

**COLORADO**Division of Reclamation,
Mining and Safety

Department of Natural Resources

MINERALS PROGRAM INSPECTION REPORT**PHONE: (303) 866-3567**

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Bonser Pit	MINE/PROSPECTING ID#: M-2000-156	MINERAL: Gravel	COUNTY: Larimer
INSPECTION TYPE: Monitoring	INSPECTOR(S): Jared L. Ebert	INSP. DATE: March 13, 2017	INSP. TIME: 10:00
OPERATOR: Coulson Excavating Company, Inc.	OPERATOR REPRESENTATIVE: Ken Coulson	TYPE OF OPERATION: 112c - Construction Regular Operation	

REASON FOR INSPECTION: Normal I&E Program	BOND CALCULATION TYPE: Complete Bond	BOND AMOUNT: \$218,003.00
DATE OF COMPLAINT: NA	POST INSP. CONTACTS: None	JOINT INSP. AGENCY: None
WEATHER: Clear	INSPECTOR'S SIGNATURE: 	SIGNATURE DATE: March 15, 2017

The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.

INSPECTION TOPIC: Gen. Compliance With Mine Plan

PROBLEM/POSSIBLE VIOLATION: Problem: Coulson Excavating Company, Inc. is not following the approved mine plan sequence. The current mine plan needs to be updated and clarified pursuant to C.R.S. 34-32.5-112 (1)(c)(VI). The operator must provide sufficient information to describe or identify how the operator intends to conduct the operation.

CORRECTIVE ACTIONS: The operator shall submit a Technical Revision, with the required \$216 revision fee, to update and clarify the current approved mine plan to reflect existing and proposed activities by the corrective action date.

CORRECTIVE ACTION DUE DATE: 4/26/17

OBSERVATIONS

This was a monitoring inspection of the Bonser Pit, DRMS Permit No. M-2000-156, operated by Coulson Excavating Company, Inc. (CEC). I, Jared Ebert of the Colorado Division of Reclamation, Mining and Safety (Division) conducted the inspection. Mr. Ken Coulson with CEC accompanied me during the inspection. The weather was partly cloudy at the time of the inspection.

This is a 112c mining operation with 146 permitted acres. The operation is mining sand and gravel for construction materials. The commodity is crushed and processed on site. The approved post mine land use for the site is developed water resources.

Backfilling and Grading:

The mining plan calls for mining the site in two phases. Phase 1 consists of two cells and Phase II consists of five cells. It appears the operator has partially mined the majority of the Phase I area with the exception of the southern end of the Phase I/Cell 2 area. The operator is currently mining in the Phase II/Cells 1 and 2 area. They have created a pit that appears to be advancing from east to west. The operator strips the overburden from on top of the sand and gravel and concurrently backfills the eastern end of the pit with this material. At this time it appears the majority of the Phase I/Cells 1 and 2 areas have been backfilled with overburden with the exception of a 1-acre pond area in the northeast corner of Phase I/Cell 1 area, a .2-acre sediment pond in the Phase I/Cell 2 area and a dewatering trench that leads to this sediment pond.

At this time, it appears the operator has backfilled a portion of the Phase I area that was originally proposed to be part of the 55 acre clay lined reservoir. Given this, it is likely the final configuration of the clay line lake may be different than originally proposed. This issue was discussed with Mr. Coulson, and he indicated that the company is currently in communications with several entities that may wish to use the area for water storage. Depending on the outcome of these negotiations the final lake configuration may change from what is currently approved. Once this has been determined, the operator will need to file and receive approval for a Technical Revision with our office to update the final configuration of the lake.

Hydrologic Balance:

The operator has created a 1-acre pond on the northeast corner of the Phase I/Cell 1 area. This pond is used as a source of water to irrigate the vegetation established on the visual berm that separates the mining operation from the landowner to the north.

Gen. Compliance With Mine Plan:

As indicated above, the current approved mine plan calls for mining the site in two phases and each phase was to be bonded for separately. Prior to initiating mining in the Phase II area, the operator was to provide the Division notice and an increase in financial warranty to cover the mining of this phase. This mining plan was approved with Amendment No. 1 (AM01). Given this, AM01 was approved with the following stipulation:

"Coulson Excavating Co., Inc. shall request in writing to the DRMS that the financial warranty be increased prior to opening an additional phase(s). An increase of the financial warranty shall be requested, and provided with the letter to DRMS, by Coulson Excavating Co., Inc. to its bonding/surety provider prior to opening and mining additional phase(s). The increased financial warranty and updated bond forms shall also be provided to the DRMS from Coulson Excavating Co., Inc. bonding/surety provider."

This stipulation was included in the approval letter sent to CEC dated April 23, 2010 and is enclosed with this report.

