$55.35
Flax, Lewis Blue	0.50	3.32	\$8.25
Sagebrush, Silver	0.10	1.94	\$3.10
Saltbush, Four Wing	2.40	3.31	\$30.00
Serviceberry	4.80	8.82	\$295.20
Siberian Wheatgrass	0.90	2.27	\$5.15
<b>Totals Seed Mix</b>	<b>34.50</b>	<b>74.14</b>	<b>\$677.44</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	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

#### Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	225.02	Cost /Acre:	\$1,528.07
Estimated Failure Rate:	50%	Cost /Acre*:	\$1,433.44
*Selected Replanting Work Items:	SEEDING,MULCHING		

Initial Job Cost:	<b>\$343,846.31</b>
Reseeding Job Cost:	<b>\$161,276.33</b>
Total Job Cost:	<b>\$505,123</b>
Job Hours:	<b>225.02</b>

## REVEGETATION WORK

Task description: Drill Seed Drill Pads

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 151 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-151  
User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</b>

#### Application

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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	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

### **Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	82.97	Cost /Acre:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$96,975.34</b>
Reseeding Job Cost:	<b>\$17,125.01</b>
Total Job Cost:	<b>\$114,100</b>
Job Hours:	<b>82.97</b>

## REVEGETATION WORK

Task description: Drill Seed Lt-Use Roads to Drill Pads and Terror Creek

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 152

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-152

User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</b>

#### Application

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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	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

### **Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	62.01	Cost /Acre:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$72,477.29</b>
Reseeding Job Cost:	<b>\$12,798.86</b>
Total Job Cost:	<b>\$85,276</b>
Job Hours:	<b>62.01</b>

## REVEGETATION WORK

Task description: Broadcast Seed Mix 3 on Gob Pile #3

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 154

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-154

User: ZTT

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
Chisel plowing {DMG}	\$94.63
<b>Total Tilling Cost/Acre</b>	<b>\$94.63</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Beardless Wheatgrass - Whitmar	2.60	8.48	\$30.49
Bitterbrush, Antelope	16.60	5.11	\$323.70
Aster, Smooth	0.60	10.44	\$87.90
Great Basin Wildrye - Magnar	2.40	9.75	\$27.72
Kentucky Bluegrass - Ginger	0.20	9.87	\$0.64
Ryegrass, Perennial - Belramo	1.40	7.94	\$2.52
Intermediate Wheatgrass - Oahe	3.60	7.69	\$10.08
Smooth Brome - Manchar	2.40	7.99	\$7.98
Alfalfa - Ranger (inoculated)	1.40	6.75	\$3.57
Burnett, Small (or Little) - Delar	5.60	7.07	\$14.00
Sheep Fescue - Covar	0.40	6.24	\$2.44
Milk Vetch, Cicer - Lutana	2.20	7.32	\$18.04
Tall Wheatgrass - Jose	4.00	7.25	\$13.50
Western Wheatgrass - Arriba	2.80	7.07	\$18.20

Rose, Wood's	5.40	0.00	\$110.70
Flax, Lewis Blue	1.00	6.63	\$16.50
Sagebrush, Silver	0.20	3.88	\$6.20
Saltbush, Four Wing	4.80	6.61	\$60.00
Serviceberry	9.60	17.63	\$590.40
Siberian Wheatgrass	1.80	4.55	\$10.31
<b>Totals Seed Mix</b>	<b>69.00</b>	<b>148.28</b>	<b>\$1,354.88</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	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

#### Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	30.63	Cost /Acre:	\$2,472.73
Estimated Failure Rate:	50%	Cost /Acre*:	\$2,378.10

\*Selected Replanting Work Items: SEEDING,MULCHING

Initial Job Cost:	<b>\$75,739.72</b>
Reseeding Job Cost:	<b>\$36,420.60</b>
Total Job Cost:	<b>\$112,160</b>
Job Hours:	<b>60.63</b>

## REVEGETATION WORK

Task description: Drill seed Hubbard Creek Vent Shaft Pad

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 155

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-155

User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</b>

#### Application

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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	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

### **Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	1.2	Cost /Acre:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,402.56</b>
Reseeding Job Cost:	<b>\$247.68</b>
Total Job Cost:	<b>\$1,650</b>
Job Hours:	<b>1.20</b>

## REVEGETATION WORK

Task description: Drill Seed Rock Laydown Area

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 156 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-156  
User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</b>

#### Application

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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	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

### **Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	0.2	Cost /Acre:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$233.76</b>
Reseeding Job Cost:	<b>\$41.28</b>
Total Job Cost:	<b>\$275</b>
Job Hours:	<b>0.50</b>

## REVEGETATION WORK

Task description: Weed Control Over 10-Year Liability Period

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 157

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-157

User: ZTT

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
	1.00		\$0.00	\$0.00
	1.00		\$0.00	\$0.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$0.00</b>

**Application**

Description	Cost /Acre
Weed spray, truck, aquatic area, nox. [DMG]	\$68.50
<b>Total Mulch Application Cost/Acre</b>	<b>\$68.50</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:	838	Cost /Acre:	\$68.50
Estimated Failure Rate:	0%	Cost /Acre*:	\$0.00

\*Selected Replanting Work Items: NONE

Initial Job Cost: **\$57,403.00**  
 Reseeding Job Cost: **\$0.00**  
 Total Job Cost: **\$57,403**  
 Job Hours: **400.00**

## DEMOLITION WORK

Task description: Demolish and Remove all Structures

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 165

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-165

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Location adjustment: 102.20 %

<b>Structure or Item Description</b>	<b>Dimensions</b>	<b>Demolition Menu Selection</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Office and Bath House Superstructure	120'x50'x24'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	144,000.00	CF	\$0.23	\$33,163.20
floor	120'x50'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	6,000.00	SF	\$0.93	\$5,603.40
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	340.00	LF	\$5.60	\$1,905.12
Shop Superstructure	100'x60'x24'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	144,000.00	CF	\$0.23	\$33,163.20
floor	100'x50'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	5,000.00	SF	\$0.93	\$4,669.50
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	300.00	LF	\$5.60	\$1,680.99
Warehouse Superstructure	50'x60'x24'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	72,000.00	CF	\$0.23	\$16,581.60
floor	50'x60'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	3,000.00	SF	\$0.93	\$2,801.70
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	220.00	LF	\$5.60	\$1,232.73
Wash Bay Superstructure	50'x25'x24'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	30,000.00	CF	\$0.23	\$6,909.00
floor	50'x25'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,250.00	SF	\$0.93	\$1,167.38
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	150.00	LF	\$5.60	\$840.50
MCC Building Superstructure D-Seam Portal	18'x42'x11'	Bldg. (SC) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	8,316.00	CF	\$0.27	\$2,218.71
floor	18'x42'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	756.00	SF	\$0.93	\$706.03

footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	120.00	LF	\$5.60	\$672.40
MCC Building Superstructure Hubbard Creek	15'x25'x12'	Bldg. (SC) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,500.00	CF	\$0.27	\$1,200.60
floor	15'x25'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	375.00	SF	\$0.93	\$350.21
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	80.00	LF	\$5.60	\$448.26
Covered Storage Superstructure - D Seam Portal	30'x80'x20'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	48,000.00	CF	\$0.23	\$11,054.40
floor	30'x80'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	2,400.00	SF	\$0.93	\$2,241.36
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	220.00	LF	\$5.60	\$1,232.73
Covered Storage Superstructure B Seam	27'x55'x15'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	22,275.00	CF	\$0.23	\$5,129.93
floor	40'x15'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	600.00	SF	\$0.93	\$560.34
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	110.00	LF	\$5.60	\$616.36
Covered Storage Superstructure B Seam	50'x25'x20'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	25,000.00	CF	\$0.23	\$5,757.50
floor	50'x25'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,250.00	SF	\$0.93	\$1,167.38
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	150.00	LF	\$5.60	\$840.50
Covered Storage Superstructure Stockpile Level	30'x110'x15'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	49,500.00	CF	\$0.23	\$11,399.85

floor	30'x110'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	3,300.00	SF	\$0.93	\$3,081.87
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	280.00	LF	\$5.60	\$1,568.92
Covered Storage Superstructure Stockpile Level	40'x15'x15'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	9,000.00	CF	\$0.23	\$2,072.70
floor	40'x15'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	600.00	SF	\$0.93	\$560.34
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	110.00	LF	\$5.60	\$616.36
Water Treatment Building Superstructure	40'x21'x12'	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,360.00	CF	\$0.20	\$682.08
floor	14'x20'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	840.00	SF	\$0.93	\$784.48
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	122.00	LF	\$5.60	\$683.60
Fueling Station Superstructure	20'x30'x20'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	12,000.00	CF	\$0.23	\$2,763.60
Fueling Station Containment Structure	20'x30'x4'	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	280.00	SF	\$1.32	\$368.82
-floor	20'x30'x8"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	600.00	SF	\$0.93	\$560.34
10k gal diesel tank remove/haul	NA	Haul tank to certified salvage dump - 9,000 to 12,000 gal. tank	1.00	EA	\$1,050.00	\$1,050.00
sludge removal	NA	Remove sludge, water, and rem. product from tank - 9,000 to 12,000 gal.	1.00	EA	\$379.00	\$379.00
sludge disposal	NA	Dispose of tank sludge off-site - Average	150.00	GAL	\$6.80	\$1,020.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	150.00	LB	\$1.95	\$292.50

