STATE OF COLORADO

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

Bowie #1 Midterm Review

1 message

Zuber - DNR, Rob <rob.zuber@state.co.us> Tue, Oct 13, 2020 at 6:49 AM
To: Basil Bear <basilbear@wolverinefuels.com>, Tamme Bishop <tamme.jestover@bresnan.net>

Basil -

Please see the attached document related to the Bowie No. 1 Mine. As always, do not hesitate to call or email me with questions or comments.

Thanks in advance for your action on the items in bold in Section VI. Send an application to the PAP for the Bowie No. 1 Mine, as necessary (we can discuss if it is a minor revision or technical revision). If these items do not necessitate a revision to the PAP for the Bowie No. 1 Mine, please send a letter with a response to each of the items.

Rob

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Bowie1_MT8__with_RCE.pdf
3457K

MIDTERM PERMIT REVIEW (MT-08)
for Bowie Resources, LLC

Bowie No. 1 Mine

Permit No. C-1981-038

Photo of East Mine by R. Zuber, March 2020

October 13, 2020

Virginia Brannon, Director

Prepared by
Robert D. Zuber, P.E.

In Fulfillment of C.R.S. 34-33-115 and the following
Regulations of the Colorado Mined Land Reclamation Board for Coal Mining:
Rules 2.08.3, 2.06.2, 2.06.3, 2.06.5, 2.06.7 and 3.02.2

Introduction

This document presents the results of the Midterm Review of the Bowie No. 1 Mine permit, conducted by the Colorado Division of Reclamation, Mining and Safety (Division). The Bowie No. 1 Mine is owned and operated by Bowie Resources, LLC (BRL). This Midterm Review was conducted to fulfill the requirements of the Colorado Surface Coal Mining Reclamation Act (Act), and Rules 2.08.3, 2.06.2(9), 2.06.3(4), 2.06.5(3), 2.06.7(5), and 3.02.2(4) of the Rules and Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (Rules), which were promulgated to implement the Act.

Rule 2.08.3 requires that the Division conduct a review of each permit issued not later than the middle of the permit term. Based on this review, for good cause shown, the Division may require reasonable revisions to, or modifications of, the permit provisions to ensure compliance with the Act and Regulations.

Rules 2.06.2, 2.06.3, 2.06.5, and 2.06.7 require that during the midterm review, where applicable, experimental practices, mountaintop removal variances, variances from approximate original contour (AOC), and variances from contemporaneous reclamation, respectively, be reviewed by the Division.

Rule 3.02.2(4) requires that the Division review the amount of performance bond liability and the terms of acceptance of the bond every 2½ years.

This Midterm Review consisted of a review of the Bowie No. 1 Mine permit application package and previous Division findings of compliance to ensure that the proposed operation is in compliance with the Rules and Act. The Division also reviewed all subsequent revisions and stipulation responses to ensure that all permit commitments and conditions were being followed. Problems and observations from past Division inspection reports were also considered.

The document has seven sections.

- Section I contains a brief description of the mine history and the surrounding environment.
- Section II contains a summary of permit actions since the last Permit Renewal.
- Section III is a summary of the Division's review of the active stipulations attached to the permit.
- Section IV is a summary of the review of any previously approved experimental practices, mountaintop removal variances, variances from approximate original contour (AOC), and variances from contemporaneous reclamation.
- Section V summarizes any enforcement actions issued since the permit was last renewed, and the current status of any actions that were issued.
- Section VI is a summary of the review and a discussion of any problems identified as a result of this review that are required to be resolved.
- Section VII is a summary of the review of the reclamation cost estimate and the performance bond(s) held by the Division.

Section I - Mine History and the Environment

Mine and Permit Status and History

The Bowie No. 1 Mine was an underground mine which began operating in 1975 and was permitted under the permanent state regulatory program in 1981. The mine was originally called the Orchard Valley Mine and the original permittee of the 1981 permit was Colorado Westmoreland, Inc. (CWI). The permit has been transferred twice: first to Cyprus Orchard Valley Coal Corporation and then to BRL.

The original 1981 permit has been renewed seven times prior to this permit renewal application. Three permit revisions and two technical revisions expanded the original permit area of 2,283.5 acres to 8,859.9 acres. Permit Revision No. 4 entailed a transfer of over 2,000 acres to the Bowie No. 2 Mine and made other significant adjustments, and the revision reduced the permit area to 5,431.0 acres. In recent years, TR-59 increased the permit acreage by 4.2 acres because of adjustments to the boundary of the loadout, and TR-60 reduced the permit area by 400 acres because of another transfer of area to the Bowie No. 2 Mine. The current permit area for the Bowie No. 1 Mine is 5,035.2 acres.

The mine has been inactive for many years (the last mining was done in December 1997), and much of the surface area has been reclaimed. The post-mining land uses are grazing for livestock and wildlife at the mine site and orchard land at the loadout facilities.

Six bond release applications have been submitted for the Bowie No. 1 Mine. The first, SL-1, was a Phase I bond release request for the West Mine area that was subsequently withdrawn by the operator. SL-2, approved in 2004, granted Phase I bond release on the West Mine area. SL-3, approved in 2008, granted Phase I bond release on the Unit Train Loadout. SL-4 approved in 2013, was a Phase I bond release request for 40.15 acres at the East Mine. The acreage was increased to 70 acres at the East mine for backfilling and grading the East Mine. SL-5 was approved in 2016. The bond release was for 1.0 acres of Phase I at the West Mine and a total of 23.3 acres of Phase II, 10.2 acres at the Run of Mine Area and 13.1 acres at the West Mine. SL-6 was approved in February of 2018. SL-6 approved the release of 2.31 acres for Phase I associated with five ponds at the East Mine and the one pond at the Run of Mine Area. SL-6 also released 58.84 acres for Phase II at the East Mine.

Description of Location, Land Use, Topography, Climate, Vegetation, Soils, and Wildlife

The Bowie No. 1 Mine is situated in the northeastern portion of Delta County, Colorado. The majority of the mine permit area is located approximately four miles north of Paonia, Colorado, along Steven's Gulch Road. The coal loadout facilities are located approximately one mile northeast of Paonia along State Highway No. 133. The permit area is located in portions of Sections 1, 2, 10, 11, 12, 13, 14, 15,

22, 23, 24, and 25, Township 13 South, Range 92 West and portions of Sections 17, 18, 19, 29, 30, 31, and 32, Township 13 South, Range 91 West of the 6th Principal Meridian.

The pre-mining land use classifications of the mine area are:

- Grazing land for domestic livestock and wildlife,
- Orchard land in the area of the loadout, and
- Previous mining disturbances.

BRL plans to return the land to grazing for livestock and wildlife for the mine sites, and to orchard land for the loadout facilities. Information pertaining to land use is presented in the permit application package (PAP): Sections 2.04.3 and 2.05.5 of Volume 1, the land use appendix in Volume 9, and Map No. 9-1.

The topography of the main portion of the mine (including the East Mine, the West Mine, storage areas, and the affected area above the mine workings) is characterized by steeply sloping mountains. The loadout and coal storage near the loadout are located on much flatter terrain close to the North Fork of the Gunnison River (the predominate part of the loadout is approximately 1,000 feet from the river and other portions are closer). The permit boundary for all of the mine, including the loadout, is shown on Map 4-1, Hydrologic Reconnaissance, in the permit application package (PAP). Map 4-1 also shows other pertinent features including roads, topography, and drainage basin boundaries.

The climate of the mine area is semi-arid and strongly influenced by microclimatic features including slope aspect, elevation, soil type, soil moisture content and vegetation. The average annual temperature is 49.0°F at Paonia, with an average monthly mean of 24.5°F in January and 71.9°F in July. At Paonia, the annual precipitation is 8 to 15 inches. Prevailing winds are from the south-southeast. Near Paonia, the strong drainage wind precludes frost pockets, thus creating a favorable microclimate for fruit tree farming. Information pertaining to climate is presented in the PAP: Section 2.04 of Volume 1 and in the Climatology and Wind Direction Appendix of Volume 9.

The vegetation of the disturbed areas at the Bowie No. 1 Mine include communities dominated by Gambel oak and serviceberry as well as pinon-juniper communities, where Utah juniper dominates over pinon pine. Other communities disturbed to a lesser degree include agriculture (orchards), mixed shrub, and riparian. No threatened or endangered plant species have been identified on the permit area. Information pertaining to vegetation baseline studies is presented in the PAP: Section 2.04 of Volume 1 and the Vegetation Appendix of Volume 9A.

The natural soil characteristics within the surface disturbance areas of the mine are generally deep. Generally, available water capacities are high, reflecting the potential of these soils to store water for plant use. The area is somewhat susceptible to landslides (especially in the steep topography of the East Mine bench area), and the continual sloughing of colluvial material in this area impairs horizon development. Topsoil layers at the existing facilities of the East Mine are shallow, ranging from about two inches to eight inches; surface textures are generally loams or clay loams with subsoils ranging

from clay loams to clays. West Mine topsoil layers are much deeper, ranging from two feet to four feet in many places. Information pertaining to soil resources and their inventory is presented in the PAP: Section 2.04 of Volume 1 and the Soils Appendix of Volume 9.