As indicated in the backfilling and grading section of this report, the operator has mined the majority of the Phase I area. The operator is currently mining in the Phase II areas in Cells 1 and 2 and they are quickly advancing west. The operator failed to provide the notification to the Division and failed to provide the additional financial warranty for the Phase II area prior to initiating mining in the Phase II area as required with the approval of AM01. The operator will be required to submit additional financial warranty as described in the Financial Warranty section of this report.

Also, the current mine plan requires the operator to mine the site in a specific sequence. As indicated above, the operator is currently mining in both Phase II/Cells 1 and 2 as opposed to completing mining in Cells 1 prior to advancing to Cells 2. This issue is cited as a problem at the beginning of this report. The operator will be required to submit and receive approval of a technical revision to update the mine plan sequencing.

Financial Warranty:

As discussed in the Gen. Compliance With the Mine Plan section of this report, CEC failed to provide the Division the additional financial warranty and notification prior to excavating in the Phase II area as was required with the approval of AM01. Given this, the operator must submit additional financial warranty to cover the Phase II area as approved in the permit. The cost estimate conducted for both the Phase I and Phase II area was done in 2010 during the review of AM01. Included with this report are two updated cost estimates for the Phase I area and the Phase II area. The Phase I cost estimate was modified since the operator has backfilled the majority of the mining cells in this Phase.

The Division estimates the reclamation cost of the Phase I area and Phase II area to be \$119,195.82 and \$540,039.12 respectively. Given this, the total estimated reclamation cost for the site is \$659,234.94. The Division currently holds a financial warranty in the amount of \$218,003.00 for the site. Given this, the operator will need to increase their financial warranty to cover the total cost to reclaim the site. **By March 22, 2017, the Division will issue a Surety Increase (SI) revision; please contact the Division prior to March 22, 2017 to discuss any questions regarding the cost estimate. When the SI is issued, the Operator will then have 60 days to submit the additional financial warranty.**

Off-site Damage:

Off-site damage was not observed.

Topsoil:

Topsoil is stored on the northeast corner of the site in a large pile that also acts as a visual berm. The pile is well vegetated and is irrigated by the permittee. According to Mr. Coulson, this material will be used for reclamation.

PHOTOGRAPHS



Figure 1. HMA Plant from the scalehouse looking south



Figure 2. The south central pit area looking north.



Figure 3. From the south end of the pit looking northwest.



Figure 4. CEC stripping OB in advance of the pit.

GENERAL INSPECTION TOPICS

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS-----	<u>NA</u>	(FN) FINANCIAL WARRANTY-----	<u>Y</u>	(RD) ROADS-----	<u>Y</u>
(HB) HYDROLOGIC BALANCE-----	<u>Y</u>	(BG) BACKFILL & GRADING-----	<u>Y</u>	(EX) EXPLOSIVES-----	<u>NA</u>
(PW) PROCESSING WASTE/TAILING----	<u>NA</u>	(SF) PROCESSING FACILITIES-----	<u>Y</u>	(TS) TOPSOIL-----	<u>Y</u>
(MP) GENL MINE PLAN COMPLIANCE-	<u>PB</u>	(FW) FISH & WILDLIFE-----	<u>Y</u>	(RV) REVEGETATION----	<u>NA</u>
(SM) SIGNS AND MARKERS-----	<u>Y</u>	(SP) STORM WATER MGT PLAN----	<u>NA</u>	(CI) COMPLETE INSP----	<u>NA</u>
(ES) OVERBURDEN/DEV. WASTE-----	<u>NA</u>	(SC) EROSION/SEDIMENTATION---	<u>Y</u>	(RS) RECL PLAN/COMP--	<u>NA</u>
(AT) ACID OR TOXIC MATERIALS-----	<u>NA</u>	(OD) OFF-SITE DAMAGE-----	<u>Y</u>	(ST) STIPULATIONS-----	<u>N</u>

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

Inspection Contact Address

Ken Coulson
Coulson Excavating Company, Inc.
3609 North County Road 13
Loveland, CO 80538

Enclosure: 1.) Phase I and Phase II Cost Estimates
2.) AM01 Approval Letter, April 23, 2010

CC: None

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

1313 Sherman St., Room 215

Denver, Colorado 80203

Phone: (303) 866-3567

FAX: (303) 832-8106



Bill Ritter, Jr.
Governor

James B. Martin
Executive Director

Loretta E. Piñeda
Director

April 23, 2010

Mr. Ken Coulson
Coulson Excavating Company, Inc.
3609 North County Road 13
Loveland, CO 80538

Re: Bonser Pit, Permit No. M-2000-156, Amendment Approval, Revision No. AM-1

Dear Mr. Coulson:

On April 22, 2010 the Division of Reclamation, Mining and Safety approved the Amendment application submitted to the Division on December 7, 2009, addressing the following:

Increasing the affected area from 90 acres to 146 acres and revising the Mining Plan to include two (2) separate phases.