500 gal DOTdiesel tank remove/haul	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	1.00	EA	\$760.00	\$760.00
sludge removal	NA	Remove sludge, water, and rem. product from tank - 3,000 to 5,000 gal.	1.00	EA	\$227.50	\$227.50
sludge disposal	NA	Dispose of tank sludge off-site - Average	50.00	GAL	\$6.80	\$340.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	7.50	LB	\$1.95	\$14.63
2k gal oil tank remove/haul	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	1.00	EA	\$760.00	\$760.00
sludge removal	NA	Remove sludge, water, and rem. product from tank - 3,000 to 5,000 gal.	1.00	EA	\$227.50	\$227.50
sludge disposal	NA	Dispose of tank sludge off-site - Average	200.00	GAL	\$6.80	\$1,360.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	30.00	LB	\$1.95	\$58.50
2.5k gal gas tank remove/haul	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	1.00	EA	\$760.00	\$760.00
sludge removal	NA	Remove sludge, water, and rem. product from tank - 3,000 to 5,000 gal.	1.00	EA	\$227.50	\$227.50
sludge disposal	NA	Dispose of tank sludge off-site - Average	250.00	GAL	\$6.80	\$1,700.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	37.00	LB	\$1.95	\$72.15
1k gal motor oil tank remove/haul	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	1.00	EA	\$760.00	\$760.00
sludge removal	NA	Remove sludge, water, and rem. product from tank - 3,000 to 5,000 gal.	1.00	EA	\$227.50	\$227.50
sludge disposal	NA	Dispose of tank sludge off-site - Average	100.00	GAL	\$6.80	\$680.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	15.00	LB	\$1.95	\$29.25
Sewage Treatment	20'x30'x10'	Bldg. (SC) demo./on-site disposal in	6,000.00	CF	\$0.27	\$1,600.80



Plant Superstructure		excavated pit - Max. 10,000 ft. haul				
floor	20'x30'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	600.00	SF	\$0.93	\$560.34
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	100.00	LF	\$5.60	\$560.33
Substation Superstructure	50'x100'x20'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	50,000.00	CF	\$0.23	\$11,515.00
floor	50'x100'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	5,000.00	SF	\$0.93	\$4,669.50
transformers	3 each	NON-PCB Transformer Removal	3.00	EA	\$2,107.20	\$6,321.60
Mine Ventilation Fan Superstructure	20'x20'x8'	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,200.00	CF	\$0.20	\$649.60
floor	20'x20'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	\$0.93	\$373.56
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	80.00	LF	\$5.60	\$448.26
Non-Coal Waste Storage Structures (3)	20'x30'x6'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	10,800.00	CF	\$0.23	\$2,464.56
Rock Dust Storage Area Superstructure	30'x20'x8'	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	\$0.20	\$974.40
floor	30'x20'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	600.00	SF	\$0.93	\$560.34
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	100.00	LF	\$5.60	\$560.33
silo	50'hx8'd	Bldg. (MC) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,513.00	CF	\$0.30	\$749.38
silo pad	25'x20'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	100.00	SF	\$0.93	\$93.39
Pump House Superstructure	18'x12'x8	Bldg. (SN) demo./on-site disposal in	1,728.00	CF	\$0.20	\$350.78

		excavated pit - Max. 10,000 ft. haul				
floor	18'x12'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	216.00	SF	\$0.93	\$201.72
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	60.00	LF	\$5.60	\$336.20
Portal Conveyor Transfer Building Superstructure	20'x24'x45'	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 10,000 ft. haul	21,600.00	CF	\$0.23	\$4,974.48
floor	20'x24'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	480.00	SF	\$0.93	\$448.27
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	88.00	LF	\$5.60	\$493.09
Screening and Crushing Building	40'x21'x52'	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 10,000 ft. haul	43,680.00	CF	\$0.23	\$10,059.50
floor	40'x21'x6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	840.00	SF	\$0.93	\$784.48
footing	1.5'x2'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	122.00	LF	\$5.60	\$683.60
Clean Gob Pile Material Storage Area	NA	Loading and 5 mile haul, salvage allowed - Wood frame structures	968.00	CY	\$18.35	\$17,762.80
Clean Haul Road Storage Piles (2)	NA	Loading and 5 mile haul, salvage allowed - Wood frame structures	484.00	CY	\$18.35	\$8,881.40
Clean Topsoil Stockpile A Storage Pile	NA	Loading and 5 mile haul, salvage allowed - Wood frame structures	1,839.00	CY	\$18.35	\$33,745.65
Clean Portal Bench/Light Use Rd Piles (2)	NA	Loading and 5 mile haul, salvage allowed - Wood frame structures	1,670.00	CY	\$18.35	\$30,644.50
Portal Conveyor (D and B Seams)	140'x72"	OBSOLETE- Conveyor, elevated, including supports - 8 ft. W x 10 ft. H housing	140.00	LF	\$53.42	\$7,478.80
footing	2'x3'	Demo. and on-site disposal in excavated	5.00	LF	\$11.21	\$56.03

		pit, 2.0 ft. x 3 ft. - Max. 200 ft. push				
Gob Belt Conveyor	81'x48"	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	81.00	LF	\$44.51	\$3,605.23
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	2.00	LF	\$11.21	\$22.41
Stockpile Conveyor	393'x72"	OBSOLETE- Conveyor, elevated, including supports - 8 ft. W x 10 ft. H housing	393.00	LF	\$53.42	\$20,994.06
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	16.00	LF	\$11.21	\$179.30
Reclaim Conveyor	402'x48"	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	402.00	LF	\$44.51	\$17,892.62
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	18.00	LF	\$11.21	\$201.72
Off-Spec Coal Conveyor	111'x72"	OBSOLETE- Conveyor, elevated, including supports - 8 ft. W x 10 ft. H housing	111.00	LF	\$53.42	\$5,929.62
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	4.00	LF	\$11.21	\$44.83
Radial Stacker #1 Conveyor	150'x36"	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	150.00	LF	\$44.51	\$6,676.35
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	6.00	LF	\$11.21	\$67.24
Radial Stacker #2 Conveyor	80' x 36"	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	80.00	LF	\$44.51	\$3,560.72
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	1.00	LF	\$11.21	\$11.21
Stoker Collecting Conveyor	29' x 36"	OBSOLETE- Conveyor, elevated, including supports - 5	29.00	LF	\$44.51	\$1,290.76

		ft. W x 6 ft. H housing				
concrete runway	29' x 48"	Demo. and on-site disposal in excavated pit, 4 in. thick - Max. 200 ft. push	116.00	SF	\$0.62	\$72.22
Stacking Tube	12' diam x 100'	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	3,770.00	SF	\$1.98	\$7,448.39
foundation	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	38.00	LF	\$11.21	\$425.85
Stacking Tube	12' diam x 120'	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	4,524.00	SF	\$1.98	\$8,938.07
foundation	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	38.00	LF	\$11.21	\$425.85
Stacking Tube	12' diam x 130'	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	4,901.00	SF	\$1.98	\$9,682.91
Reclaim Tunnel Part 1	13' diam x 350'	USER PROVIDED ITEM	9,065.00	SF	\$7.77	\$70,435.05
Reclaim Tunnel Part 2	13' diam x 200'	USER PROVIDED ITEM	1,481.00	SF	\$7.77	\$11,507.37
Escape Tube	42" x 160'&150'	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,797.00	CF	\$0.20	\$770.79
Concrete Fan Housing	6'x6'x8'	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	288.00	CF	\$0.20	\$58.46
10k gal hydraulic oil tank	NA	Haul tank to certified salvage dump - 9,000 to 12,000 gal. tank	1.00	EA	\$1,050.00	\$1,050.00
remove sludge	NA	Remove sludge, water, and rem. product from tank - 9,000 to 12,000 gal.	1.00	EA	\$379.00	\$379.00
sludge disposal	NA	Dispose of tank sludge off-site - Average	1,000.00	GAL	\$6.80	\$6,800.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	150.00	LB	\$1.95	\$292.50
500 gal antifreeze tank	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	1.00	EA	\$760.00	\$760.00
sludge removal	NA	Remove sludge, water, and rem. product from tank - 3,000 to 5,000 gal.	1.00	EA	\$227.50	\$227.50