Wildlife resources in the area include important winter range for both elk and deer. Golden eagles have been nesting near the mine site for several years, but no threatened or endangered wildlife species have been observed. The North Fork of the Gunnison River contains 12 species of fish, including three species of game fish (rainbow trout, brown trout, and northern pike). Information pertaining to fish and wildlife resources are in the PAP: Section 2.04 of Volume 1 and the Wildlife Appendix, Volume 9A.

Description of the Geology and Hydrology of the Mine Area

The Somerset Coal Field lies on the southeast margin of the Piceance Basin and just south of Grand Mesa. The sedimentary strata exposed in the Somerset Coal Field dip at 3° to 5° to the north and northeast, and range in age from late Cretaceous to early Tertiary. Coal is produced from the Mesaverde Formation, a 2,500-foot-thick sequence of sandstone, shale and coals overlain by the Ohio Creek conglomerate and underlain by the Mancos Shale. The Mesaverde Formation is composed of four members which are, in order of decreasing age, the Rollins Sandstone, the Lower and Upper Coal members and the Barren member. Information on local and regional geology can be found in the PAP Section 2.04.6 of Volume 1. Maps 2-1, 2-2, 2-7, 2-8, 2-11, 2-12 and 6A-8 identify pertinent geologic features. Waste rock geochemical analyses can be found in Volume 6A.

Three categories of potential aquifers occur in the general area. These are alluvial and terrace deposits associated with the North Fork of the Gunnison River, the localized shallow alluvial/colluvial areas in the stream drainages, and ground water in the lenticular sandstones and the Rollins Sandstone of the Mesaverde Formation. The most significant occurrence of groundwater in the general area is associated with the alluvium of the North Fork of the Gunnison River, located approximately two miles southeast of the mine portals and 1,500 feet lower in elevation. Significant alluvial sand and gravel deposits averaging 34 feet thick exist along the river from the mouth of Terror Creek to the confluence with the Gunnison River. There are numerous wells in the area which draw water from this alluvium. Groundwater information can be found Sections 2.04 and 2.05.6 of Volume 1 of the PAP.

The Bowie No. 1 Mine permit area is drained by East Roatcap Creek, Steven's Gulch, Coal Gulch, and Terror Creek, all of which are tributaries to the North Fork of the Gunnison River. Terror Creek is a perennial stream with an aquatic community that includes some trout; it has a high gradient channel with riparian vegetation and alluvium confined to narrow bands along the channel. The three other creeks are intermittent to ephemeral drainages that only flow part of the year. There are several springs and ponds within the permit and adjacent area of the Bowie No. 1 Mine; most or all appear to

be intermittent. Surface water information is found in Volume 1, Sections 2.04 and 2.05.6, and in Volume 4 of the PAP.

Description of the Operation and Reclamation Plan

The Bowie No. 1 Mine is an underground mine that was in operation from 1975 to 1997. The operator, BRL, has ceased mining operations, and the mine is in the process of being reclaimed. There are three major disturbed areas within the permit boundary:

- The East Mine, including portals, the main offices, crushing and screening facilities, and storage and warehouse areas.
- The West Mine, including portals, a small maintenance facility, a ventilation shaft and water tank.
- The coal loadout facilities between the North Fork of the Gunnison River and State Highway 133, with a siding on the other (south) side of the river.

The mine utilized the room and pillar mining method of extracting coal. The general direction of mining was northward to extract coal from the D seam.

The approved reclamation plan required that the portals be backfilled, all surface facilities removed, the mine benches recontoured, the loadout regraded to approximate original contour, and all areas revegetated in accordance with the revegetation plan.

All structural demolition, backfilling, and grading operations have been completed at the East Mine.

At the West Mine, all structural demolition has been completed, and most of the backfilling and grading has been completed. The East Roatcap Creek culvert and two overlying sediment ponds still need to be removed. After these structures are removed, the cover material over the culvert will be graded back onto the hillslope, and the East Roatcap Creek drainage channel will be reconstructed.

A significant portion of the structural demolition has occurred at the loadout. However, additional work remains within the reclamation plan. This includes removal of the shop, removal of railroad tracks, removal of over 600 feet of a 60-inch culvert, and bridge reclamation. Also, grading and seeding are required in the approved plan for the loadout.

The temporary highway coal stockpile area needs to have the spur line and sediment pond removed and the soil from the road overpass redistributed to the cut slopes.

Section II - Revisions to the Permit

The following revisions have been processed since the last renewal of the Bowie No. 1 Mine permit application package (RN-07 issued in May 2018).

MR-137 was received on 29 October 2018. This revision updated ownership and control information for the permittee's parent company and was approved and issued on 6 November 2018. MR-138 was received on 4 February 2020. This revision incorporated three wells into the groundwater monitoring plan and was approved and issued on 11 February 2020.

TR-63 was received on 22 January 2018. It revised the revegetation success standard. This revision was approved on 25 April 2018 and issued on 15 May 2018. TR-64 was received on 28 September 2018. It added the reclamation plan for West Mine ponds. This revision was approved on 3 May 2019 and issued on 21 May 2019. TR-65 was received on 21 December 2018. It reduced the number of monitoring sites for surface water and groundwater. This revision was approved on 17 January 2019 and issued on 5 February 2019.

Section III - Status of Stipulations

The stipulation history for the Bowie No. 1 Mine was reviewed as part of the midterm review. Any stipulations associated with this permit and issued over the life of this operation that are not discussed in this midterm review have been complied with, terminated, or withdrawn. No new stipulations have been imposed since the 2018 renewal (RN-07).

One stipulation has been complied with since the renewal in 2018:

Stipulation No. 59:
BOWIE RESOURCES, LLC (BRL) SHALL SUBMIT AN APPLICATION FOR A TECHNICAL REVISION ADDRESSING THE DESIGN FOR RECONSTRUCTION OF THE AFFECTED SEGMENT OF EAST ROATCAP CREEK, IN ACCORDANCE WITH RULE 4.05.4. THE REVISION MUST BE APPROVED AND ISSUED BY THE DIVISION PRIOR TO COMMENCEMENT OF ANY RECLAMATION ACTIVITIES RELATED TO PONDS W-1 AND W-2 AT THE WEST MINE.

Stipulation 59 was designated as complied with on September 28, 2018 when BRL submitted TR-64. (This revision was approved and issued by the Division in May of 2019.)

At the time of this midterm review, there are two active stipulation attached to the permit: Stipulation 26 and Stipulation 29.

Stipulation 26
ONE YEAR AFTER THE COMPLETION OF RECLAMATION ACTIVITIES AT THE LOADOUT, THE OPERATOR SHALL COMPARE THE SOIL CHARACTERISTICS OF THE RECLAIMED AREA WITH THE ADJACENT UNDISTURBED ORCHARD AREAS TO VERIFY THAT THE HYDROLOGIC FUNCTION OF FLOOD IRRIGABILITY HAS BEEN RESTORED. SUCH COMPARISON SHOULD BE IN THE FORM OF INFILTRATION, PERMEABILITY AND TEXTURE STUDIES.

Since the loadout has not been reclaimed, Stipulation No. 26 will remain active.

Stipulation 29
THE OPERATOR SHALL CONTINUE TO SUBMIT TO THE DIVISION AN ANNUAL REPORT OF INFLOWS, DISCHARGES, AND CONSUMPTION OF WATER WITHIN THE MINE. THIS REPORT IS TO INCLUDE A MINE WORKINGS MAP SHOWING THE LOCATION AND QUANTITY OF INFLOWS; A TABLE KEYED TO THE MINE MAP WHICH SHALL CONTAIN THE SOURCE (I.E., FAULT, FRACTURES, ETC.), QUANTITY, DURATION AND QUALITY (I.E., PH, ELECTRO-CONDUCTIVITY AND TERMPERATURE) OF ALL MEASURABLE INFLOWS; A TABLE CONTAINING RECORDS OF WATER IMPORTED FOR USE WITHIN THE MINE; A DISCUSSION OF THE WATER BALANCE.

Stipulation 29 remains active.

Section IV – Permit Variances and Specific Approvals

The Bowie No. 1 Mine permit does not include a variance under Rules 2.06.2 (experimental practices), 2.06.3 (mountaintop removal), or 2.06.7 (variance from contemporaneous reclamation for combined surface and underground operations). The Bowie No. 1 Mine has obtained a variance from the requirement for restoration of affected lands to their approximate original contour (AOC) in accordance with Rules 2.06.5 and 4.27. The variance was granted under the 1981 permit and was reaffirmed with RN-07. The variance applies to the mine benches only and was granted due to a demonstration that backfilling the benches to AOC on the bench slopes would not achieve the required slope stability factor of 1.3 (see permit Volumes 6 and 6A, Stability Analysis, for complete discussion).