The terms of the Amendment No. 1 approved by the Division are hereby incorporated into Permit No. M-2000-156. The conditions to the approval are noted below:

Stipulation No.	Description
1.	Coulson Excavating Co., Inc. shall request in writing to the DRMS that the financial warranty be increased prior to opening an additional phase(s). An increase of the financial warranty shall be requested, and provided with the letter to DRMS, by Coulson Excavating Co., Inc. to its bonding/surety prior to opening and mining additional phase(s). The increased financial warranty and updated bond forms shall also be provided to the DRMS from Coulson Excavating Co., Inc. bonding/surety provider.

All other conditions and requirements of Permit No. M-2000-156 remain in full force and effect.

The estimated liability amount of \$218,003.00 exceeds the \$186,000.00 performance bond currently held. If you have not already done so, please submit additional bond in the amount of \$32,003.00. The revision will not be final until the bond is approved by the Division.

If you have any questions, please contact me at (303)866-3567 x8116.

Sincerely,

Michael A. Cunningham
Environmental Protection Specialist

CC: Tony Waldron, DRMS
Elizabeth Merry, DRMS
Peter Wayland, Weiland, Inc. (via email)

COST SUMMARY WORK

Task description: _____

Site: **Bonser Pit**Permit Action: **Phase I**Permit/Job#: **M2000156****PROJECT IDENTIFICATION**Task #: **000**State: **Colorado**Abbreviation: **None**Date: **3/14/2017**County: **Larimer**Filename: **M156-000**User: **JLE**Agency or organization name: **DRMS****TASK LIST (DIRECT COSTS)**

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill/Grade Phase I area	TRUCK1	1	61.04	\$64,460.00
002	Replacing topsoil along reservoir shoreline - Phase I	SCRAPER1	1	24.34	\$17,209.00
003	Revegetation of disturbed areas - Phase I	REVEGE	1	9.00	\$18,397.00
<u>SUBTOTALS:</u>				94.38	\$100,066

INDIRECT COSTS**OVERHEAD AND PROFIT:**

Liability insurance: 0.00
Performance bond: 0.00
Job superintendent: 47.19
Profit: 10.00

Total = \$0.00
Total = \$0.00
Total = \$3,447.23
Total = \$10,006.60

TOTAL O & P = \$13,453.83

CONTRACT AMOUNT (direct + O & P) = \$113,519.83

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 0.00
Engineering work and/or contract/bid preparation: 0.00
Reclamation management and/or administration: 5.00

Total = 0.00
Total = \$0.00
Total = \$5,675.99

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$19,129.82

TOTAL BOND AMOUNT (direct + indirect) = \$119,195.82

TRUCK/LOADER TEAM WORKTask description: Backfill/Grade Phase I areaSite: Bonser PitPermit Action: Phase IPermit/Job#: M2000156PROJECT IDENTIFICATIONTask #: 001State: ColoradoAbbreviation: NoneDate: 3/14/2017County: LarimerFilename: M156-001User: JLEAgency or organization name: DRMSHOURLY EQUIPMENT COSTShift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 990H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D9T - 9SU
Road Maintenance -Motor Grader:	CAT 12M
-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	100	NA	50	25	25
Ownership cost/hour:	\$67.61	\$126.84	NA	\$100.59	\$28.02	\$24.01
Operating cost/hour:	\$53.30	\$118.18	NA	\$43.62	\$7.07	\$8.53
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$25.65	\$41.46	NA	\$40.52	\$38.16	\$39.38
Unit Subtotals:	\$146.56	\$286.48	NA	\$184.73	\$73.25	\$71.93
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work: \$726.16		Support: \$184.73		Maint: \$145.18	

Total work team cost/hour: \$1,056.07MATERIAL QUANTITIESInitial volume: 51,400

CCY

Swell factor: 1.000Loose volume: 51,400

LCY

Source of estimated volume: Exhibit L - Reclamation Costs - Phase IISource of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00HOURLY PRODUCTIONTruck Capacity:Truck Payload (weight) Basis:Material weight: 1

Pounds/LCY

Description: User ProvidedRated Payload: 87,000

Pounds

Payload Capacity: 87,000.00 LCY

Truck Bed (volume) Basis:

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

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

Loading Tool Capacity

Bucket Size Class: NA

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

Job Condition Corrections:

Site Altitude (ft.): 4850 feet

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

Loading Tool Cycle Time:

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

Excavators and Front Shovels:

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

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

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

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.000	minutes
Adjusted Loader Cycle Time:		0.600	minutes
Net Load Time per Truck:		0.700	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.60</u>	Minutes	Adjusted for site altitude:	<u>0.600</u>	Minutes
Truck Load Time:	<u>0.700</u>	Minutes	Adjusted for site altitude:	<u>0.700</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.00</u>	Minutes	Adjusted for site altitude:	<u>1.000</u>	Minutes