sludge disposal	NA	Dispose of tank sludge off-site - Average	50.00	GAL	\$6.80	\$340.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	7.50	LB	\$1.95	\$14.63
Power line removal	6350' lin.ft.	Disposal of utility pole and hardware surplus material	6,350.00	LF	\$0.02	\$127.00
Portal Bench to Transfer Tower on grade conveyor	36" x 800'	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	800.00	LF	\$17.60	\$14,080.00
Portal Bench to Transfer Tower elevated conveyor	36" x 120'	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	120.00	LF	\$44.51	\$5,341.08
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	38.00	LF	\$11.21	\$425.85
tunnel structure	100 lin.ft.	USER PROVIDED ITEM	100.00	LF	\$58.19	\$5,819.00
Transfer Tower to Stockpile overland	36" x 2280'	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	2,280.00	LF	\$17.60	\$40,128.00
Transfer Tower to Stockpile elevated	36" x 475'	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	475.00	LF	\$44.51	\$21,141.78
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	112.00	LF	\$11.21	\$1,255.13
tunnel	80 lin.ft.	USER PROVIDED ITEM	80.00	LF	\$58.19	\$4,655.20
Downhill Conveyor Transfer Tower Structure	16'x16'x25'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	6,400.00	CF	\$0.23	\$1,460.48
concrete pad	16'x16'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	256.00	SF	\$0.93	\$239.08
footing	2'x3'	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	65.00	LF	\$11.21	\$728.42
Wildlife Structures	300 lin.ft.	USER PROVIDED ITEM	300.00	LF	\$58.19	\$17,457.00
Reclaim Conveyor overland	36" x 395'	OBSOLETE- Conveyor, overland, including supports - 5	395.00	LF	\$17.60	\$6,952.00

		ft. W x 6 ft. H housing				
Reclaim Conveyor elevated	36" x 180'	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	180.00	LF	\$44.51	\$8,011.62
Coal Loadout Bin	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	46,875.00	CF	\$0.23	\$10,696.88
footing	2'x3'	Demo. and on-site disposal in existing pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	100.00	LF	\$10.71	\$1,071.08
Coal Reclaim Tunnel	42" x 160'	USER PROVIDED ITEM	160.00	LF	\$58.19	\$9,310.40
escapeway	42" x 160'	USER PROVIDED ITEM	160.00	LF	\$17.70	\$2,832.00
fan housing building	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	288.00	CF	\$0.23	\$65.72
Loadout Substation	20'x20'x10'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	4,000.00	CF	\$0.23	\$912.80
floor	20'x20'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	\$0.93	\$373.56
transformer	NA	NON-PCB Transformer Removal	1.00	EA	\$2,107.20	\$2,107.20
fencing	100 lin.ft.	Fencing, chain link, including posts and fabric - 8 ft. to 10 ft. high	100.00	LF	\$3.12	\$312.00
Structure at Vent Shaft - Lap Slab	576 sq.ft.	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	576.00	SF	\$0.93	\$537.93
wing and stem walls	1408 sq.ft.	Demo. and on-site disposal in existing pit, 6 in. thick - Max. 200 ft. push	1,408.00	SF	\$0.95	\$1,332.81
wing wall footing	100 lin. ft.	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	100.00	LF	\$8.40	\$840.49
fan and evase	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	22,032.00	CF	\$0.23	\$5,027.70
shaft house	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	10,788.00	CF	\$0.23	\$2,461.82

Haul road pavement removal	NA	Pavement, bituminous, demolition only - 3 in. thick	33,367.00	SY	\$4.31	\$143,811.77
disposal	NA	Loading and 2 mile haul, no salvage - Machine loading	5,578.00	CY	\$17.55	\$97,893.90
guardrail removal	NA	Railing, roadside guiderail and posts (posts on 20 ft. centers)	7,545.00	LF	\$3.67	\$27,682.61
Storage Shed at Topsoil Stockpile	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	76,500.00	CF	\$0.23	\$17,457.30
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	5,100.00	SF	\$0.93	\$4,762.89
Wood fencing from TR-11	NA	Fencing, wood, all types - 4 ft. to 6 ft. high	140.00	LF	\$1.31	\$183.40
12" PVC Pipe from TR-11	NA	Pipe, corrugated metal (CMP) - 8 in. diameter pipe	42.00	LF	\$2.58	\$108.17
Misc Steel Pipe from TR-11	NA	Pipe, steel, welded connections - 4 in. diameter pipe	18.00	LF	\$1.70	\$30.60
Reclaim Conveyor Transfer Building	20'x20'x45'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	18,000.00	CF	\$0.23	\$4,107.60
floor	20'x20'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	\$0.93	\$373.56
footing	2'x3'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	80.00	LF	\$5.60	\$448.26
Railroad Track	NA	Railroad track - Ties and track	7,630.00	LF	\$9.36	\$71,416.80
Storage Track	NA	Railroad track - Ties and track	3,880.00	LF	\$9.36	\$36,316.80
Bypass Track	NA	Railroad track - Ties and track	615.00	LF	\$9.36	\$5,756.40
ballast	NA	Railroad track - Ballast	1,347.00	CY	\$4.78	\$6,438.66
Reclaim Conveyor Transfer Building	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	340.00	LF	\$17.60	\$5,984.00
elevated portion	NA	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	265.00	LF	\$44.51	\$11,794.89

elevated to batch weigh	NA	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	1,200.00	LF	\$44.51	\$53,410.80
footing	NA	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	7.00	LF	\$11.21	\$78.45
Hazardous Waste Removal	NA	Hazardous waste removal - Drum solids/liquids, per drum, (7+ drum job)	20.00	DRUM	\$486.10	\$9,722.09
test	NA	Hazardous waste sampling and analysis, per sample	20.00	EA	\$232.49	\$4,649.78
transport to dump	NA	Solid transport, large truck (max. 80 drums, 25 cy, or 18 tons) - Maximum	150.00	MI	\$7.25	\$1,087.50
dump charges	NA	Dumpsite disposal charge - Average	6.00	TON	\$277.50	\$1,665.00
TR24 Fan Structure	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	12,923.00	CF	\$0.23	\$2,949.03
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	20.00	SF	\$0.93	\$18.68
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	12.00	LF	\$5.60	\$67.24
Conveyor Overpass Retaining Wall	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,400.00	CF	\$0.23	\$775.88
concrete halfwall	NA	Demo. and on-site disposal in existing pit, 8 in. thick - Max. 200 ft. push	480.00	SF	\$1.26	\$605.81
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	120.00	SF	\$0.93	\$112.07
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	360.00	LF	\$5.60	\$2,017.19
multiplate structure	5.5' dia x 4'	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	64.00	CF	\$0.18	\$11.65
140k gal water tank	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	19,300.00	CF	\$0.23	\$4,404.26



Transfer Building	20'x24'x45'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	21,600.00	CF	\$0.23	\$4,929.12
floor	20'x35'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	700.00	SF	\$0.93	\$653.73
footing	2'x3'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	106.00	LF	\$5.60	\$593.95
MCC Building	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	1,000.00	CF	\$0.23	\$228.20
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	100.00	SF	\$0.93	\$93.39
Substation	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	25,000.00	CF	\$0.23	\$5,705.00
transformer	NA	NON-PCB Transformer Removal	2.00	EA	\$2,107.20	\$4,214.40
Water tank 50k gal	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	6,720.00	CF	\$0.23	\$1,533.50
Mine vent fan	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,200.00	CF	\$0.23	\$730.24
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	40.00	SF	\$0.93	\$37.36
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	116.00	LF	\$5.60	\$649.98
Powerlines	NA	Disposal of utility pole and hardware surplus material	200.00	LF	\$0.02	\$4.00
Rock Dust Tank	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	2,513.00	CF	\$0.23	\$573.47
compressor house	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	4,800.00	CF	\$0.23	\$1,095.36
Portal Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	148.00	LF	\$17.60	\$2,604.80