Section V - Enforcement Actions

The Division has taken no enforcement actions since the renewal in 2018.

Section VI - Identified Issues and Required Revisions

1. **If there have been any changes to the ownership and control information for BRL since RN-07, BRL needs to provide updated identification of interests information as required by Rule 2.03.4**.
2. **Per Rules 2.04.11(4) and 2.05.6(2), please update T&E species and discuss potential impacts to current State and Federal Threatened and Endangered plant and animal species lists.** The Federal and State listed species of concern may have changed since the last revision. To find the most up to date lists, please reference the USFWS and Colorado CPW websites.

Section VII – Reclamation Liability and Performance Bonding

With this midterm review, the Division updated the reclamation cost estimate, and the resulting amount is $1,639,674. The increase from the previous reclamation cost estimate ($1,463,269 from bond release SL-06) is due to general inflation and large increases in the costs for sealing of boreholes. [Note that RN-07 was issued shortly after SL-06, and an additional reclamation cost estimate was not determined to be necessary with the renewal.]

As explained in the findings document for SL-06, Rule 3.03.1(2) limits the amount of a bond release based on percentages of a task. For example, no more than 65 percent of a bond amount for a given area may be released due to backfilling, grading, and drainage control; the rest of the bond must be retained for the other reclamation requirements. Based on this rule, with SL-06 the Division determined that the reclamation liability for mining operations at the Bowie No. 1 Mine is $2,779,202 (significantly higher than the reclamation cost estimate). This is the current liability for the mine. The Division currently holds two Corporate Sureties with a total amount of $2,880,000 for the Bowie No. 1 Mine, and *additional bond is not required*.

This concludes the 2020 Midterm Review of the Bowie No. 1 Mine. *Please submit any required revision applications responding to the issues outlined in Section VI on or before December 15, 2020*.

RECLAMATION COST ESTIMATE

COST SUMMARY WORK

Task description: **MT-08 Cost Summary**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-000
User: RDZ

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
017	Backfill Orchard Valley West Mine Bench	DOZER	4	5.92	$9,400
019	Regrade Drill Pads from MR-124 and 125 and TR-38, 49 and 50	DOZER	4	3.54	$5,624
041	Rip Roads	RIPPER	4	0.17	$278
049	Regrade OVM Light Access Road	EXCAVATE	1	4.36	$730
052	Regrade Old Waste Disposal Road	EXCAVATE	1	8.32	$1,395
054	Finish Grade Lower Waste Disposal Road	GRADER	1	0.06	$10
059	Regrade Light Use Roads from MR-125 and TR-38, 49 and 50	DOZER	4	18.82	$29,893
064	Finish Grade Upper Waste Disposal Road	GRADER	1	0.17	$28
065	Finish Grade Crusher and Screening Road	GRADER	1	0.06	$10
079	Establish Irrigation Ditch at Storage	EXCAVATE	1	1.70	$285
093	Backfill and Regrade Coal Stockpile Pond	DOZER	4	0.19	$296
095	Backfill and Regrade Pond W-1	DOZER	4	0.52	$796
096	Backfill and Regrade Pond W-2	DOZER	4	0.52	$796
102	Replace topsoil fm stockpile to OVWM resdisturbance area	DOZER	4	9.75	$15,010
104	Replace Topsoil from Stockpile to OVWM Vent Shaft Access	DOZER	4	2.85	$4,380
110	Replace Topsoil from Stockpile to Drill Pads	DOZER	4	1.42	$2,192
111	Replace Topsoil from Stockpile Light-Use Roads to Drill Pads	DOZER	4	4.38	$6,743
112	Replace Topsoil from Stockpile to Pond W-1	DOZER	4	0.29	$441
113	Replace Topsoil from Stockpile to Pond W-2	DOZER	4	0.29	$441
125	Plug and Seal all Boreholes	BOREHOLE	1	177.00	$112,122
130	Reseed OVM - No Phase II Release	REVEGE	1	119.00	$10,369
130A	Reseed OVM - Phase II Release Areas (ROM & 58.4 ac from OVM)	REVEGE	1	11.00	$254,944
131	Reseed OVWM - Phase II Released	REVEGE	1	26.00	$49,339
131A	Reseed OVWM - NoPhase II Release	REVEGE	1	9.00	$20,200
137	East Mine Crushing and Screening Level	DEMOLISH	1	40.00	$3,733
146	Mobilize/Demobilize Equipment for Initial Reclamation	MOBILIZE	1	10.28	$44,314
147	Mobilize/Demobilize Equipment for Pond Cleaning	MOBILIZE	1	10.28	$2,926
148	Mobilize/Demobilize Equipment for Pond Removal	MOBILIZE	1	10.28	$4,101
149	Mobilize/Demobilize Equipment for Site Maintenance	MOBILIZE	1	10.28	$15,625

158	YEARLY SITE MNTNC	SITEMAINTENANCE	1	0.00	$96,348
201	Seal Loadout Wells	BOREHOLE	1	177.00	$6,259
202	Demolish and Remove all Structures at Train Loadout	DEMOLISH	1	175.00	$381,475
204	Haul Footprint of Loadout Stockpiles to Refuse Area	TRUCK1	1	4.37	$8,871
205	Rip Coal Storage/Loadout Area	RIPPER	4	0.63	$1,011
206	Excavation/Grading at Storage Area and Loadout	DOZER	4	34.33	$54,539
207	Grade Railroad Spur	DOZER	4	50.43	$80,105
208	Finish Grade Railroad Spur	GRADER	1	16.26	$2,495
209	Replace Topsoil from Stockpile to Truck Dump Station	DOZER	4	0.59	$945
210	Reseed Train Loadout and Coal Stockpile Areas	REVEGE	1	80.00	$49,079
211	Remove Coal Stockpile Pond	DOZER	4	0.19	$305
212	Remove Train Loadout Pond	DOZER	4	1.58	$2,511
		SUBTOTALS:		**1026.83**	**$1,280,364**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$25,863
Performance bond:	1.05	Total =	$13,444
Job superintendent:	513.42	Total =	$35,708
Profit:	10.00	Total =	$128,036
		TOTAL O & P =	$203,052
		CONTRACT AMOUNT (direct + O & P) =	$1,483,416

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$500	Total =	$500
Engineering work and/or contract/bid preparation:	6.00	Total =	$89,005
Reclamation management and/or administration:	4.50		$66,754
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$359,310
		TOTAL BOND AMOUNT (direct + indirect) =	**$1,639,674**

BULLDOZER WORK

Task description: **Backfill Orchard Valley West Mine Bench**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 017 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-017
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 2,823
Swell factor: 1.165
Loose volume: **3,289** LCY

Source of estimated volume: Regrading 3.5 acres, 0.50' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 400 feet
Unadjusted hourly production: 497.3 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 10 %
Average site altitude: 7,300 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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: 138.95 LCY/hr
Adjusted fleet production: **555.8** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $2.858/LCY

Total job time: **5.92** Hours
Total job cost: **$9,400**

BULLDOZER WORK

Task description: **Regrade Drill Pads from MR-124 and 125 and TR-38, 49 and 50**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 019 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-019
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 8,700
Swell factor: 1.250
Loose volume: **10,875** LCY

Source of estimated volume: Division Estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 2,748.7 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 10 %
Average site altitude: 7,850 feet

Material weight: 2,900 lbs/LCY

Weight description: User Provided

Job Condition Correction Factor		Source
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: 767.99 LCY/hr

Adjusted fleet production: **3071.96** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)

Unit cost: $0.517/LCY

Total job time: **3.54** Hours

Total job cost: **$5,624**

BULLDOZER RIPPING WORK

Task description: **Rip Roads**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 041 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-041
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper Ownership Cost/Hour:	$20.48	NA
Ripper Operating Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$397.13	

Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 0.55 acres Rip Depth (ft): 2.00 Volume: 1,775 BCY or CCY

Source of estimated quantity: Map 8-1

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	2.87	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:	7,000	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.79 Acres/hr
Adjusted Hourly Fleet Production: **3.14** Acres/hr

JOB TIME AND COST

Fleet size: 4 Grader(s) Total job time: **0.17** Hours

Unit cost: $505.373 Per acre Total job cost: **$278**

HYDRAULIC EXCAVATOR WORK

Task description: **Regrade OVM Light Access Road**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 049 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-049
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick
Attachment 1: ROPS Cab

Horsepower: 268
Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$60.67	NA
Operating Cost/Hour:	$69.53	100
Operator Cost/Hour:	$37.32	NA
Total Unit Cost/Hour:	$167.52	

Total Fleet Cost/Hour: $167.52

MATERIAL QUANTITIES

Initial volume: 977 CCY Swell factor: 1.330
Loose volume: **1,299** LCY

Source of estimated volume: Map 8-7
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.321 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 2.26 LCY (heaped)
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity: **1.92** LCY

Job Condition Correction Factors Site Altitude: 7000 feet

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

Unadjusted Hourly Unit Production: 359.07 LCY/Hour
Adjusted Hourly Unit Production: 298.02 LCY/Hour
Adjusted Hourly Fleet Production: **298.02** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: **4.36** Hours