Truck Travel (Haul & Return) Time:
maintained 3.0

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

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1700.00	0.00	3.00	3.00	3005	1.358

Haul Time: **1.358** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1700.00	0.00	3.00	3.00	3005	0.733

Return Time: **0.733** minutes

Total Truck Cycle Time: **4.391** minutes

Loading Tool unit

Production 1,142.31 LCY/Hour

Adjusted for job efficiency: 948.12 LCY/Hour

Truck Unit Production

 338.19 LCY/Hour

Adjusted for job efficiency: 280.70 LCY/Hour

Optimal No. of Trucks: 3 Truck(s)

Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 842.10 LCY/Hour

Adjusted single truck/loader team production: 842.10 LCY/Hour

Adjusted multiple truck/loader team production: **842.10** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s)

Total job time: **61.04** Hours

Unit cost: \$1.254 /LCY

Total job cost: **\$64,460**

SCRAPER TEAM WORKTask description: Replacing topsoil along reservoir shoreline - Phase ISite: Bonser PitPermit Action: Phase IPermit/Job#: M2000156PROJECT IDENTIFICATIONTask #: 002State: CaliforniaAbbreviation: NoneDate: 3/14/2017County: LarimerFilename: M156-002User: JLEAgency or organization name: DRMSHOURLY EQUIPMENTCOSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 14M
-Water Truck:	Water Tanker, 5,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	50	25
Ownership cost/hour:	\$99.75	NA	NA	NA	\$54.68	\$24.01
Operating cost/hour:	\$118.23	NA	NA	NA	\$23.50	\$8.53
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$41.46	NA	NA	NA	\$38.16	\$39.38
Unit Subtotals:	\$259.44	NA	NA	NA	\$116.33	\$71.93
Number of Units:	2	0	0	0	1	1
Group Subtotals:	Work:	\$518.88	Support:	\$0.00	Maint:	\$188.26

Total work team cost/hour: \$707.14MATERIAL QUANTITIESInitial volume: 19,360

CCY

Swell factor: 1.000Loose volume: 19,360

LCY

Source of estimated volume: DRMS EstimateSource of estimated swell factor: Cat HandbookHOURLY PRODUCTIONScraper Bowl (volume) Basis:

Material weight:	<u>1 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>User Provided</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>52,800.00 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

Cycle Time:

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

Job Condition Correction:

Site Altitude: 4850 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	0.00	3.00	3.00	2824	0.43

Haul Time: 0.43 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	0.00	3.00	3.00	2874	0.43

Return Time: 0.43 minutes

Total Scraper team cycle time: 2.36 minutes
 Adjusted for job conditions: 795.53 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 795.53 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 795.53 LCY/Hour

Unadjusted unit production/hour: 958.47 LCY/Hour
 Optimal Number of Scrapers per push
 dozer: _____

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 24.34 Hours
 Unit cost: \$0.889 /LCY Total job cost: \$17,209

REVEGETATION WORKTask description: **Revegetation of disturbed areas - Phase I**Site: **Bonser Pit**Permit Action: Phase IPermit/Job#: M2000156**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 3/14/2017County: LarimerFilename: M156-003User: JLEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	250.00	pound	\$1.23	\$307.50
			Total Fertilizer Materials Cost/Acre	\$307.50

Application

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

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$106.29
Total Tilling Cost/Acre	\$106.29

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Nebraska 28	4.00	35.72	\$43.00
Sideoats Grama - Vaughn	5.00	16.41	\$50.00
Thickspike Wheatgrass - Critana	8.00	28.28	\$45.92
Totals Seed Mix	17.00	80.42	\$138.92

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00

Total Seed Application Cost/Acre	\$232.00
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MULCHING and MISCELLANEOUS**Materials**

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

Application

Description	Cost /Acre
	\$
Total Mulch Application Cost/Acre	\$0.00

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:	18	Cost /Acre:	\$929.33
Estimated Failure Rate:	25%	Cost /Acre*:	\$370.92

*Selected Replanting Work Items: SEEDING

Initial Job Cost:	\$16,727.94
Reseeding Job Cost:	\$1,669.14
Total Job Cost:	\$18,397
Job Hours:	9.00

COST SUMMARY WORK

Task description: Bonser Pit, Phase II - Cost Estimate 14 March 2017

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-000

User: JLE

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Dewatering Phase II	PUMPING	1	76.00	\$55,146.00
002	Backfill/Grade Phase II area	TRUCK1	1	158.21	\$167,079.00
003	Rip shale from pit floor to construct reservoir liner - PII	RIPPER	1	63.24	\$15,564.00
004	Place and Compact Liner - Phase II	SCRAPER1	1	84.04	\$81,155.00
005	Replacing topsoil along reservoir shoreline - Phase II	SCRAPER1	1	50.70	\$35,851.00
006	Revegetation of disturbed areas - Phase II	REVEGE	1	18.50	\$37,816.00
007	Backfill/Grade Sediment Pond	TRUCK1	1	3.63	\$3,832.00
008	Place slope protection on East Shore	LOADER	1	8.43	\$2,415.00
009	QA/QC; \$723.88/day @ 15 Days	NA	1	120.00	\$10,858.20
010	Mobilization and Demobilization of Equipment	MOBILIZE	1	3.08	\$8,536.00
<u>SUBTOTALS:</u>				585.83	\$418,252