Gob Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	\$17.60	\$1,760.00
Radial Stacker Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	42.00	LF	\$17.60	\$739.20
Wash Plant	55'x70'x80'	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 200 ft. push	308,000.0 0	CF	\$0.23	\$70,285.60
floor	55'x70'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	3,850.00	SF	\$0.93	\$3,595.52
footing	55'x70'	Demo. and on-site disposal in existing pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	250.00	LF	\$5.36	\$1,338.85
MCC Room	NA	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 200 ft. push	5,760.00	CF	\$0.23	\$1,314.43
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	480.00	SF	\$0.93	\$448.27
Transfer Bldg - Reclaim to Plant	NA	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 200 ft. push	10,240.00	CF	\$0.23	\$2,336.77
Reclaim Tunnel Multiplate	5.5' dia x 4'	Bldg. (SN) demo./on- site disposal in existing pit or cut - Max. 200 ft. push	64.00	CF	\$0.18	\$11.65
Stacking Tube	NA	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 200 ft. push	4,900.00	CF	\$0.23	\$1,118.18
structure	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	8,000.00	SF	\$0.99	\$7,903.20
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	38.00	LF	\$5.60	\$212.93
Clarifier Tank/Thickene r	70'd x 10'h x 10" th	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	2,199.00	SF	\$1.56	\$3,422.74
base	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	3,848.00	SF	\$0.93	\$3,593.65

sludge removal	NA	Remove sludge, water, and rem. product from tank - 9,000 to 12,000 gal.	10.00	EA	\$379.00	\$3,790.00
Transfer Building - Plant Feed	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	8,192.00	CF	\$0.23	\$1,869.41
Transfer Building - Clean Coal	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	4,096.00	CF	\$0.23	\$934.71
Reclaim Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 8 ft. W x 10 ft. H housing	250.00	LF	\$26.71	\$6,677.50
Plant Feed Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 8 ft. W x 10 ft. H housing	300.00	LF	\$26.71	\$8,013.00
Stoker Stockpile Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 8 ft. W x 10 ft. H housing	125.00	LF	\$26.71	\$3,338.75
Clean Coal Transfer Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 8 ft. W x 10 ft. H housing	25.00	LF	\$26.71	\$667.75
Clean Coal Stockpile Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 8 ft. W x 10 ft. H housing	550.00	LF	\$26.71	\$14,690.50
Synfuel Plant	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	84,000.00	CF	\$0.23	\$19,168.80
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	28,000.00	SF	\$0.93	\$26,149.20
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	220.00	LF	\$5.60	\$1,232.73
Feed Belt Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	50.00	LF	\$17.60	\$880.00
Product Belt Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	85.00	LF	\$17.60	\$1,496.00

Return Belt Conveyor	NA	OBSOLETE- Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	80.00	LF	\$17.60	\$1,408.00
Fan and Duct Work TR62	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	31,752.00	CF	\$0.23	\$7,245.81
footings	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	108.00	LF	\$5.60	\$605.16
MCC Building TR62	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	4,500.00	CF	\$0.23	\$1,026.90
motor foundation	NA	Demo. and on-site disposal in existing pit, 6 in. thick - Max. 200 ft. push	100.00	SF	\$0.89	\$89.26
floor	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	375.00	SF	\$0.93	\$350.21
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	80.00	LF	\$5.60	\$448.26
Water Line TR53	NA	Pipe, sewer/water - 12 in. diameter pipe	400.00	LF	\$4.64	\$1,856.00
Upper Parking Area Retaining Wall TR50	NA	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	1,305.00	SF	\$1.98	\$2,578.29
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	150.00	LF	\$5.60	\$840.50
10k gal fuel tank TR47	NA	Excavate and load tank onto trailer, non-leaking - 9,000 gal. to 12,000 gal.	1.00	EA	\$1,330.00	\$1,330.00
remove sludge	NA	Remove sludge, water, and rem. product from tank - 9,000 to 12,000 gal.	1.00	EA	\$379.00	\$379.00
dispose of sludge	NA	Dispose of tank sludge off-site - Average	1,000.00	GAL	\$6.80	\$6,800.00
insert CO2	NA	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	150.00	LB	\$1.95	\$292.50
haul tank to certified dump	NA	Haul tank to certified salvage dump - 9,000 to 12,000 gal. tank	1.00	EA	\$1,050.00	\$1,050.00
Trailers (3)	NA	Bldg. (MN) demo./on-site disposal in	3,000.00	CF	\$0.23	\$684.60

		excavated pit - Max. 200 ft. push				
Quonset Hut MR108	25'x60'x12.5'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	18,750.00	CF	\$0.23	\$4,278.75
floor	25'x60'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,500.00	SF	\$0.93	\$1,400.85
Hoist Structure MR97	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	1,440.00	CF	\$0.23	\$328.61
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	9.00	LF	\$5.60	\$50.43
piers	NA	USER PROVIDED ITEM	2.00	CY	\$89.00	\$178.00
head frame	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	5,886.00	CF	\$0.23	\$1,343.19
Collecting Conveyor	NA	OBSOLETE- Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	76.00	LF	\$44.51	\$3,382.68
footing	NA	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	2.00	LF	\$11.21	\$22.41
Batch Weigh @ Loadout	30' x 40' x 120'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	144,000.00	CF	\$0.23	\$32,860.80
Fuel Station floor	20' x 30'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	600.00	SF	\$0.93	\$560.34
footing	2'x3'	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	100.00	LF	\$5.60	\$560.33
Loadout Storage Stacker	NA	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	8,000.00	CF	\$0.23	\$1,825.60
tube	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	3,678.00	SF	\$0.93	\$3,434.88
footing	NA	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	44.00	LF	\$5.60	\$246.55
Filter Building MR 125	40'x16'x8'	Bldg. (SC) demo./on-site disposal in	5,120.00	CF	\$0.26	\$1,355.78

		excavated pit - Max. 200 ft. push				
floor	40'x16'x4"	Demo. and on-site disposal in excavated pit, 4 in. thick - Max. 200 ft. push	640.00	SF	\$0.62	\$398.46
footing	112 LF	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	112.00	LF	\$5.60	\$627.57
Shower Facility Expansion MR 126	16' x 50' x 12'	Bldg. (MN) demo./on- site disposal in excavated pit - Max. 200 ft. push	9,600.00	CF	\$0.23	\$2,190.72
floor	16'x50'x4"	Demo. and on-site disposal in excavated pit, 4 in. thick - Max. 200 ft. push	800.00	SF	\$0.62	\$498.08
footing	82 LF	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	82.00	LF	\$3.74	\$306.31
Terror Creek Vent Shaft Collar	30'x30'x12"	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	900.00	SF	\$1.87	\$1,681.02
Terror Creek Vent Shaft Quonset Hut	NA	Bldg. (SN) demo./on- site disposal in excavated pit - Max. 10,000 ft. haul	14,720.00	CF	\$0.20	\$2,988.16
pad	NA	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,500.00	SF	\$0.93	\$1,400.85
Temporary Culvert T-F1	24" x 300'	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	300.00	LF	\$5.94	\$1,783.32
Temporary Culvert T-F2	12" x 20'	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	20.00	LF	\$3.38	\$67.65
Half Culvert C- J11	30" x 500'	USER PROVIDED ITEM	500.00	LF	\$3.42	\$1,710.00
Culvert C-G5	36" x 95'	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	95.00	LF	\$9.23	\$876.92
Culvert C-G6	12" x 87'	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	87.00	LF	\$3.38	\$294.27
Culvert C-G2	12" x 40'	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	40.00	LF	\$3.38	\$135.30
Concrete Box Structure at Pond D	4' x 4'	Wall, concrete, demolition only, average reinforcing - 4 in. thick	80.00	SF	\$0.71	\$56.50
Temporary Culvert T-F3	24" x 20'	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	20.00	LF	\$5.94	\$118.89

Temporary Culvert T-F4	30" x 40'	Pipe, corrugated metal (CMP) - 30 in. diameter pipe	40.00	LF	\$7.66	\$306.32
Temporary Culvert T-F5	30" x 80'	Pipe, corrugated metal (CMP) - 30 in. diameter pipe	80.00	LF	\$7.66	\$612.65
Temporary Culvert C-J10	24" x 30'	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	30.00	LF	\$5.94	\$178.33
Culvert C22 drop inlet structure	44 - 16" x 8" x 6" blocks	Wall, block, demolition only, 6 in. thick - Vertical reinforcing	39.06	SF	\$0.58	\$22.50
Trailer Mounted Filter Press	8' x 8' x 40'	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	2,560.00	CF	\$0.18	\$465.92
West Terror Creek Flume Anchors	1' x 1.5' x 4'	Footing, concrete, 1.0 ft. x 2 ft. - Average reinforcing	8.00	LF	\$3.37	\$26.93
W Ter Crk Flume walls - 2 walls/2 flumes	2' x 4' x 4" (2)	Footing, concrete, 1.5 ft. x 2 ft. - Average reinforcing	16.00	LF	\$4.05	\$64.77
Flume rubble disposal	NA	Loading and 5 mile haul, salvage allowed - Concrete frame structures	2.80	CY	\$12.40	\$34.72
Rock Bin on D Portal Bench - side walls	7' x 15' (2)	Wall, concrete, demolition only, average reinforcing - 12 in. thick	210.00	SF	\$1.29	\$270.27
Rock Bin on D Portal Bench - back wall	8' x 23'	Wall, concrete, demolition only, average reinforcing - 18 in. thick	184.00	SF	\$2.57	\$473.62
Rock Bin on D Portal Bench - floor	16.5' x 23' x 12"	Floor, concrete, demolition only, average reinforcing - 12 in. thick	379.50	SF	\$1.70	\$645.76
Rock Bin on D Bench rubble disposal	NA	Push demolished materials/rubble/debris into pit - Max. 200 ft. push	32.00	CY	\$1.62	\$51.78
Concrete patch @haul road intersection	50' x 18' x 8"	Pavement, concrete, demolition only, 7 in. to 24 in. thick - Reinforced	7.40	CY	\$124.00	\$917.60
Culverts B1(50), B3(100), B7(220)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	370.00	LF	\$3.38	\$1,251.49
Culverts B8(110), B9(140)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	250.00	LF	\$3.38	\$845.60
Culverts B13(110), B18(110), B24(60)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	280.00	LF	\$3.38	\$947.07