Unit cost: $0.562 /LCY Total job cost: **$730**

HYDRAULIC EXCAVATOR WORK

Task description: **Regrade Old Waste Disposal Road**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 052 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-052
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick
Attachment 1: ROPS Cab

Horsepower: 268
Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$60.67	NA
Operating Cost/Hour:	$69.53	100
Operator Cost/Hour:	$37.32	NA
Total Unit Cost/Hour:	$167.52	

Total Fleet Cost/Hour: $167.52

MATERIAL QUANTITIES

Initial volume: 1,866 CCY Swell factor: 1.330
Loose volume: **2,482** LCY

Source of estimated volume: Map 8-1
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.321 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 2.26 LCY (heaped)
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity: **1.92** LCY

Job Condition Correction Factors Site Altitude: 7000 feet

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

Unadjusted Hourly Unit Production: 359.07 LCY/Hour
Adjusted Hourly Unit Production: 298.02 LCY/Hour
Adjusted Hourly Fleet Production: **298.02** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: **8.33** Hours

Unit cost: $0.562 /LCY Total job cost: **$1,395**

MOTOR GRADER WORK

Task description: **Finish Grade Lower Waste Disposal Road**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 054 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-054
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 14M Horsepower: 259
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$65.89	NA
Operating Cost/Hour:	$58.96	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$153.41	
Total Fleet Cost/Hour:	**$153.41**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.10 acres

Source of estimated acreage: Map 8-1

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 12.10 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 10.10 feet
Unadjusted Hourly Unit Production: 1.8364 acres/hour

Job Condition Correction Factors Site Altitude: 7000 feet

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

Adjusted Hourly Unit Production: 1.5609 acres/Hour
Adjusted Hourly Fleet Production: **1.5609** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.06** Hours

Unit cost: $98.28 per acre Total job cost: **$10**

BULLDOZER WORK

Task description: **Regrade Light Use Roads from MR-125 and TR-38, 49 and 50**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 059 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-059
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 18,280
Swell factor: 1.250
Loose volume: **22,850** LCY

Source of estimated volume: Map 8-1; Permit Volume 1, page 53
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: 7,850 feet

Material weight: 2,900 lbs/LCY

Weight description: User Provided

Job Condition Correction Factor		Source
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: $1.308/LCY

Total job time: **18.82** Hours
Total job cost: **$29,893**

MOTOR GRADER WORK

Task description: **Finish Grade Upper Waste Disposal Road**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 064 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-064
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 14M Horsepower: 259
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$65.89	NA
Operating Cost/Hour:	$58.96	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$153.41	

Total Fleet Cost/Hour: **$153.41**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.28 acres

Source of estimated acreage: Map8-1

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 12.10 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 10.10 feet
Unadjusted Hourly Unit Production: 1.8364 acres/hour

Job Condition Correction Factors Site Altitude: 7100 feet

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

Adjusted Hourly Unit Production: 1.5609 acres/Hour
Adjusted Hourly Fleet Production: **1.5609** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.18** Hours

Unit cost: $98.28 per acre Total job cost: **$28**

MOTOR GRADER WORK

Task description: **Finish Grade Crusher and Screening Road**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 065 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-065
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 14M Horsepower: 259
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$65.89	NA
Operating Cost/Hour:	$58.96	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$153.41	

Total Fleet Cost/Hour: **$153.41**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.10 acres

Source of estimated acreage: Map8-1

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 12.10 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 10.10 feet
Unadjusted Hourly Unit Production: 1.8364 acres/hour

Job Condition Correction Factors Site Altitude: 7000 feet

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

Adjusted Hourly Unit Production: 1.5609 acres/Hour
Adjusted Hourly Fleet Production: **1.5609** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.06** Hours

Unit cost: $98.28 per acre Total job cost: **$10**

HYDRAULIC EXCAVATOR WORK

Task description: **Establish Irrigation Ditch at Storage**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 079 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-079
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick
Attachment 1: ROPS Cab

Horsepower: 268
Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$60.67	NA
Operating Cost/Hour:	$69.53	100
Operator Cost/Hour:	$37.32	NA
Total Unit Cost/Hour:	$167.52	

Total Fleet Cost/Hour: $167.52

MATERIAL QUANTITIES

Initial volume: 275 CCY Swell factor: 1.330
Loose volume: **366** LCY

Source of estimated volume: 1998 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: 0.445 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 2.26 LCY (heaped)
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity: **1.92** LCY

Job Condition Correction Factors Site Altitude: 7000 feet

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

Unadjusted Hourly Unit Production: 259.01 LCY/Hour
Adjusted Hourly Unit Production: 214.98 LCY/Hour
Adjusted Hourly Fleet Production: **214.98** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: **1.70** Hours

Unit cost: $0.779 /LCY Total job cost: **$285**

BULLDOZER WORK

Task description: **Backfill and Regrade Coal Stockpile Pond**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 093 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-093
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 565
Swell factor: 1.330
Loose volume: **751** LCY

Source of estimated volume: Map 8-1; Permit Volume 1, page 33
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 2,748.7 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 7,200 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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: 976.89 LCY/hr
Adjusted fleet production: **3907.56** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.394/LCY

Total job time: **0.19** Hours
Total job cost: **$296**

BULLDOZER WORK

Task description: **Backfill and Regrade Pond W-1**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 095 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-095
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 1,200
Swell factor: 1.165
Loose volume: **1,398** 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: 7,100 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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: 675.59 LCY/hr
Adjusted fleet production: **2702.36** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.570/LCY

Total job time: **0.52** Hours
Total job cost: **$796**

BULLDOZER WORK

Task description: **Backfill and Regrade Pond W-2**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 096 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-096
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 1,200
Swell factor: 1.165
Loose volume: **1,398** 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: 7,100 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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: 675.59 LCY/hr
Adjusted fleet production: **2702.36** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.570/LCY

Total job time: **0.52** Hours
Total job cost: **$796**

BULLDOZER WORK

Task description: **Replace topsoil fm stockpile to OVWM resdisturbance area**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 102 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-102
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 4,235
Swell factor: 1.000
Loose volume: **4,235** LCY

Source of estimated volume: 3..5 ac @ 9" replacement depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 350 feet
Unadjusted hourly production: 556.8 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 30 %
Average site altitude: 7,200 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

Job Condition Correction Factor		Source
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:	0.298	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.1950

Adjusted unit production: 108.58 LCY/hr
Adjusted fleet production: **434.32** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $3.544/LCY

Total job time: **9.75** Hours
Total job cost: **$15,010**

BULLDOZER WORK

Task description: **Replace Topsoil from Stockpile to OVWM Vent Shaft Access**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 104 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-104
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 3,300
Swell factor: 1.115
Loose volume: **3,680** LCY

Source of estimated volume: Permit Volume 1, Page 64
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 250 feet
Unadjusted hourly production: 754.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 10 %
Average site altitude: 7,100 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4286

Adjusted unit production: 323.29 LCY/hr
Adjusted fleet production: **1293.16** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $1.190/LCY

Total job time: **2.85** Hours
Total job cost: **$4,380**

BULLDOZER WORK

Task description: **Replace Topsoil from Stockpile to Drill Pads**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 110 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-110
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 5,455
Swell factor: 1.230
Loose volume: **6,710** LCY

Source of estimated volume: Division Estimate
Source of estimated swell factor: CAT Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 2,748.7 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 10 %
Average site altitude: 7,310 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4286

Adjusted unit production: 1,178.09 LCY/hr

Adjusted fleet production: **4712.36** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)

Unit cost: $0.327/LCY

Total job time: **1.42** Hours

Total job cost: **$2,192**

BULLDOZER WORK

Task description: **Replace Topsoil from Stockpile Light-Use Roads to Drill Pads**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 111 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-111
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 6,635
Swell factor: 1.230
Loose volume: **8,161** LCY

Source of estimated volume: Division 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: 7,310 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4924

Adjusted unit production: 465.81 LCY/hr
Adjusted fleet production: **1863.24** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.826/LCY

Total job time: **4.38** Hours
Total job cost: **$6,743**

BULLDOZER WORK

Task description: **Replace Topsoil from Stockpile to Pond W-1**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 112 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-112
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 530
Swell factor: 1.115
Loose volume: **591** LCY

Source of estimated volume: Division 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: 7,310 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

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:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5453

Adjusted unit production: 515.85 LCY/hr
Adjusted fleet production: **2063.4** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.746/LCY

Total job time: **0.29** Hours
Total job cost: **$441**

BULLDOZER WORK

Task description: **Replace Topsoil from Stockpile to Pond W-2**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 113 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-113
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $384.85
Total Fleet Cost/Hour: **$1,539.39**

MATERIAL QUANTITIES

Initial Volume: 530
Swell factor: 1.115
Loose volume: **591** LCY

Source of estimated volume: Division 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: 7,310 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

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:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5453