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$8,448.69

Performance bond: 1.05

Total = \$4,391.65

Job superintendent: 292.92

Total = \$21,397.44

Profit: 10.00

Total = \$41,825.20

TOTAL O & P = \$76,062.98

CONTRACT AMOUNT (direct + O & P) = \$494,314.98

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 0.00

Total = 0.00

Engineering work and/or contract/bid preparation: 4.25

Total = \$21,008.39

Reclamation management and/or administration: 5.00

\$24,715.75

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$121,787.12

TOTAL BOND AMOUNT (direct + indirect) = \$540,039.12

PUMPING WORK

Task description: Dewatering Phase II

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-001

User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Centrifugal pump - 200M, 10 in.	2
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	4
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	4
Labor Unit 1:	Pump operator	0

Horsepower: 70

Shift Basis: 1 per day

Weight: 1.95

(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$18.10</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$33.72</u>	<u>100</u>
Operator Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$51.82</u>	

Total Fleet Cost/Hour: \$51.82

PUMPING QUANTITIES

Initial Pond Volume:	<u>595.00</u>		Conversion factor:	<u>325850.5800</u>
Final Pond Volume:	<u>193,881,095.10</u>	gallons		
Total Pond Inflow Surface Area:	<u>1</u>	Sq. ft.	Unit inflow rate in gph/sq. ft.:	<u>0.1758</u>
Total Pond Inflow Volume per Hour:	<u>0.18</u>	gallons		

Source of estimated volume: DRMS Estimate

PUMPING TIME

Maximum Pump Capacity:	<u>200,000</u>	gph/pump
Estimated Suction Head:	<u>25</u>	feet
Estimated Discharge Head:	<u>25</u>	feet
Total Head:	<u>50</u>	feet
CPB Pump Capacity:	<u>81,000</u>	gph/pump
Site Altitude:	<u>4,850</u>	feet
Adjusted Pumping Capacity:	<u>162,000</u>	gph
Initial Unadjusted Pumping Time:	<u>1,196.80</u>	hours
Inflow during Initial Pumping:	<u>210</u>	gallons
Net Unadjusted Pumping Time:	<u>1,196.80</u>	Hours
Altitude Adjustment Factor:	<u>0.9700</u>	(3% rule)
Pump Efficiency Factor:	<u>0.9167</u>	(55 min./hr.)
Total Adjusted Pumping Time:	<u>1,064.19</u>	hours

JOB TIME AND COST

Unit cost: \$0.000284 /Gallon

Total job time: 1,064.19 Hours

Total job cost: \$55,146

TRUCK/LOADER TEAM WORK

Task description: Backfill/Grade Phase II area

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 002

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-002

User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 990H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D9T - 9SU
Road Maintenance -Motor Grader:	CAT 12M
-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	100	NA	50	25	25
Ownership cost/hour:	\$67.61	\$126.84	NA	\$100.59	\$28.02	\$24.01
Operating cost/hour:	\$53.30	\$118.18	NA	\$43.62	\$7.07	\$8.53
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$25.65	\$41.46	NA	\$40.52	\$38.16	\$39.38
Unit Subtotals:	\$146.56	\$286.48	NA	\$184.73	\$73.25	\$71.93
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work: \$726.16		Support: \$184.73		Maint: \$145.18	

Total work team cost/hour: **\$1,056.07**

MATERIAL QUANTITIES

Initial volume: 150,000

CCY

Swell factor: 1.000

Loose volume: **150,000**

LCY

Source of estimated volume: Exhibit L - Reclamation Costs - Phase II

Source of estimated swell factor: Cat Handbook

Material Purchase Cost: \$0.00

Total Cost: \$0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:	1	Pounds/LCY
Description:	User Provided	
Rated Payload:	87,000	Pounds
Payload Capacity:	87,000.00	LCY

Truck Bed (volume) Basis:

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

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

Loading Tool Capacity

Bucket Size Class: NA

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

Job Condition Corrections:

Site Altitude (ft.): 4850 feet

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

Loading Tool Cycle Time:

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

Excavators and Front Shovels:

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

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

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

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment: 0.000 minutes
Adjusted Loader Cycle Time: 0.600 minutes
Net Load Time per Truck: 0.700 minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.60</u>	Minutes	Adjusted for site altitude:	<u>0.600</u>	Minutes
Truck Load Time:	<u>0.700</u>	Minutes	Adjusted for site altitude:	<u>0.700</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.00</u>	Minutes	Adjusted for site altitude:	<u>1.000</u>	Minutes