Culverts B25(160), B26(70)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	230.00	LF	\$3.38	\$777.95
Culvert B11(60) and B29 (40)	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	100.00	LF	\$4.58	\$458.17
Culverts B12(170), B14(70), B22(40)	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	280.00	LF	\$4.58	\$1,282.88
Culvert B23(40)	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	40.00	LF	\$4.58	\$183.27
Culverts B15(80), B16(60), B17(90)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	230.00	LF	\$5.94	\$1,367.21
Culverts B19(60), B27(100)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	160.00	LF	\$5.94	\$951.10
Culvert B28(120)	30"	Pipe, corrugated metal (CMP) - 30 in. diameter pipe	120.00	LF	\$7.66	\$918.97
Culvert B21(40)	36"	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	40.00	LF	\$9.23	\$369.23
Culverts C1(110), C2(30), C3(40), C8(30)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	210.00	LF	\$3.38	\$710.30
Culverts C10(100) and C17(100)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	200.00	LF	\$3.38	\$676.48
Culverts C19(60), C21(170), C22(150)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	380.00	LF	\$3.38	\$1,285.31
Culverts C23(30), C24(30), C25(30)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	90.00	LF	\$3.38	\$304.42
Culverts C4(300) and C11(90)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	390.00	LF	\$5.94	\$2,318.32
Culverts C12(65), C13(120), C14(170)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	355.00	LF	\$5.94	\$2,110.26
Culverts C15(25), C16(90), C18(30)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	145.00	LF	\$5.94	\$861.94
Culvert C5(260)	30"	Pipe, corrugated metal (CMP) - 30 in. diameter pipe	260.00	LF	\$7.66	\$1,991.11
Culverts C7(400), C20(25), C26(40)	36"	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	465.00	LF	\$9.23	\$4,292.28



Culverts D1(40), D2(30)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	70.00	LF	\$5.94	\$416.11
Culvert E1(40)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	40.00	LF	\$3.38	\$135.30
Culvert F2(40) and F4(60)	30"	Pipe, corrugated metal (CMP) - 30 in. diameter pipe	100.00	LF	\$7.66	\$765.81
Culverts G2(40) and G4(25)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	65.00	LF	\$3.38	\$219.86
Culvert G3(50)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	50.00	LF	\$5.94	\$297.22
Culvert H1(175)	36"	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	175.00	LF	\$9.23	\$1,615.37
Culverts J3(60), J5(50), J6(60)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	170.00	LF	\$3.38	\$575.01
Culverts J7(60), J12(50), J13(50)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	160.00	LF	\$3.38	\$541.18
Culvert J14(175)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	175.00	LF	\$3.38	\$591.92
Culverts J1(65), J2(100), J4(50)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	215.00	LF	\$5.94	\$1,278.05
Culverts J8(50), J9(90-2), J10(40)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	270.00	LF	\$5.94	\$1,604.99
Culverts K1(40), K2(130)	12"	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	170.00	LF	\$3.38	\$575.01
Culvert K3(75)	24	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	75.00	LF	\$5.94	\$445.83
Refuse Bin	20' x 20' x 60'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	24,000.00	CF	\$0.23	\$5,476.80
- slab	20' x 20'	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	\$0.93	\$373.56
- footing	20' x 20'	Demo. and on-site disposal in existing pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	80.00	LF	\$5.36	\$428.43
Refuse Bin Fender Walls	4' x 40' x 12" (2)	Wall, concrete, demolition only, average reinforcing - 12 in. thick	320.00	SF	\$1.29	\$411.84
- footing (10' either side of bin)	20' (2)	Demo. and on-site disposal in existing	40.00	LF	\$8.08	\$323.34

		pit, 1.5 ft. x 3 ft. - Max. 10,000 ft. haul				
Refuse Bin Bollards (2)	12" diam	USER PROVIDED ITEM	2.00	EA	\$23.50	\$47.00
- footing	1' x 2'	Demo. and on-site disposal in existing pit, 1.0 ft. x 2 ft. - Max. 10,000 ft. haul	2.00	LF	\$3.59	\$7.19
Mine Entrance Security Gate	6' x 40'	USER PROVIDED ITEM	40.00	LF	\$16.62	\$664.80
- motor assembly	NA	USER PROVIDED ITEM	1.00	EA	\$755.00	\$755.00
- actuator	NA	USER PROVIDED ITEM	1.00	EA	\$50.50	\$50.50
Culvert G5	36" x 150'	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	150.00	LF	\$9.23	\$1,384.61
Culvert G6	12" x 100'	Pipe, corrugated metal (CMP) - 12 in. diameter pipe	100.00	LF	\$3.38	\$338.24
Fire Mountain Canal Storage Bldg	100' x 20' x 20'	Bldg. (MN) demo./on- site disposal in existing pit or cut - Max. 10,000 ft. haul	40,000.00	CF	\$0.22	\$8,600.00
- slab	100' x 20'	Demo. and on-site disposal in existing pit, 6 in. thick - Max. 10,000 ft. haul	2,000.00	SF	\$0.90	\$1,796.40
- footing	100' x 20'	Demo. and on-site disposal in existing pit, 1.0 ft. x 2 ft. - Max. 10,000 ft. haul	240.00	LF	\$3.59	\$862.25
Culvert C9 (replaced by Ditch D-C14)	36" x 500'	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	500.00	LF	\$9.23	\$4,615.35
Smart Ditch T- F6	24" X 50'	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	50.00	LF	\$5.94	\$297.22
Bowie Rd Intersection Asphalt Removal	620 SY	Pavement, bituminous, demolition only - 3 in. thick	620.00	SY	\$4.31	\$2,672.20
Temporary Culvert T6	36"X40'	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	40.00	LF	\$9.23	\$369.23
Methane Flare Stack (MR200)	6' dia x 50'	USER PROVIDED ITEM	1,414.00	CF	\$0.22	\$311.08
- Skid	17' x 10' x 6'	USER PROVIDED ITEM	1,020.00	CF	\$0.22	\$224.40
- Interconnecting Piping	40'	USER PROVIDED ITEM	40.00	LF	\$2.30	\$92.00
- Remove Fence	350'	Fencing, chain link, including posts and fabric - to 6 ft. high	350.00	LF	\$2.68	\$938.00
- Concrete Foundation for Oxidizer	8' dia	Demo. and on-site disposal in existing pit, 6 in. thick - Max. 200 ft. push	50.00	SF	\$0.89	\$44.63

- Footing	25'	Demo. and on-site disposal in existing pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	25.00	LF	\$10.71	\$267.77
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**Job Hours:**

160.00

**Subtotal**  
**(unadjusted):**

\$1,563,930.02

**Total Cost**  
**(adjusted for location):**

\$1,598,336.48

## SITE MAINTENANCE

Task description: Proctor Testing of Backfill (5 tests)

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task 170  
#:

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-170

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Supervision/Quality Control	0.00	USER PROVIDED ITEM	5.00	1	\$135.00	\$675.00

Job Hours: 0.00

Total Cost: \$675.00

## SITE MAINTENANCE

Task description: **Nuclear Density Testing of Backfill**

Site: **Bowie No. 2 Mine**

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task 171  
#:

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-171

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

<b>Maintenance Item</b>	<b>Hours per Year</b>	<b>Menu Selection</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Supervisor/Quality Control	0.00	USER PROVIDED ITEM	1,760.00	1	\$73.13	\$128,708.80

**Job Hours:** **0.00**

**Total Cost:** **\$128,708.80**

## MISCELLANEOUS TRUCK WORK

Task description: Water Truck for Moisture Augmentation of Backfill Material

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 172

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C83-172

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Make and Model: Water Tanker, 5,000 Gal.