Adjusted unit production: 515.85 LCY/hr
Adjusted fleet production: **2063.4** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.746/LCY

Total job time: **0.29** Hours
Total job cost: **$441**

BOREHOLE SEALING WORK

Task description: **Plug and Seal all Boreholes**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 125 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-125
User: RDZ

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom plug for 2.5" wells	PVC plug - 2 in. diameter borehole	2.5	na	9.00	EA	$24.09	$216.81
Fiil Holes with Concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	2.5	na	3.00	bag	$15.95	$47.85
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	9.00	EA	$35.50	$319.50
Cut Casing at Surface	Exposed casing removal - Calculate Circumference in Linear Feet	2.5	NA	9.00	LF	$3.26	$29.34
Drill Rig Time	SCHRAMM T450WS	na	na	9.00	EA	$415.81	$3,742.29
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	9.00	EA	$71.44	$642.96
Bottom Plug for 5" Wells	PVC plug - 6 in. diameter borehole	6	na	13.00	EA	$60.19	$782.47
Fill Holes with concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	6	na	219.00	bag	$15.95	$3,493.05
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	13.00	EA	$35.50	$461.50
Cut Casing at Surface	Exposed casing removal - Calculate Circumference in Linear Feet	6	na	20.00	LF	$3.26	$65.20
Drill Rig Time	SCHRAMM T450WS	na	na	52.00	EA	$415.81	$21,622.12
Bottom Plug for Shallow 6" wells	PVC plug - 6 in. diameter borehole	6	na	3.00	EA	$60.19	$180.57
Fill Hole with concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	6	na	20.00	bag	$15.95	$319.00
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	3.00	EA	$35.50	$106.50
Cut Casing at Surface	Exposed casing removal - Calculate Circumference in Linear Feet	6	na	5.00	LF	$3.26	$16.30

Drill Rig Time	SCHRAMM T450WS	na	na	12.00	EA	$415.81	$4,989.72
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	12.00	EA	$71.44	$857.28
Bottom Plug for Intermediate 6" Well	PVC plug - 6 in. diameter borehole	6	na	1.00	EA	$60.19	$60.19
Fill Holes with Concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	6	na	51.00	bag	$15.95	$813.45
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	1.00	EA	$35.50	$35.50
Cut Casing at Surface	Exposed casing removal - Calculate Circumference in Linear Feet	6	na	2.00	LF	$3.26	$6.52
Drill Rig Time	SCHRAMM T450WS	na	na	8.00	EA	$415.81	$3,326.48
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	8.00	EA	$71.44	$571.52
Bottom Plug for Deep 6" Wells	PVC plug - 6 in. diameter borehole	6	na	2.00	EA	$60.19	$120.38
Fill Holes with Concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	6	na	207.00	bag	$15.95	$3,301.65
Borehole Markers	Borehole location/identification marker (EA, material cost only)	na	na	2.00	EA	$35.50	$71.00
Cut Casing At Surface	Exposed casing removal - Calculate Circumference in Linear Feet	6	na	3.00	LF	$3.26	$9.78
Drill Rig Time	SCHRAMM T450WS	na	na	24.00	EA	$415.81	$9,979.44
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	24.00	EA	$71.44	$1,714.56
Bottom Plug GVB-10A - B	PVC plug - 10 in. diameter borehole	10	na	2.00	EA	$112.95	$225.90
Fill Holes with Concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	na	na	330.00	bag	$15.95	$5,263.50
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	2.00	EA	$35.50	$71.00
Cut Casing At Surface	Exposed casing removal - Calculate Circumference in Linear Feet	10	na	5.00	LF	$3.26	$16.30
Drill Rig Time	SCHRAMM T450WS	na	na	16.00	EA	$415.81	$6,652.96
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	16.00	EA	$71.44	$1,143.04
Bottom Plug Ex. Holes TR-49 & MR-124	PVC plug - 10 in. diameter borehole	10	na	3.00	EA	$112.95	$338.85
Fill Holes with Concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	na	na	1,065.00	bag	$15.95	$16,986.75
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	3.00	EA	$35.50	$106.50

Cut Casing at Surface	Exposed casing removal - Calculate Circumference in Linear Feet	10	na	8.00	LF	$3.26	$26.08
Drill Rig Time	SCHRAMM T450WS	na	na	48.00	EA	$415.81	$19,958.88
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	48.00	EA	$71.44	$3,429.12

Job Hours: **177.00** **Total Cost**: **$112,122.00**

REVEGETATION WORK

Task description: **Reseed OVM - No Phase II Release**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 130 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-130
User: RDZ

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
8-24-24, 10-15-15, 10-20-20	30.00	pound	$0.32	$9.45
			Total Fertilizer Materials Cost/Acre	**$9.45**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$37.03
Total Fertilizer Application Cost/Acre	**$37.03**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Total Tilling Cost/Acre	**$107.16**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arizona Fescue - Redondo	0.40	4.59	$3.70
Indian Ricegrass - Paloma	2.00	6.47	$22.25
Bitterbrush, Antelope	8.00	2.46	$156.00
Aster, Smooth	0.40	6.96	$58.60
Burnett, Small (or Little) - Delar	4.00	5.05	$10.00
Milk Vetch, Cicer - Lutana	2.00	6.66	$16.40
Slender Wheatgrass - San Luis	1.60	5.84	$6.80
Streambank Wheatgrass - Sodar	1.60	5.22	$9.12
Thickspike Wheatgrass - Critana	1.60	5.66	$11.00
Western Wheatgrass - Arriba	2.00	5.05	$13.00
Rabbitbrush, Rubber	0.80	11.92	$51.44

Rose, Wood's	3.00	0.00	$61.50
Flax, Lewis Blue	1.00	6.63	$16.50
Snowberry, Western	2.00	3.44	$127.00
Winter Fat	3.00	7.64	$61.50
Totals Seed Mix	33.40	83.60	**$624.81**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$965.73
Total Seed Application Cost/Acre	**$965.73**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Hydromulch tackifier, >15 ac. {Materials Only}	1.00	ACRE	$527.08	$527.08
Hydromulch, 1 ton/ac. rate {Materials Only}	1.00	ACRE	$527.08	$527.08
Total Mulch Materials Cost/Acre				**$1,054.16**

Application

Description	**Cost /Acre**
Hydromulching (MEANS 32 92 19.13 1100)	$968.00
Total Mulch Application Cost/Acre	**$968.00**

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 2.31
Estimated Failure Rate: 20%
*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: $3,766.34
Cost /Acre*: $3,612.70

Initial Job Cost: **$8,700.25**
Reseeding Job Cost: **$1,669.07**
Total Job Cost: **$10,369**
Job Hours: **119.00**

REVEGETATION WORK

Task description: **Reseed OVM - Phase II Release Areas (ROM & 58.4 ac from OVM)**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 130A State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-130A
User: RDZ

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
8-24-24, 10-15-15, 10-20-20	30.00	pound	$0.32	$9.45
			Total Fertilizer Materials Cost/Acre	**$9.45**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$37.03
Total Fertilizer Application Cost/Acre	**$37.03**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Total Tilling Cost/Acre	**$107.16**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arizona Fescue - Redondo	0.40	4.59	$3.70
Indian Ricegrass - Paloma	2.00	6.47	$22.25
Bitterbrush, Antelope	8.00	2.46	$156.00
Aster, Smooth	0.40	6.96	$58.60
Burnett, Small (or Little) - Delar	4.00	5.05	$10.00
Milk Vetch, Cicer - Lutana	2.00	6.66	$16.40
Slender Wheatgrass - San Luis	1.60	5.84	$6.80
Streambank Wheatgrass - Sodar	1.60	5.22	$9.12
Thickspike Wheatgrass - Critana	1.60	5.66	$11.00
Western Wheatgrass - Arriba	2.00	5.05	$13.00
Rabbitbrush, Rubber	0.80	11.92	$51.44

Rose, Wood's	3.00	0.00	$61.50
Flax, Lewis Blue	1.00	6.63	$16.50
Snowberry, Western	2.00	3.44	$127.00
Winter Fat	3.00	7.64	$61.50
Totals Seed Mix	33.40	83.60	**$624.81**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$965.73
Total Seed Application Cost/Acre	**$965.73**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Hydromulch tackifier, >15 ac. {Materials Only}	1.00	ACRE	$527.08	$527.08
Hydromulch, 1 ton/ac. rate {Materials Only}	1.00	ACRE	$527.08	$527.08
Total Mulch Materials Cost/Acre				**$1,054.16**

Application

Description	**Cost /Acre**
Hydromulching (MEANS 32 92 19.13 1100)	$968.00
Total Mulch Application Cost/Acre	**$968.00**

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 67.69
Estimated Failure Rate: 0%
*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: $3,766.34
Cost /Acre*: $3,612.70

Initial Job Cost: **$254,943.55**
Reseeding Job Cost: **$0.00**
Total Job Cost: **$254,944**
Job Hours: **11.00**