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

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	3005	0.959

Haul Time: **0.959** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	3.00	3.00	3005	0.334

Return Time: **0.334** minutes

Total Truck Cycle Time: **3.593** minutes

Loading Tool unit Production	<u>1,142.31</u>	LCY/Hour	Adjusted for job efficiency:	<u>948.12</u>	LCY/Hour
Truck Unit Production	<u>413.30</u>	LCY/Hour	Adjusted for job efficiency:	<u>343.04</u>	LCY/Hour
Optimal No. of Trucks:	<u>3</u>	Truck(s)	Selected Number of Trucks:	<u>3</u>	Truck(s)

Adjusted hourly truck team production:	<u>1,029.13</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>948.12</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u>948.12</u>	LCY/Hour

JOB TIME AND COST

Fleet size:	<u>1</u>	Team(s)	Total job time:	<u>158.21</u>	Hours
Unit cost:	<u>\$1.114</u>	/LCY	Total job cost:	<u>\$167,079</u>	

BULLDOZER RIPPING WORK

Task description: Rip shale from pit floor to construct reservoir liner - PII

Site: Bonser Pit Permit Action: Phase II Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 3/14/2017 County: Larimer Filename: M156-003
User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU Horsepower: 405
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$100.59</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$87.23</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$10.94</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$6.82</u>	<u>100</u>
Operator Cost/Hour:	<u>\$40.52</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$246.10</u>	
Total Fleet Cost/Hour:	<u>\$246.10</u>	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 40.00 acres Rip Depth (ft): 1.25 Volume: 80,667 BCY or CCY

Source of estimated quantity: Exhibit L - Reclamation Cost - Phase II

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.63</u>	<u>mph</u>
Average Ripping Width:	<u>7.67</u>	<u>degrees</u>
Average Ripping Length:	<u>100.00</u>	<u>feet</u>
Average Dozer Speed:	<u>88.00</u>	<u>feet</u>
Average Maneuver Time:	<u>0.25</u>	<u>feet</u>
Production per unit area:	<u>0.762</u>	<u>acres/hour</u>

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	<u>0.762</u>	<u>Acres/hr</u>
Site Altitude:	<u>4,850</u>	<u>feet</u>
Altitude Adj:	<u>1.00</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.83</u>	<u>multiplier</u>

Adjusted Hourly Unit Production:	<u>0.63</u>	<u>Acres/hr</u>
Adjusted Hourly Fleet Production:	<u>0.63</u>	<u>Acres/hr</u>

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 63.24 Hours

Unit cost: \$389.092 Per acreTotal job cost: \$15,564**SCRAPER TEAM WORK**Task description: Place and Compact Liner - Phase IISite: Bonser PitPermit Action: Phase IIPermit/Job#: M2000156**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 3/14/2017County: LarimerFilename: M156-004User: JLEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	CAT 825H
Road Maintenance -Motor Grader:	CAT 14M
-Water Truck:	Water Tanker, 5,000 Gal.

Cost Breakdown:**Scraper Work Team****Support Equipment****Maintenance Equipment**

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$99.75	NA	NA	\$103.01	\$54.68	\$24.01
Operating cost/hour:	\$118.23	NA	NA	\$74.57	\$46.99	\$34.13
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$41.46	NA	NA	\$31.87	\$38.16	\$39.38
Unit Subtotals:	\$259.44	NA	NA	\$209.45	\$139.83	\$97.52
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work: \$518.88		Support: \$209.45		Maint: \$237.35	

Total work team cost/hour: **\$965.68****MATERIAL QUANTITIES**Initial volume: 80,500

CCY

Swell factor: 1.000Loose volume: 80,500

LCY

Source of estimated volume: Exhibit L - Reclamation Cost - Phase IISource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 1 lbs/LCY
 Material description: User Provided
 Rated Payload: 52,800 pounds

Struck Volume: 15.70 LCY
 Heaped Volume: 22.00 LCY
 Average Volume: 18.85 LCY

Payload Capacity: 52,800.00 LCY

Adjusted Capacity: 18.85 LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes

Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 4850 feet

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

Travel Time:

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

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	5.00	5.00	2218	0.21

Haul Time: 0.21 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	5.00	5.00	2814	0.25

Return Time: 0.25 minutes

Total Scraper team cycle time: 1.96 minutes

Adjusted for job conditions: 957.89 LCY/Hour

Selected Number of Scrapers: 2 Scraper(s)

Adjusted single scraper team (unit) hourly production: 957.89 LCY/Hour

Adjusted multiple scraper team (fleet) hourly production: 957.89 LCY/Hour

Unadjusted unit production/hour: 1,154.08 LCY/Hour

Optimal Number of Scrapers per push
dozer: _____

JOB TIME AND COST

Fleet size: 1 Team(s)