Horsepower: 175

Attachment 1: \_\_\_\_\_

Shift Basis: 1 per day

Attachment 2: \_\_\_\_\_

Weight: 15.00

Labor Unit 1: Tanker Driver - 1 rear axle

(US Tons)

Labor Unit 2: \_\_\_\_\_

### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$27.40</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$39.99</u>	<u>100</u>
Operator Cost/Hour:	<u>\$21.09</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$88.48</u>	
Total Fleet Cost/Hour:	<u>\$88.48</u>	

### JOB TIME AND COST

Fleet size: 1 Truck(s)

Total job time: 1,437.02 Hours

Unit cost: \$88.48 /Hour

Total job cost: \$127,148

## SITE MAINTENANCE

Task description: Site Maintenance - Ten Years

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task 173  
#:

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-173

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Dozer for Rills and Gullies	24.00	Cat D3K LGP - 3P	240.00	EA	\$95.66	\$22,958.40
Grader for Roads and Ditches	4.00	CAT 12M	40.00	EA	\$96.36	\$3,854.40
Pond Dredging	12.00	USER PROVIDED ITEM	12.00	EA	\$18,000.00	\$216,000.00

Job Hours: 292.00

Total Cost: \$242,812.80

## SITE MAINTENANCE

Task description: Support Equipment for Scraper Hauling

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task 174  
#:

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-174

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Water Truck	458.57	Water Tanker, 5,000 Gal.	458.57	EA	\$88.48	\$40,574.27
Grader	458.57	CAT 14M	458.57	EA	\$148.79	\$68,230.63

Job Hours: 449.16

Total Cost: \$108,804.90



## EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: Mobilize/Demobilize Equipment for First Construction Season

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 180

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-180

User: ZTT

Agency or organization name: DRMS

### EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day

Cost Data Source: CRG Data

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

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

#### Cost Breakdown:

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

### NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D10T - 10SU	84.53	\$140.61	\$141.54	4	\$1,128.60	\$566.16	\$1,000.00
Cat 365C L 13'-7" Stick	77.56	\$121.37	\$141.54	2	\$525.82	\$283.08	\$500.00
CAT 815F	22.88	\$60.28	\$67.39	1	\$127.67	\$67.39	\$250.00
CAT 14M	23.57	\$64.10	\$67.39	1	\$131.49	\$67.39	\$250.00
CAT 988H	54.46	\$91.83	\$141.54	1	\$233.37	\$141.54	\$250.00
Cat 773F	49.74	\$105.90	\$123.81	3	\$689.13	\$371.43	\$750.00
Cat 627G w/push- pull	43.48	\$126.52	\$123.81	4	\$1,001.32	\$495.24	\$1,000.00
Water Tanker, 5,000 Gal.	15.00	\$27.40	\$67.39	1	\$94.79	\$67.39	\$250.00
ATLAS COPCO ROC D7-11,4.0 in.	1.25	\$79.74	\$67.39	1	\$147.13	\$67.39	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$18.15	\$67.39	1	\$85.54	\$67.39	\$250.00
Fuel Tanker, 6x4, 210 HP	6.00	\$13.51	\$67.39	1	\$80.90	\$67.39	\$250.00

Subtotals: **\$4,245.76** **\$2,261.79** **\$5,000.00**

**ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Fuel Tanker, 6x4, 210 HP	\$63.55	1	\$63.55	\$63.55
Lube Truck, 6x4, 250 HP	\$71.50	1	\$71.50	\$71.50
Flatbed Truck, 6x4, 45K GVW	\$76.76	1	\$76.76	\$76.76
Light Duty Pickup, 4x4, 1 T. Crew	\$48.58	1	\$48.58	\$48.58

Subtotals: **\$260.39** **\$260.39**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: GRAND JUNCTION  
Total one-way travel distance: 100.00 miles  
Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost \* \$51,029.27  
\*\* two round trips with haul rig:  
Total Roadable Mob/Demob Cost \*\* \$1,301.95  
\*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non- Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.50	2.50
Return Time (Hours):	2.50	2.50
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	6.00	5.00

**JOB TIME AND COST**

Total job time: 12.00 Hours

Total job cost: \$52,331

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**

Task description: Mobilize/Demobilize Equipment for Second Construction Season

Site: Bowie No. 2 Mine Permit Action: MT5 Permit/Job#: C1996083

**PROJECT IDENTIFICATION**

Task #: 181 State: Colorado Abbreviation: None  
Date: 10/2/2019 County: Delta Filename: C083-181  
User: ZTT

Agency or organization name: DRMS

**EQUIPMENT TRANSPORT RIG COST**

Shift basis: 1 per day

Cost Data Source: CRG Data

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

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

**Cost Breakdown:**

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

**NON ROADABLE EQUIPMENT:**

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D10T - 10SU	84.53	\$140.61	\$141.54	4	\$1,128.60	\$566.16	\$1,000.00
Cat 365C L 13'-7" Stick	77.56	\$121.37	\$141.54	2	\$525.82	\$283.08	\$500.00
CAT 815F	22.88	\$60.28	\$67.39	1	\$127.67	\$67.39	\$250.00
CAT 14M	23.57	\$64.10	\$67.39	1	\$131.49	\$67.39	\$250.00
CAT 988H	54.46	\$91.83	\$141.54	1	\$233.37	\$141.54	\$250.00
Cat 773F	49.74	\$105.90	\$123.81	3	\$689.13	\$371.43	\$750.00
Cat 627G w/push-pull	43.48	\$126.52	\$123.81	4	\$1,001.32	\$495.24	\$1,000.00
Water Tanker, 5,000 Gal.	15.00	\$27.40	\$67.39	1	\$94.79	\$67.39	\$250.00
ATLAS COPCO ROC D7-11,4.0 in.	1.25	\$79.74	\$67.39	1	\$147.13	\$67.39	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$18.15	\$67.39	1	\$85.54	\$67.39	\$250.00
Fuel Tanker, 6x4, 210 HP	6.00	\$13.51	\$67.39	1	\$80.90	\$67.39	\$250.00

Subtotals: **\$4,245.76** **\$2,261.79** **\$5,000.00**

**ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Fuel Tanker, 6x4, 210 HP	\$63.55	1	\$63.55	\$63.55
Lube Truck, 6x4, 250 HP	\$71.50	1	\$71.50	\$71.50
Flatbed Truck, 6x4, 45K GVW	\$76.76	1	\$76.76	\$76.76
Light Duty Pickup, 4x4, 1 T. Crew	\$48.58	1	\$48.58	\$48.58

Subtotals: **\$260.39** **\$260.39**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: GRAND JUNCTION  
Total one-way travel distance: 100.00 miles  
Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost \* \$51,029.27  
\*\* two round trips with haul rig:

Total Roadable Mob/Demob Cost \*\* \$1,301.95  
\*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non- Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.50	2.50
Return Time (Hours):	2.50	2.50
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	6.00	5.00

### **JOB TIME AND COST**

Total job time: 12.00 Hours

Total job cost: \$52,331

### **EQUIPMENT MOBILIZATION/DEMOBILIZATION**

Task description: Mobilize/Demoblize Equipment for Pond Removal

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 182

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-182

User: ZTT

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:**

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

### **NON ROADABLE EQUIPMENT:**

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D9T - 9SU	60.01	\$121.49	\$141.54	1	\$263.03	\$141.54	\$250.00
Cat 627G w/push-pull	43.48	\$126.52	\$123.81	1	\$250.33	\$123.81	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$18.15	\$67.39	1	\$85.54	\$67.39	\$250.00

Subtotals: **\$598.90** **\$332.74** **\$750.00**

### **ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Flatbed Truck, 6x4, 45K GVW	\$76.15	1	\$76.15	\$76.15

Subtotals: **\$76.15** **\$76.15**

### **EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: DELTA  
Total one-way travel distance: 45.00 miles  
Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost \* \$4,793.99

\* two round trips with haul rig:

Total Roadable Mob/Demob Cost \*\* \$171.34

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

Transportation Cycle Time:

	Non- Roadable Equipment	Roadable Equipment
Haul Time (Hours):	1.13	1.13
Return Time (Hours):	1.13	1.13
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	3.25	2.25

### **JOB TIME AND COST**

Total job time: 6.50 Hours

Total job cost: \$4,965

### **EQUIPMENT MOBILIZATION/DEMOBILIZATION**

Task description: Mobilize/Demobilize Equipment for Yearly Site Maintenance

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### **PROJECT IDENTIFICATION**

Task #: 183

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-183

User: ZTT

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:**

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

### **NON ROADABLE EQUIPMENT:**

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D3K LGP - 3P	9.20	\$24.76	\$67.39	10	\$921.50	\$673.90	\$2,500.00
CAT 14M	23.57	\$64.10	\$67.39	5	\$657.45	\$336.95	\$1,250.00

Subtotals: **\$1,578.95** **\$1,010.85** **\$3,750.00**

### **ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
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Subtotals: **\$0.00** **\$0.00**

### **EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region: DELTA  
Total one-way travel distance: 45.00 miles  
Average Travel Speed: 45.00 mph

Total Non-Roadable Mob/Demob Cost \*  
\*\* two round trips with haul rig: \$28,469.10

Total Roadable Mob/Demob Cost \*\*  
\*\* one round trip, no haul rig: \$0.00

#### **Transportation Cycle Time:**

	Non- Roadable Equipment	Roadable Equipment
Haul Time (Hours):	1.00	1.00
Return Time (Hours):	1.00	1.00

Loading Time (Hours):	2.50	NA
Unloading Time (Hours):	2.50	NA
Subtotals:	7.00	2.00

### **JOB TIME AND COST**

Total job time: 14.00 Hours

Total job cost: \$28,469



## BULLDOZER WORK

Task description: Regrade Terror Creek Light-Use Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 241

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-241

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: \$268.57

### MATERIAL QUANTITIES

Initial Volume: 9,800

Swell factor: 1.125

Loose volume: 11,025 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 125 feet