REVEGETATION WORK

Task description: **Reseed OVWM - Phase II Released**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 131 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-131
User: RDZ

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
8-24-24, 10-15-15, 10-20-20	30.00	pound	$0.32	$9.45
			Total Fertilizer Materials Cost/Acre	**$9.45**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$37.03
Total Fertilizer Application Cost/Acre	**$37.03**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Total Tilling Cost/Acre	**$107.16**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arizona Fescue - Redondo	0.40	4.59	$3.70
Indian Ricegrass - Paloma	2.00	6.47	$22.25
Bitterbrush, Antelope	8.00	2.46	$156.00
Aster, Smooth	0.40	6.96	$58.60
Burnett, Small (or Little) - Delar	4.00	5.05	$10.00
Milk Vetch, Cicer - Lutana	2.00	6.66	$16.40
Slender Wheatgrass - San Luis	1.60	5.84	$6.80
Streambank Wheatgrass - Sodar	1.60	5.22	$9.12
Thickspike Wheatgrass - Critana	1.60	5.66	$11.00
Western Wheatgrass - Arriba	2.00	5.05	$13.00
Rabbitbrush, Rubber	0.80	11.92	$51.44

Rose, Wood's	3.00	0.00	$61.50
Flax, Lewis Blue	1.00	6.63	$16.50
Snowberry, Western	2.00	3.44	$127.00
Winter Fat	3.00	7.64	$61.50
Totals Seed Mix	33.40	83.60	**$624.81**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$965.73
Total Seed Application Cost/Acre	**$965.73**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Hydromulch tackifier, <15 ac. {Materials Only}	1.00	ACRE	$527.08	$527.08
Hydromulch, 1 ton/ac. rate {Materials Only}	1.00	ACRE	$527.08	$527.08
Total Mulch Materials Cost/Acre				**$1,054.16**

Application

Description	**Cost /Acre**
Hydromulching (MEANS 32 92 19.13 1100)	$968.00
Total Mulch Application Cost/Acre	**$968.00**

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 13.1
Estimated Failure Rate: 0%
*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: $3,766.34
Cost /Acre*: $3,612.70

Initial Job Cost: **$49,339.05**
Reseeding Job Cost: **$0.00**
Total Job Cost: **$49,339**
Job Hours: **26.00**

REVEGETATION WORK

Task description: **Reseed OVWM - NoPhase II Release**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 131A State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-131A
User: RDZ

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
8-24-24, 10-15-15, 10-20-20	30.00	pound	$0.32	$9.45
			Total Fertilizer Materials Cost/Acre	**$9.45**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$37.03
Total Fertilizer Application Cost/Acre	**$37.03**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Total Tilling Cost/Acre	**$107.16**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arizona Fescue - Redondo	0.40	4.59	$3.70
Indian Ricegrass - Paloma	2.00	6.47	$22.25
Bitterbrush, Antelope	8.00	2.46	$156.00
Aster, Smooth	0.40	6.96	$58.60
Burnett, Small (or Little) - Delar	4.00	5.05	$10.00
Milk Vetch, Cicer - Lutana	2.00	6.66	$16.40
Slender Wheatgrass - San Luis	1.60	5.84	$6.80
Streambank Wheatgrass - Sodar	1.60	5.22	$9.12
Thickspike Wheatgrass - Critana	1.60	5.66	$11.00
Western Wheatgrass - Arriba	2.00	5.05	$13.00
Rabbitbrush, Rubber	0.80	11.92	$51.44

Rose, Wood's	3.00	0.00	$61.50
Flax, Lewis Blue	1.00	6.63	$16.50
Snowberry, Western	2.00	3.44	$127.00
Winter Fat	3.00	7.64	$61.50
Totals Seed Mix	33.40	83.60	**$624.81**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$965.73
Total Seed Application Cost/Acre	**$965.73**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Hydromulch tackifier, <15 ac. {Materials Only}	1.00	ACRE	$527.08	$527.08
Hydromulch, 1 ton/ac. rate {Materials Only}	1.00	ACRE	$527.08	$527.08
Total Mulch Materials Cost/Acre				**$1,054.16**

Application

Description	**Cost /Acre**
Hydromulching (MEANS 32 92 19.13 1100)	$968.00
Total Mulch Application Cost/Acre	**$968.00**

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 4.5
Estimated Failure Rate: 20%
*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: $3,766.34
Cost /Acre*: $3,612.70

Initial Job Cost: **$16,948.53**
Reseeding Job Cost: **$3,251.43**
Total Job Cost: **$20,200**
Job Hours: **9.00**

DEMOLITION WORK

Task description: **East Mine Crushing and Screening Level**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 137 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-137
User: RDZ

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 98.20 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Guard Shack Floor	120 sf	Demo. and on-site disposal in existing pit, 8 in. thick - Max. 10,000 ft. haul	120.00	SF	$1.11	$133.56
Guard Shack Fence	118 lf	Fencing, chain link, including posts and fabric - 8 ft. to 10 ft. high	118.00	LF	$2.95	$348.10
Culvert Removal 18 inch	115 lf	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	115.00	LF	$5.39	$619.39
Culvert Removal 24 inch	100 lf	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	100.00	LF	$7.01	$701.20
Culvert Removal 48 inch	125 lf	Pipe, corrugated metal (CMP) - 48 in. diameter pipe	125.00	LF	$16.00	$1,999.63

Job Hours: **40.00** **Subtotal (unadjusted):** **$3,801.88** **Total Cost (adjusted for location):** **$3,733.45**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilize/Demobilize Equipment for Initial Reclamation**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 146 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-146
User: RDZ

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	93.31	$190.52	$141.54	4	$1,328.24	$566.16	$1,000.00
Cat 773F	49.74	$97.85	$123.81	5	$1,108.30	$619.05	$1,250.00
CAT 990H	83.34	$111.11	$141.54	1	$252.65	$141.54	$250.00
Water Tanker, 5,000 Gal.	15.00	$29.31	$67.39	2	$193.40	$134.78	$500.00
CAT 14M	23.57	$65.89	$67.39	1	$133.28	$67.39	$250.00
Cat 637G w/push-pull	59.59	$181.30	$141.54	2	$645.68	$283.08	$500.00
CAT 815F	22.88	$63.43	$67.39	1	$130.82	$67.39	$250.00
ATLAS COPCO ROC D3-01,3.0 in.	0.00	$58.81	$67.39	2	$252.40	$134.78	$500.00
Cat 336D L 10'-6" Stick	32.23	$60.67	$123.81	1	$184.48	$123.81	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$6.72	$67.39	1	$74.11	$67.39	$250.00
Subtotals:					**$4,303.36**	**$2,205.37**	**$5,000.00**

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	$50.03	1	$50.03	$50.03
Fuel Tanker, 6x4, 210 HP	$45.29	1	$45.29	$45.29
Lube Truck, 6x4, 250 HP	$46.71	1	$46.71	$46.71
Light Duty Pickup, 4x4, 1 T. Crew	$21.48	1	$21.48	$21.48
Subtotals:			**$163.51**	**$163.51**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION	
Total one-way travel distance:	90.00	miles
Average Travel Speed:	35.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$43,473.47
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$840.91

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.57	2.57
Return Time (Hours):	2.57	2.57
Loading Time (Hours):	0.00	NA
Unloading Time (Hours):	0.00	NA
Subtotals:	5.14	5.14

JOB TIME AND COST

Total job time:	**10.29**	Hours
Total job cost:	**$44,314**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilize/Demobilize Equipment for Pond Cleaning**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 147 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-147
User: RDZ

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 336D L 10'-6" Stick	32.23	$60.67	$123.81	1	$184.48	$123.81	$250.00
Subtotals:					**$184.48**	**$123.81**	**$250.00**

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	$50.03	1	$50.03	$50.03
Fuel Tanker, 6x4, 210 HP	$45.29	1	$45.29	$45.29
Lube Truck, 6x4, 250 HP	$46.71	1	$46.71	$46.71
Light Duty Pickup, 4x4, 1 T. Crew	$21.48	1	$21.48	$21.48
Subtotals:			**$163.51**	**$163.51**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION	
Total one-way travel distance:	90.00	miles
Average Travel Speed:	35.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$2,085.49
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$840.91

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.57	2.57
Return Time (Hours):	2.57	2.57
Loading Time (Hours):	0.00	NA
Unloading Time (Hours):	0.00	NA
Subtotals:	5.14	5.14

JOB TIME AND COST

Total job time:	**10.29**	Hours
Total job cost:	**$2,926**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilize/Demobilize Equipment for Pond Removal**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 148 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-148
User: RDZ

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 D9T - 9SU	60.01	$156.88	$141.54	1	$298.42	$141.54	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$6.72	$67.39	1	$74.11	$67.39	$250.00
Subtotals:					**$372.53**	**$208.93**	**$500.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	$21.48	1	$21.48	$21.48
Subtotals:			**$21.48**	**$21.48**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION	
Total one-way travel distance:	90.00	miles
Average Travel Speed:	35.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$3,990.37
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$110.47