Total job time: 84.04 Hours

Unit cost: \$1.008 /LCY

Total job cost: \$81,155

SCRAPER TEAM WORK

Task description: Replacing topsoil along reservoir shoreline - Phase II

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 005

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-005

User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 14M
-Water Truck:	Water Tanker, 5,000 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	50	25
Ownership cost/hour:	\$99.75	NA	NA	NA	\$54.68	\$24.01
Operating cost/hour:	\$118.23	NA	NA	NA	\$23.50	\$8.53
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$41.46	NA	NA	NA	\$38.16	\$39.38
Unit Subtotals:	\$259.44	NA	NA	NA	\$116.33	\$71.93
Number of Units:	2	0	0	0	1	1
Group Subtotals:	Work:	\$518.88	Support:	\$0.00	Maint:	\$188.26

Total work team cost/hour: **\$707.14**

MATERIAL QUANTITIES

Initial volume: 40,333

CCY

Swell factor: 1.000

Loose volume: **40,333**

LCY

Source of estimated volume: Exhibit L - Reclamation Costs - Phase II

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight:	<u>1 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>User Provided</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>52,800.00 LCY</u>	Adjusted Capacity:	<u>18.85</u>	LCY

Cycle Time:

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

Job Condition Correction:

Site Altitude: 4850 feet

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

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

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	0.00	3.00	3.00	2824	0.43

Haul Time: 0.43 minutes**Return Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	0.00	3.00	3.00	2874	0.43

Return Time: 0.43 minutes

Total Scraper team cycle time: 2.36 minutes
 Adjusted for job conditions: 795.53 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 795.53 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 795.53 LCY/Hour

Unadjusted unit production/hour: 958.47 LCY/Hour
 Optimal Number of Scrapers per push
 dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 50.70 HoursUnit cost: \$0.889 /LCY Total job cost: \$35,851

REVEGETATION WORK

Task description: Revegetation of disturbed areas - Phase II

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 006

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-006

User: JLE

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	250.00	pound	\$1.23	\$307.50
			Total Fertilizer Materials Cost/Acre	\$307.50

Application:

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

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$106.29
Total Tilling Cost/Acre	\$106.29

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Nebraska 28	4.00	35.72	\$43.00
Sideoats Grama - Vaughn	5.00	16.41	\$50.00
Thickspike Wheatgrass - Critana	8.00	28.28	\$45.92
Totals Seed Mix	17.00	80.42	\$138.92

Application

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

MULCHING and MISCELLANEOUS

Materials

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

Application

Description	Cost /Acre
	\$
Total Mulch Application Cost/Acre	\$0.00

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:	37	Cost /Acre:	\$929.33
Estimated Failure Rate:	25%	Cost /Acre*:	\$370.92
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$34,385.21
Reseeding Job Cost:	\$3,431.01
Total Job Cost:	\$37,816
Job Hours:	18.50

TRUCK/LOADER TEAM WORK

Task description: Backfill/Grade Sediment Pond

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 007

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-007

User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 990H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D9T - 9SU
Road Maintenance -Motor Grader:	CAT 12M
-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	100	NA	50	25	25
Ownership cost/hour:	\$67.61	\$126.84	NA	\$100.59	\$28.02	\$24.01
Operating cost/hour:	\$53.30	\$118.18	NA	\$43.62	\$7.07	\$8.53
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$25.65	\$41.46	NA	\$40.52	\$38.16	\$39.38
Unit Subtotals:	\$146.56	\$286.48	NA	\$184.73	\$73.25	\$71.93
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work: \$726.16		Support: \$184.73		Maint: \$145.18	

Total work team cost/hour: **\$1,056.07**

MATERIAL QUANTITIES

Initial volume: 3,227

CCY

Swell factor: 1.000

Loose volume: 3,227

LCY

Source of estimated volume: Exhibit L - Reclamation Costs - Phase II

Source of estimated swell factor: Cat Handbook

Material Purchase Cost: \$0.00

Total Cost: \$0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:	1	Pounds/LCY
Description:	User Provided	
Rated Payload:	87,000	Pounds
Payload Capacity:	87,000.00	LCY

Truck Bed (volume) Basis:

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

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

Loading Tool Capacity

Bucket Size Class: NA

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

Job Condition Corrections:

Site Altitude (ft.): 4850 feet

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

Loading Tool Cycle Time:

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

Excavators and Front Shovels:

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

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

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

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.000	minutes
Adjusted Loader Cycle Time:		0.600	minutes
Net Load Time per Truck:		0.700	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.60</u>	Minutes	Adjusted for site altitude:	<u>0.600</u>	Minutes
Truck Load Time:	<u>0.700</u>	Minutes	Adjusted for site altitude:	<u>0.700</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.00</u>	Minutes	Adjusted for site altitude:	<u>1.000</u>	Minutes