Unadjusted hourly  
production: 1,055.6 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 5 %

Average site altitude: 7,800 feet

Material weight: 2,650 lbs/LCY

Weight description: Decomposed rock - 25% Rock, 75% Earth

Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3513

Adjusted unit  
production: 370.83 LCY/hr  
Adjusted fleet  
production: **370.83** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.724/LCY

Total job time: **29.73** Hours  
Total job cost: **\$7,985**

## BULLDOZER WORK

Task description: Replace Topsoil from Stockpile to Terror Creek Lt-Use Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 242

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-242

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: \$268.57

### MATERIAL QUANTITIES

Initial Volume: 7,400

Swell factor: 1.125

Loose volume: 8,325 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 125 feet

Unadjusted hourly  
production: 1,055.6 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

Average push  
gradient: 5 %

Average site altitude: 7,800 feet

Material weight: 2,650 lbs/LCY

Weight description: Decomposed rock - 25% Rock, 75% Earth

Job Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3513

Adjusted unit  
production: 370.83 LCY/hr  
Adjusted fleet  
production: **370.83** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.724/LCY

Total job time: **22.45** Hours  
Total job cost: **\$6,029**

## SAFEGUARDING UNDERGROUND OPENINGS

Task description: Concrete Plug and Backfill Terror Creek Vent Shaft

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #:

261

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-261

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Concrete Cap	269.00 cf	Shaft closure - concrete cap, poured-in-place (per Cubic Feet)	269.00	CF	\$3.70	\$996.30
Backfill Shaft	6900 cy	Shaft closure - backfilling, by hand	6,900.00	CY	\$15.00	\$103,500.00
- Equipment to Backfill	1717 hr/cy	Cat D7R DS XR Series II	4.00	EA	\$177.10	\$708.40

Job Hours: 40.00

Total Cost: \$105,204.70

## REVEGETATION WORK

Task description: Reseed Add'l Disturbance from Utility Boreholes at Fan Bench

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 301

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-301

User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</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
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	0.39	Cost /Acre:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$455.83</b>
Reseeding Job Cost:	<b>\$80.50</b>
Total Job Cost:	<b>\$536</b>
Job Hours:	<b>1.00</b>

## BULLDOZER WORK

Task description: Regrade Fan Bench - Utility Borehole Mudpit Add'l Dist.

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 302

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-302

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: \$268.57

### MATERIAL QUANTITIES

Initial Volume: 782

Swell factor: 1.165

Loose volume: 911 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 200 feet

Unadjusted hourly  
production: 700.0 LCY/hr

Materials consistency  
description: Compacted fill or embankment 0.9

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

Net correction: 0.3209

Adjusted unit  
production: 224.63 LCY/hr

---

Adjusted fleet  
production: **224.63** LCY/hr

---

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)

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Unit cost: \$1.196/LCY

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Total job time: **4.06** Hours

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Total job cost: **\$1,089**

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## BULLDOZER WORK

Task description: Re-topsoil Pitkin Mesa Pipeline corridor

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 352

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-352

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: **\$268.57**

### MATERIAL QUANTITIES

Initial Volume: 3,227

Swell factor: 1.000

Loose volume: **3,227** LCY

Source of estimated volume: BRL - 2 acres @ 12"

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,243.2 LCY/hr

Materials consistency  
description: Consolidated stockpile 1.0

Average push  
gradient: 20 %

Average site altitude: 7,725 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

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

Net correction: 0.2448

Adjusted unit  
production: 304.34 LCY/hr  
Adjusted fleet  
production: **304.34** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.882/LCY

Total job time: **10.60** Hours  
Total job cost: **\$2,848**

## REVEGETATION WORK

Task description: Reseed Pitkin Mesa Pipeline Corridor

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 353

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-353

User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</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
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$2,337.60</b>
Reseeding Job Cost:	<b>\$412.80</b>
Total Job Cost:	<b>\$2,750</b>
Job Hours:	<b>2.00</b>

## BOREHOLE SEALING WORK

Task description: Seal Well DH-67blw

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #:

369

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-369

User: ZTT

Agency or organization name: DRMS

### UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Cement seal	Portland cement grout ( Bag, material cost only...94 lb. bag)	8.75	360	127.40	bag	\$13.40	\$1,707.16
Casing removal	Exposed casing removal - Calculate Circumference in Linear Feet	8.75	3	2.00	LF	\$3.26	\$6.52
Hole marker	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig Time	ATLAS COPCO ROC D7-11,4.0 in.	NA	NA	12.00	EA	\$232.77	\$2,793.24
Water Truck Time	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$5,302.00

## BOREHOLE SEALING WORK

Task description: Seal CWI-DH-58A

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #:

Date: 10/2/2019

User: ZTT

State: Colorado

County: Delta

Abbreviation: None

Filename: C083-374

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 ( Bag, material cost only...94 lb. bag)	8.75	550	194.37	bag	\$13.40	\$2,604.56
Remove casing	Exposed casing removal - Calculate Circumference in Linear Feet	8.75	3	2.00	LF	\$3.26	\$6.52
Hole marker	Borehole location/identification marker (EA, material cost only)	NA	NA	1.00	EA	\$32.00	\$32.00
Drill Rig Time	ATLAS COPCO ROC D7-11,4.0 in.	NA	NA	12.00	EA	\$229.43	\$2,753.16
Water Truck Time	Water Tanker, 3,500 Gal.	NA	NA	12.00	EA	\$63.55	\$762.60

Job Hours: 12.00

Total Cost: \$6,159.00

## BULLDOZER WORK

Task description: Regrade Section 5 Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 379

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-379

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: \$268.57

### MATERIAL QUANTITIES

Initial Volume: 2,957

Swell factor: 1.165

Loose volume: 3,445 LCY

Source of estimated volume: DRMS - assume 1.5' material over 1.22 ac

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,243.2 LCY/hr

Materials consistency  
description: Consolidated stockpile 1.0

Average push  
gradient: 20 %

Average site altitude: 7,725 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:	0.545	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2152

Adjusted unit  
production: 267.54 LCY/hr  
Adjusted fleet  
production: **267.54** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$1.004/LCY

Total job time: **12.88** Hours  
Total job cost: **\$3,458**

## BULLDOZER WORK

Task description: Re-topsoil Section 5 Road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 380

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-380

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$121.49	NA
Operating Cost/Hour:	\$105.84	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$268.57

Total Fleet Cost/Hour: \$268.57

### MATERIAL QUANTITIES

Initial Volume: 1,478

Swell factor: 1.125

Loose volume: 1,663 LCY

Source of estimated volume: DRMS - 0.75' over 1.22 acres

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly  
production: 1,243.2 LCY/hr

Materials consistency  
description: Consolidated stockpile 1.0

Average push  
gradient: 20 %

Average site altitude: 7,725 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

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

Net correction: 0.2448

Adjusted unit  
production: 304.34 LCY/hr  
Adjusted fleet  
production: **304.34** LCY/hr

**JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.882/LCY

Total job time: **5.46** Hours  
Total job cost: **\$1,467**

## REVEGETATION WORK

Task description: Reseed Section 5 road

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 381

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-381

User: ZTT

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
Indian Ricegrass - Nespar	3.00	9.71	\$26.63
Bluebunch Wheatgrass - Secar	3.00	9.64	\$32.63
Mountain Brome - Bromar	3.00	4.82	\$11.40
Sandberg Bluegrass - VNS	3.00	63.71	\$25.20
Coreopsis, Lance Leafed	1.00	25.58	\$28.55
Western Wheatgrass - Arriba	4.00	10.10	\$26.00
Daisy, Englemann's	1.00	4.94	\$127.40
Prairie Junegrass	2.00	106.31	\$52.00
Golden Banner	1.00	2.00	\$83.00
<b>Totals Seed Mix</b>	<b>21.00</b>	<b>236.80</b>	<b>\$412.80</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
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$590.00</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$95.83
<b>Total Mulch Application Cost/Acre</b>	<b>\$166.00</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:	1.22	Cost /Acre:	\$1,168.80
Estimated Failure Rate:	50%	Cost /Acre*:	\$412.80
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$1,425.94</b>
Reseeding Job Cost:	<b>\$251.81</b>
Total Job Cost:	<b>\$1,678</b>
Job Hours:	<b>2.00</b>

## BULLDOZER WORK

Task description: Distribute Gob Pile #2 cover hauled by T/L

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 45A

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-45A

User: ZTT

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D10T - 10SU

Horsepower: 574

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$140.61	NA
Operating Cost/Hour:	\$135.35	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.24	NA

Total unit Cost/Hour: \$317.20

Total Fleet Cost/Hour: **\$317.20**

### MATERIAL QUANTITIES

Initial Volume: 134,142

Swell factor: 1.000

Loose volume: **134,142** LCY

Source of estimated volume: Volume IX, Appendix A

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 250 feet

Unadjusted hourly  
production: 754.3 LCY/hr

Materials consistency  
description: Loose stockpile 1.2

Average push  
gradient: 0 %

Average site altitude: 6,300 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:	1.200	(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: 357.46 LCY/hr