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.57	2.57
Return Time (Hours):	2.57	2.57
Loading Time (Hours):	0.00	NA
Unloading Time (Hours):	0.00	NA
Subtotals:	5.14	5.14

JOB TIME AND COST

Total job time:	**10.29**	Hours
Total job cost:	**$4,101**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilize/Demobilize Equipment for Site Maintenance**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 149 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-149
User: RDZ

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 D3K LGP - 3P	9.20	$27.78	$67.39	10	$951.70	$673.90	$250.00
CAT 14M	23.57	$65.89	$67.39	5	$666.40	$336.95	$250.00
Subtotals:					**$1,618.10**	**$1,010.85**	**$500.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	$21.48	10	$214.80	$214.80
Subtotals:			**$214.80**	**$214.80**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION	
Total one-way travel distance:	90.00	miles
Average Travel Speed:	35.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$14,520.31
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$1,104.69

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.57	2.57
Return Time (Hours):	2.57	2.57
Loading Time (Hours):	0.00	NA
Unloading Time (Hours):	0.00	NA
Subtotals:	5.14	5.14

JOB TIME AND COST

Total job time:	**10.29**	Hours
Total job cost:	**$15,625**	

SITE MAINTENANCE

Task description: **YEARLY SITE MNTNC**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 158 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-158
User: RDZ

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	6.00	Cat D3K LGP - 3P	60.00	EA	$96.33	$5,779.80
CAT Motor Grader	2.00	CAT 14M	20.00	EA	$153.41	$3,068.20
POND CLEANING	5.00	USER PROVIDED ITEM	5.00	EA	$17,500.00	$87,500.00

Job Hours: 0.00 **Total Cost: $96,348.00**

BOREHOLE SEALING WORK

Task description: **Seal Loadout Wells**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 201 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-201
User: RDZ

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom plug for 6" wells	PVC plug - 6 in. diameter borehole	6	na	1.00	EA	$60.19	$60.19
Fiil Holes with Concrete	Portland cement grout (Bag, material cost only...94 lb. bag)	6	na	19.60	bag	$15.95	$312.62
Borehole Marker	Borehole location/identification marker (EA, material cost only)	na	na	1.00	EA	$35.50	$35.50
Cut Casing at Surface	Exposed casing removal - Calculate Circumference in Linear Feet	na	na	1.00	LF	$3.26	$3.26
Drill Rig Time	SCHRAMM T450WS	na	na	12.00	EA	$415.81	$4,989.72
Water Truck Time	Water Tanker, 5,000 Gal.	na	na	12.00	EA	$71.44	$857.28

Job Hours: **177.00** **Total Cost**: **$6,259.00**

DEMOLITION WORK

Task description: **Demolish and Remove all Structures at Train Loadout**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 202 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-202
User: RDZ

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 98.20 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Truck Dump Superstructure Slab	1200 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	1,200.00	SF	$1.49	$1,786.80
Truck Dump Superstructure Footing	170	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	170.00	LF	$10.72	$1,822.40
MCC at Truck Dump Superstructure Slab	364 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	364.00	SF	$1.49	$542.00
Scrubber Superstructure Footings	10 lf	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	10.00	LF	$10.72	$107.20
Tunnel Building Superstructure Slab	1152 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	1,152.00	SF	$1.49	$1,715.33
Tunnel Building Superstructure Footings	128 lf	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	128.00	LF	$10.72	$1,372.16
Tunnel Building Superstructure Concrete Tunnel	1440 sqft	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	1,440.00	SF	$1.90	$2,736.00
Truck Scale Superstructure	768 cf	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	768.00	CF	$0.21	$162.82
Truck Scale Superstructure Slab	996 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	996.00	SF	$1.49	$1,483.04
Silo Fan Footing	4.5 lf	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	4.50	LF	$10.72	$48.24
Silo Buildings Superstructure Slab	256 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	256.00	SF	$1.49	$381.18

Coal Storage Silos Superstructure Slab	11545 sqft	Floor, concrete, demolition only, average reinforcing - 12 in. thick	11,545.00	SF	$1.61	$18,587.45
Coal Storage Silos Superstructure Footings	89 cy	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	89.00	LF	$10.72	$954.08
MCC at Silo Superstructure Slab	504 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	504.00	SF	$1.49	$750.46
Substation Superstructure Slab	291 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	291.00	SF	$1.49	$433.30
Substation Superstructure Footing	168 lf	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	168.00	LF	$10.72	$1,800.96
Shop Building Superstructure	150000 cf	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	150,000.00	CF	$0.21	$31,800.00
Shop Building Superstructure Slab	5420 sqft	Demo. and on-site disposal in existing pit, 10 in. thick - Max. 200 ft. push	5,420.00	SF	$1.42	$7,685.56
Shop Building Superstructure Footings	300 lf	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	300.00	LF	$10.72	$3,216.00
Pump House at Silo Superstructure Slab	1164 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	1,164.00	SF	$1.49	$1,733.20
MCC at Loadout Superstructure Slab	672 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	672.00	SF	$1.49	$1,000.61
Misc Fencing	2800 lf	Fencing, chain link, including posts and fabric - 8 ft. to 10 ft. high	2,800.00	LF	$2.95	$8,260.00
Train Loadout Superstructure Slab	900 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	900.00	SF	$1.49	$1,340.10
Train Loadout Superstructure Footings	120 lf	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	120.00	LF	$10.72	$1,286.40
Train Loadout Superstructure Fence	120 lf	Fencing, chain link, including posts and fabric - 8 ft. to 10 ft. high	120.00	LF	$2.95	$354.00
Pump House at Loadout Superstructure	16280 cf	Bldg. (MN) demo./on-site disposal in excavated pit - Max.	16,280.00	CF	$0.23	$3,776.96

		200 ft. push				
Pump House at Loadout Slab	813 sqft	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	813.00	SF	$1.49	$1,210.56
Pump House at Loadout Walls	1944 sqft	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	1,944.00	SF	$1.90	$3,693.60
Railroad Track	7088 lf	Railroad track - Ties and track	7,088.00	LF	$9.56	$67,761.28
Railroad Track Ballast	1590 cy	Railroad track - Ballast	1,590.00	CY	$4.68	$7,441.20
Bridge Reclamation (Adjusted Cyprus Estimate)	1 bridge	USER PROVIDED ITEM	1.00	ea	$156,669.00	$156,669.00
500 Gallon Fuel Tank (2)	500 gal	Hazardous waste removal - Drum solids/liquids, per drum, (7+ drum job)	2.00	DRUM	$488.75	$977.50
500 Gallon Fuel Tank (2) Remove Sludge	500 gal	Remove sludge, water, and rem. product from tank - 3,000 to 5,000 gal.	2.00	EA	$233.00	$466.00
500 Gallon Fuel Tank (2) Disposal of Sludge	100 gal	Dispose of tank sludge off-site - Average	100.00	GAL	$6.25	$625.00
500 Gallon Fuel Tank (2) Add CO2 for Tank Cleaning	15 lbs	Insert dry ice (CO2) into tank to produce inert gas - 1.5 lbs./100 gal.	15.00	LB	$1.89	$28.35
500 Gallon Fuel Tank (2) Haul Tanks to Certified Dump	2 tanks	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	2.00	EA	$760.00	$1,520.00
Concrete Disposal Charges	1911 CY	Loading and 5 mile haul, salvage allowed - Concrete frame structures	1,911.00	CY	$12.55	$23,983.05
Culvert Removal - 24" Culvert	24 inches	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	934.00	LF	$7.01	$6,549.21
Culvert Removal - 36" Culvert	36 inches	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	36.00	LF	$10.95	$394.02
Culvert Removal - 60" Culvert	60 inches	Pipe, corrugated metal (CMP) - 60 in. diameter pipe	627.00	LF	$21.53	$13,498.06
Single post power poles	22 poles	Utility Poles, Wood 35' - 45' high (each pole)	22.00	EA	$282.00	$6,204.00
Single post cross members	22 Poles	Utility Pole Cross Arm	22.00	EA	$98.00	$2,156.00
Disposal of Utility Pole and Harware Surplus Material	4,400 ft Long	Disposal of utility pole and hardware surplus material	4,400.00	LF	$0.02	$88.00
Disposal of Utility Pole Cross Arms and Hardware Surplus Material	4,400 ft Long	Disposal of utility pole cross arms and hardware surplus material	4,400.00	LF	$0.01	$44.00
Metering Substation	3ft * 3ft *3ft	Bldg. (SN) demo./on-	27.00	CF	$0.19	$5.13

		site disposal in existing pit or cut - Max. 10,000 ft. haul				
Metering point concrete slab	4ft * 8ft * 4in	Floor, concrete, demolition only, average reinforcing - 4 in. thick	32.00	SF	$0.54	$17.28

Job Hours: **175.00** **Subtotal (unadjusted)**: **$388,467.49** **Total Cost (adjusted for location)**: **$381,475.08**