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

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1350.00	0.00	3.00	3.00	3005	1.242

Haul Time: 1.242 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1350.00	0.00	3.00	3.00	3005	0.616

Return Time: 0.616 minutes

Total Truck Cycle Time: 4.158 minutes

Loading Tool unit

Production	<u>1,142.31</u>	LCY/Hour	Adjusted for job efficiency:	<u>948.12</u>	LCY/Hour
Truck Unit Production	<u>357.14</u>	LCY/Hour	Adjusted for job efficiency:	<u>296.43</u>	LCY/Hour

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

Adjusted hourly truck team production:	<u>889.29</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>889.29</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u>889.29</u>	LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 3.63 Hours

Unit cost: \$1.188 /LCY Total job cost: \$3,832

WHEEL LOADER – LOAD AND CARRY WORK

Task description: Place slope protection on East Shore

Site: Bonser Pit

Permit Action: Phase II

Permit/Job#: M2000156

PROJECT IDENTIFICATION

Task #: 008

State: Colorado

Abbreviation: None

Date: 3/14/2017

County: Larimer

Filename: M156-008

User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 990H

Attachment 1: ROPS Cab

Horsepower: 621

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$126.84	NA
Operating Cost/Hour:	\$118.18	100
Operator Cost/Hour:	\$41.46	NA
Total Unit Cost/Hour:	\$286.48	
Total Fleet Cost/Hour:	\$286.48	

MATERIAL QUANTITIES

Initial volume: 1,608

CCY

Swell factor: 1.000

Loose volume: 1,608

LCY

Source of estimated volume: Exhibit L - Reclamation Costs

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Loader Cycle Time:

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

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		-0.020	minutes
Adjusted Basic Cycle Time:		0.580	minutes

Rolling Resistance – Road Conditions

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

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	1200	0.00	5.00	5.00	0.9974	(Cat HB)
Return Route:	1200	0.00	5.00	5.00	0.9931	(Cat HB)

Total Travel Time: 1.9905 minutes
Total Cycle Time: 2.5705 minutes

Load Bucket Capacity

Rated Capacity: 11.25 LCY (heaped)
Bucket Fill Factor: 0.875 Loose material - 1" and over (85 - 90%) 0.875
Adjusted Capacity: 9.84 LCY

Job Condition Correction Factors

Site Altitude: 4850 feet

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

Unadjusted Hourly Unit Production: 229.77 LCY/Hour
Adjusted Hourly Unit Production: 190.71 LCY/Hour
Adjusted Hourly Fleet Production: 190.71 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 8.43 Hours
Unit cost: \$1.502 /LCY Total job cost: \$2,415

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization and Demobilization of Equipment**

Site: **Bonser Pit**

Permit Action: **Phase II**

Permit/Job#: **M2000156**

PROJECT IDENTIFICATION

Task #: **010**

State: **Colorado**

Abbreviation: **None**

Date: **3/14/2017**

County: **Larimer**

Filename: **M156-010**

User: **JLE**

Agency or organization name: **DRMS**

EQUIPMENT TRANSPORT RIG COST

Shift basis: **1 per day**

Cost Data Source: **CRG Data**

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

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

Cost Breakdown:

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

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Centrifugal pump - 200M, 10 in.	1.95	\$0.00	\$88.67	1	\$88.67	\$88.67	\$250.00
CAT 990H	83.34	\$126.84	\$125.45	1	\$252.29	\$125.45	\$250.00
CAT 14M	23.57	\$54.68	\$88.67	1	\$143.35	\$88.67	\$250.00
Cat D9T - 9SU	66.13	\$111.53	\$125.45	1	\$236.98	\$125.45	\$250.00
Cat 627G w/push- pull	43.48	\$99.75	\$117.55	2	\$434.60	\$235.10	\$500.00
CAT 825H	36.08	\$103.01	\$117.55	1	\$220.56	\$117.55	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$12.22	\$88.67	1	\$100.89	\$88.67	\$250.00

Subtotals: **\$1,477.34** **\$869.56** **\$2,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Cat 740	\$146.56	3	\$439.68	\$439.68
Water Tanker, 5,000 Gal.	\$97.52	1	\$97.52	\$97.52

Subtotals: **\$537.20** **\$537.20**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: LOVELAND
Total one-way travel distance: 5.00 miles
Average Travel Speed: 50.00 mph

Total Non-Roadable Mob/Demob Cost * \$8,428.65
** two round trips with haul rig:
Total Roadable Mob/Demob Cost ** \$107.44
** one round trip, no haul rig:

Transportation Cycle Time:

	Non- Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.10	0.10
Return Time (Hours):	0.10	0.10
Loading Time (Hours):	0.67	NA
Unloading Time (Hours):	0.67	NA
Subtotals:	1.54	0.20

JOB TIME AND COST

Total job time: 3.08 Hours

Total job cost: \$8,536