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Adjusted fleet  
production: **357.46** LCY/hr

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**JOB TIME AND COST**

Fleet size: 1 Dozer(s)

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Unit cost: \$0.887/LCY

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Total job time: **375.26** Hours

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Total job cost: **\$119,033**

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## TRUCK/LOADER TEAM WORK

Task description: Haul Cover Material from Borrow Area #1 to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 45B

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-45B

User: ZTT

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:		CAT 950H
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:	\$19.51	\$27.37	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$33.82	NA	NA	NA	NA
%Utilization-riper:	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	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$101.84	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work:	\$167.86	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$167.86**

### MATERIAL QUANTITIES

Initial volume: 7,200

CCY

Swell factor: 1.165

Loose volume: **8,388**

LCY

Source of estimated volume: Volume IX, Appendix A

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.21	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: **10.97** LCY

#### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.850	Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity:	<b>3.655</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 6300 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: 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment:	0.040	minutes
Adjusted Loader Cycle Time:	<b>0.540</b>	minutes
Net Load Time per Truck:	<b>1.180</b>	minutes

### **Truck Cycle Time:**

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.180</u>	Minutes	Adjusted for site altitude:	<u>1.180</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: 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	5.00	5.00	10.00	1068	0.482

Haul Time: **0.482** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-5.00	5.00	0.00	2938	0.195

Return Time: **0.195** minutes

Total Truck Cycle Time: **3.257** minutes

Loading Tool unit

Production	<u>391.61</u>	LCY/Hour	Adjusted for job efficiency:	<u>325.03</u>	LCY/Hour
Truck Unit Production	<u>202.00</u>	LCY/Hour	Adjusted for job efficiency:	<u>167.66</u>	LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production:	<u>167.66</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>167.66</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u><b>167.66</b></u>	LCY/Hour

### **JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: **50.03** Hours

Unit cost: \$1.001 /LCY Total job cost: **\$8,398**

## TRUCK/LOADER TEAM WORK

Task description: Haul Cover Material from Borrow Area #2 to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 45C

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-45C

User: ZTT

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:	CAT 950H
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:	\$19.51	\$27.37	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$33.82	NA	NA	NA	NA
%Utilization-riper:	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	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$101.84	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work:	\$167.86	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$167.86**

### MATERIAL QUANTITIES

Initial volume: 30,000

CCY

Swell factor: 1.165

Loose volume: **34,950**

LCY

Source of estimated volume: Volume IX, Appendix A

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.21	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: **10.97** LCY

#### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.850	Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity:	<b>3.655</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 6300 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment: 0.040 minutes  
Adjusted Loader Cycle Time: **0.540** minutes  
Net Load Time per Truck: **1.180** minutes

### **Truck Cycle Time:**

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.180</u>	Minutes	Adjusted for site altitude:	<u>1.180</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: 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	750.00	5.00	5.00	10.00	1068	0.716

Haul Time: **0.716** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	750.00	-5.00	5.00	0.00	2938	0.280

Return Time: **0.280** minutes

Total Truck Cycle Time: **3.576** minutes

Loading Tool unit				
Production	<u>391.61</u>	LCY/Hour	Adjusted for job efficiency:	<u>325.03</u> LCY/Hour
Truck Unit Production	<u>183.98</u>	LCY/Hour	Adjusted for job efficiency:	<u>152.70</u> LCY/Hour
Optimal No. of Trucks:	<u>2</u>	Truck(s)	Selected Number of Trucks:	<u>1</u> Truck(s)
	Adjusted hourly truck team production:	<u>152.70</u>	LCY/Hour	
	Adjusted single truck/loader team production:	<u>152.70</u>	LCY/Hour	
	Adjusted multiple truck/loader team production:	<u><b>152.70</b></u>	LCY/Hour	

### **JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<u><b>228.88</b></u>	Hours
Unit cost:	<u>\$1.099</u>	/LCY	Total job cost:	<u><b>\$38,420</b></u>	

## TRUCK/LOADER TEAM WORK

Task description: Haul Cover Material from Borrow Area #3 to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 45D

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-45D

User: ZTT

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:		CAT 950H
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:	\$19.51	\$27.37	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$33.82	NA	NA	NA	NA
%Utilization-riper:	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	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$101.84	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work:	\$167.86	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$167.86**

### MATERIAL QUANTITIES

Initial volume: 5,000

CCY

Swell factor: 1.165

Loose volume: **5,825**

LCY

Source of estimated volume: Volume IX, Appendix A

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.21	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: **10.97** LCY

#### **Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.850	Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity:	<b>3.655</b>	LCY

### **Job Condition Corrections:**

Site Altitude (ft.): 6300 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment:	<u>0.040</u>	minutes
Adjusted Loader Cycle Time:	<b><u>0.540</u></b>	minutes
Net Load Time per Truck:	<b><u>1.180</u></b>	minutes

### **Truck Cycle Time:**

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>1.180</u>	Minutes	Adjusted for site altitude:	<u>1.180</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: 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	1000.00	5.00	5.00	10.00	1068	0.950

Haul Time: **0.950** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-5.00	5.00	0.00	2938	0.365

Return Time: **0.365** minutes

Total Truck Cycle Time: **3.895** minutes

Loading Tool unit

Production 391.61 LCY/Hour

Adjusted for job efficiency: 325.03 LCY/Hour

Truck Unit Production

168.91 LCY/Hour

Adjusted for job efficiency: 140.19 LCY/Hour

Optimal No. of Trucks: 2 Truck(s)

Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 140.19 LCY/Hour

Adjusted single truck/loader team production: 140.19 LCY/Hour

Adjusted multiple truck/loader team production: **140.19** LCY/Hour

## **JOB TIME AND COST**

Fleet size: 1 Team(s)

Total job time: **41.55** Hours

Unit cost: \$1.197 /LCY

Total job cost: **\$6,974**



## TRUCK/LOADER TEAM WORK

Task description: Haul Cover Material from B Portal Storage to Gob Pile #2

Site: Bowie No. 2 Mine

Permit Action: MT5

Permit/Job#: C1996083

### PROJECT IDENTIFICATION

Task #: 45E

State: Colorado

Abbreviation: None

Date: 10/2/2019

County: Delta

Filename: C083-45E

User: ZTT

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:	CAT 950H
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:	\$19.51	\$27.37	NA	NA	NA	NA
Operating cost/hour:	\$46.51	\$33.82	NA	NA	NA	NA
%Utilization-riper:	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	\$40.65	NA	NA	NA	NA
Unit Subtotals:	\$66.02	\$101.84	NA	NA	NA	NA
Number of Units:	4	1	0	0	0	0
Group Subtotals:	Work:	\$365.92	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$365.92**

### MATERIAL QUANTITIES

Initial volume: 14,000

CCY

Swell factor: 1.165

Loose volume: **16,310**

LCY

Source of estimated volume: Volume XI, Appendix A

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:	Decomposed rock - 50% Rock, 50% Earth	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.21	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: **10.64** LCY

#### Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	4.300	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	<b>3.548</b>	LCY

### Job Condition Corrections:

Site Altitude (ft.): 6300 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: 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter	0.00	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less	0.01	(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:	-0.070	minutes
Adjusted Loader Cycle Time:	<b>0.430</b>	minutes
Net Load Time per Truck:	<b>0.960</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	<u>0.50</u>	Minutes	Adjusted for site altitude:	<u>0.500</u>	Minutes
Truck Load Time:	<u>0.960</u>	Minutes	Adjusted for site altitude:	<u>0.960</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:**

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	6500.00	-10.70	3.00	-7.70	1749	3.831
2	3100.00	0.00	3.00	3.00	2824	1.128
3	1000.00	10.00	3.00	13.00	834	0.191

Haul Time: **5.150** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-10.00	3.00	-7.00	2938	0.410
2	3100.00	0.00	3.00	3.00	2874	1.079
3	6500.00	10.70	3.00	13.70	1274	5.147

Return Time: **6.636** minutes

Total Truck Cycle Time: **14.146** minutes

Loading Tool unit

Production	<u>437.36</u>	LCY/Hour	Adjusted for job efficiency:	<u>363.01</u>	LCY/Hour
Truck Unit Production	<u>45.14</u>	LCY/Hour	Adjusted for job efficiency:	<u>37.47</u>	LCY/Hour
Optimal No. of Trucks:	<u>10</u>	Truck(s)	Selected Number of Trucks:	<u>4</u>	Truck(s)

Adjusted hourly truck team production:	<u>149.86</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>149.86</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u><b>149.86</b></u>	LCY/Hour

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<u><b>108.83</b></u>	Hours
Unit cost:	<u>\$2.442</u>	/LCY	Total job cost:	<u><b>\$39,824</b></u>	