TRUCK/LOADER TEAM WORK

Task description: **Haul Footprint of Loadout Stockpiles to Refuse Area**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 204 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-204
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 773F
-Loader:	CAT 990H
Support Equipment -Load Area:	Cat D10T - 10SU
-Dump Area:	Cat D10T - 10SU
Road Maintenance –Motor Grader:	CAT 14M
-Water Truck:	Water Tanker, 5,000 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	65	100	100	50	50
Ownership cost/hour:	$97.85	$111.11	$170.04	$170.04	$65.89	$29.31
Operating cost/hour:	$94.20	$75.89	$153.03	$153.03	$29.48	$21.07
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$0.00	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	$0.00	$0.00	$0.00	$0.00
Operator cost/hour:	$33.34	$40.71	$41.30	$41.30	$28.56	$0.00
Unit Subtotals:	$225.38	$227.71	$364.36	$364.36	$123.93	$50.38
Number of Units:	4	1	1	1	1	1
Group Subtotals:	Work:	$1,129.23	Support:	$728.72	Maint:	$174.31

Total work team cost/hour: **$2,032.26**

MATERIAL QUANTITIES

Initial volume: 1,613 CCY Swell factor: 1.370
Loose volume: **2,210** LCY

Source of estimated volume: Division Estimate
Source of estimated swell factor: Division Estimate
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,300 Pounds/LCY
Description: User Provided
Rated Payload: 122,520 Pounds
Payload Capacity: 53.27 LCY

Truck Bed (volume) Basis:

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

Final Truck Volume Based on Number of Loader Passes: **43.88** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	11.250	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - uniform aggregates to 1/8" (95-100%) 0.975
Adjusted Capacity:	**10.969**	LCY

Job Condition Corrections: Site Altitude (ft.): 7100 feet

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

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 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): 0.600 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(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:	-0.070	minutes
	Adjusted Loader Cycle Time:	**0.530**	minutes
	Net Load Time per Truck:	**1.690**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.70	Minutes	Adjusted for site altitude:	0.700	Minutes
Truck Load Time:	1.690	Minutes	Adjusted for site altitude:	1.690	Minutes
Truck Maneuver and Dump Time:	1.10	Minutes	Adjusted for site altitude:	1.100	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	21120.00	0.00	3.00	3.00	2983	7.643

Haul Time: **7.643** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	21120.00	0.00	3.00	3.00	3569	6.131

Return Time: **6.131** minutes
Total Truck Cycle Time: **17.264** minutes

Loading Tool unit Production 1,101.46 LCY/Hour Adjusted for job efficiency: 914.22 LCY/Hour

Truck Unit Production 152.48 LCY/Hour Adjusted for job efficiency: 126.56 LCY/Hour

Optimal No. of Trucks: 7 Truck(s) Selected Number of Trucks: 4 Truck(s)

Adjusted hourly truck team production: 506.25 LCY/Hour
Adjusted single truck/loader team production: 506.25 LCY/Hour
Adjusted multiple truck/loader team production: **506.25** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **4.37** Hours

Unit cost: $4.014 /LCY Total job cost: **$8,871**

BULLDOZER RIPPING WORK

Task description: **Rip Coal Storage/Loadout Area**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 205 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-205
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper Ownership Cost/Hour:	$20.48	NA
Ripper Operating Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$397.13	

Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 2.00 acres Rip Depth (ft): 2.00 Volume: 6,453 BCY or CCY

Source of estimated quantity: Map 8-1

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	2.87	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:	6,800	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.79 Acres/hr
Adjusted Hourly Fleet Production: **3.14** Acres/hr

JOB TIME AND COST

Fleet size: 4 Grader(s) Total job time: **0.64** Hours

Unit cost: $505.373 Per acre Total job cost: **$1,011**

BULLDOZER WORK

Task description: **Excavation/Grading at Storage Area and Loadout**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 206 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-206
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 23,232
Swell factor: 1.165
Loose volume: **27,065** LCY

Source of estimated volume: Permit Vol 1, Page 60
Source of estimated swell factor: CAT Handbook

HOURLY PRODUCTION

Average push distance: 400 feet
Unadjusted hourly production: 497.3 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -5 %
Average site altitude: 7,000 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3963

Adjusted unit production: 197.08 LCY/hr
Adjusted fleet production: **788.32** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $2.015/LCY

Total job time: **34.33** Hours
Total job cost: **$54,539**

BULLDOZER WORK

Task description: **Grade Railroad Spur**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 207 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-207
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 113,504
Swell factor: 1.330
Loose volume: **150,960** LCY

Source of estimated volume: 1988 Cyprus 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: 6,500 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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:	1.225	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4354

Adjusted unit production: 748.41 LCY/hr
Adjusted fleet production: **2993.64** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.531/LCY

Total job time: **50.43** Hours
Total job cost: **$80,105**

MOTOR GRADER WORK

Task description: **Finish Grade Railroad Spur**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 208 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-208
User: RDZ

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 14M Horsepower: 259
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$65.89	NA
Operating Cost/Hour:	$58.96	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$153.41	

Total Fleet Cost/Hour: **$153.41**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 25.39 acres

Source of estimated acreage: Map8-1

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 12.10 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 10.10 feet
Unadjusted Hourly Unit Production: 1.8364 acres/hour

Job Condition Correction Factors Site Altitude: 7000 feet

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

Adjusted Hourly Unit Production: 1.5609 acres/Hour
Adjusted Hourly Fleet Production: **1.5609** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **16.27** Hours

Unit cost: $98.28 per acre Total job cost: **$2,495**

BULLDOZER WORK

Task description: **Replace Topsoil from Stockpile to Truck Dump Station**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 209 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-209
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 2,000
Swell factor: 1.115
Loose volume: **2,230** LCY

Source of estimated volume: Permit Vol 1, Page 65; 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: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 6,500 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

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:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5453

Adjusted unit production: 937.32 LCY/hr
Adjusted fleet production: **3749.28** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.424/LCY

Total job time: **0.59** Hours
Total job cost: **$945**

REVEGETATION WORK

Task description: **Reseed Train Loadout and Coal Stockpile Areas**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 210 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-210
User: RDZ

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
0-10-20, 3-9-18	1.00	pound	$0.18	$0.18
8-24-24, 10-15-15, 10-20-20	30.00	pound	$0.32	$9.45
			Total Fertilizer Materials Cost/Acre	**$9.63**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$37.03
Total Fertilizer Application Cost/Acre	**$37.03**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Total Tilling Cost/Acre	**$107.16**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Fringed Bromegrass - Native	4.38	8.03	$74.38
Rye, Perennial Tetraploid - Elgon	3.50	19.85	$6.30
Meadow Brome - Regar	5.25	4.82	$20.87
Orchardgrass - Potomac	4.38	54.24	$18.66
Totals Seed Mix	17.50	86.94	**$120.20**

Application

Description	Cost /Acre

	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$301.00	$602.00
Total Mulch Materials Cost/Acre				**$602.00**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$70.17
Power mulcher (MEANS 32 91 13.16 0350)	$101.93
Total Mulch Application Cost/Acre	**$172.10**

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres: 40
Estimated Failure Rate: 20%
*Selected Replanting Work Items: SEEDING,MULCHING

Cost /Acre: $1,048.12
Cost /Acre*: $894.30

Initial Job Cost: **$41,924.80**
Reseeding Job Cost: **$7,154.40**
Total Job Cost: **$49,079**
Job Hours: **80.00**

BULLDOZER WORK

Task description: **Remove Coal Stockpile Pond**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 211 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-211
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 565
Swell factor: 1.330
Loose volume: **751** LCY

Source of estimated volume: Permit Vol 1, Page 35
Source of estimated swell factor: CAT Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 2,748.7 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 7,200 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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: 976.89 LCY/hr
Adjusted fleet production: **3907.56** LCY/hr

JOB TIME AND COST

Fleet size: 4 Dozer(s)
Unit cost: $0.407/LCY

Total job time: **0.19** Hours
Total job cost: **$305**

BULLDOZER WORK

Task description: **Remove Train Loadout Pond**

Site: **Bowie No. 1 Mine** Permit Action: MT8 Permit/Job#: C1981038

PROJECT IDENTIFICATION

Task #: 212 State: Colorado Abbreviation: None
Date: 10/1/2020 County: Delta Filename: C038-212
User: RDZ

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:	$170.04	NA
Operating Cost/Hour:	$153.03	100
Ripper own. Cost/Hour:	$20.48	NA
Ripper op. Cost/Hour:	$12.29	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $397.13
Total Fleet Cost/Hour: **$1,588.53**

MATERIAL QUANTITIES

Initial Volume: 2,904
Swell factor: 1.330
Loose volume: **3,862** LCY

Source of estimated volume: Permit Vol 1, Page 111; Map 8a-2
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: 7,200 feet

Material weight: 2,900 lbs/LCY

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

Job Condition Correction Factor		Source
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: $0.650/LCY

Total job time: **1.58** Hours
Total job cost: **$2,511**