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: Timnath Pit	**MINE/PROSPECTING ID#:** M-1989-056	**MINERAL:** Sand and gravel	**COUNTY:** Larimer
INSPECTION TYPE: Monitoring	**INSPECTOR(S):** Jared L. Ebert	**INSP. DATE:** May 26, 2017	**INSP. TIME:** 09:00
OPERATOR: Don Kehn Construction, Inc.	**OPERATOR REPRESENTATIVE:** Dan Kehn	**TYPE OF OPERATION:** 112c - Construction Regular Operation	

REASON FOR INSPECTION: Normal I&E Program	**BOND CALCULATION TYPE:** Complete Bond	**BOND AMOUNT:** $207,700.50
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** None	**JOINT INSP. AGENCY:** None
WEATHER: Clear	**INSPECTOR'S SIGNATURE:** Jared Ebert	**SIGNATURE DATE:** May 31, 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: Availability Of Records
PROBLEM: The Operator has not submitted the results of the groundwater monitoring required to be conducted at the site since 2012. The Operator is required to submit the water monitoring results to the Division with the submittal of their annual report. This is a problem at this time for failure to comply with the condition of a permit in accordance with C.R.S. 34-32.5-124.
CORRECTIVE ACTIONS: The Operator shall submit the results of the groundwater level monitoring data collected from the first quarter of 2013 to date.
CORRECTIVE ACTION DUE DATE: 6/30/17

OBSERVATIONS

This was a monitoring inspection of the Timnath Pit operated by Don Kehn Construction, Inc. DRMS file no. M-1989-056. I, Jared Ebert of the Colorado Division of Reclamation Mining and Safety (Division) conducted the inspection. Mr. Dan Kehn with Don Kehn Construction accompanied me during the inspection. The weather was clear and cool at the time of the inspection.

This is a 280 acre 112c mining operation for sand and gravel. The post mine land use for the site is to create wetland areas and a private recreational reservoir. Mining is occurring in the Phase II and III mining area. Portions of the Phase II area have been reclaimed. The majority of the Phase I (a,b and c) mining areas has been reclaimed to wetlands. The main office, maintenance shop, asphalt and concrete batch plants are located in the Phase V mining area. Crushing and screening of mined material is occurring at the southern end of the Phase II mining area and a portion of the Phase Ia mining area.

Availability Of Records:
With the approval of the Amendment No. 1 (AM01) application in 1994, Don Kehn Construction committed to conducting water level monitoring at three wells on a quarterly basis. The Operator committed to submitting the results of the groundwater level monitoring to the Division with their annual reports each year. The Division has not received the water monitoring data since 2012. The Division will require the operator to submit all of the ground water monitoring data from the first quarter of 2013 to date. This issue is cited as a problem at the beginning of this report.

Backfilling and Grading:
The pit slopes were approximately graded to a 3H:1V ratio on the east side of the Phase II pit. Grading is still required at a portion of the northern end and western end of the Phase II excavation. Also a highwall was observed in the western edge of the pit located in the Phase III area.

Financial Warranty:
The current bond held for the site is $207,700.50 in the form of a corporate surety. The last reclamation cost estimate conducted for the site was done in 2008. Given this, the Division has evaluated the reclamation liability at the site. The Division has estimated the cost to reclaim the site in accordance with the approved reclamation plan to be $369,626.30. The reclamation cost estimate is enclosed with this report for the Operator's review. The Division requests that the Operator review the cost estimate and provide the Division any comments or questions about the estimate by **June 12, 2017**. The Division may issue a surety increase revision after **June 12, 2017** if no comments or questions are received. The Division will send a separate notice of the required surety increase to the Operator. The Operator will have sixty days from that notice to submit the additionally required warranty.

Hydrologic Balance:
The Operator has constructed a recharge pond at the northern end of the Phase III mining area. According to Mr. Kehn, this pond was constructed as a requirement of their augmentation plan.

Gen. Compliance With Mine Plan:
The approved mine plan calls for mining the site in five phases. Mining is complete in the Phase I area along the southern portion of the site. The Operator is currently mining in the northern portion of the Phase II area

on the west side of the phase. An excavation was observed at the southern end of the Phase III area on the east side of the Office/Plant site.

The Operator is currently dewatering the pit. Water is pumped to a holding pond at the northeast corner of the Phase II area. Water then discharges through a pipe spillway to a ditch that runs north/south on the east side of the site. The dewatering water enters another settling pond on the southeast side of the Phase II area before it discharges to the river.

The out-slopes of the dewatering pond are at least 3H:1V or less. The main highwall in located in the northeast corner of the Phase II area. The slopes are near vertical at this location. Also a highwall is located on the west pit slopes of the excavation at in the Phase III area.

Reclamation Success:
They have reclaimed the majority of the Phase I mining area and have created wetlands at the southern end of the site. Dense vegetation has established within these areas consisting of wetland vegetation. Irregular shaped ponds are located throughout the area.

A portion of the southern end of the Phase II area has also been reclaimed to wetlands.

Revegetation:
Russian olive trees were observed throughout the reclaimed area. According to Mr. Kehn, they plan to remove these trees when equipment and ground conditions improve.

Support Facilities On-site:
The main facilities are located in the Phase V mining area. This area consists of a main office for the company, a large shop building, a covered storage area, an asphalt plant, concrete plant and a parking area for construction equipment and trailers.

At the southern end of the Phase II mining area the Operator has set up a crushing facility and washing facility. Many stockpiles of material are located in this area along with multiple conveyors.

Topsoil:
Two topsoil stockpiles are locate at the southern end of the Phase II area. These piles are vegetated and stable. Mr. Kehn indicated the western most pile will need to be moved to accommodate the mining operation.

PHOTOGRAPHS

Figure 1. Phase Ic reclaimed area.

Figure 2. Phase Ib reclaimed area.

Figure 3. Dewatering ditch on the east side of the Phase II mining area.

Figure 4. From the southeast corner of the Phase II mining area looking northwest.

Figure 5. Dewatering pond at the northeast corner of the Phase II area.

Figure 6. From the northeast corner of the Phase II excavation looking southwest.

Figure 7. From the northwest corner of the Phase II area looking east.

Figure 8. From the northwest corner of the Phase II area looking south.

Figure 9. Recharge Pond at the north end of the Phase III mining area. From the northwest corner looking southeast.

GENERAL INSPECTION TOPICS

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

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

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
Dan Kehn
Don Kehn Construction, Inc.
6550 S. CR 5
Fort Collins, CO 80528

Enclosure: *1.) 30 May 2017 CIRCES Reclamation Cost Estimate.*

CC: None

COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-000
User: JLE

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolition of Facilities	DEMOLISH	1	860.50	$54,346.01
002	Rip facilities area and primary haul road	RIPPER	2	11.88	$7,102.00
003	Backfill and Grade Highwalls in Phase II and III area	DOZER	2	3.61	$2,094.00
004	Pump water from de-watering pit to remove embankment	PUMPING	1	38.31	$2,086.00
005	Remove dewatering pond embankment	DOZER	2	30.09	$17,404.00
006	Spread Topsoil Over Affected Area	SCRAPER1	2	27.65	$56,797.00
007	Revegetation of Dryland Area	REVEGE	1	15.00	$48,680.00
008	Revegetation of Wet Meadow Area	REVEGE	1	56.48	$90,779.00
009	Mobilization of Equipment	MOBILIZE	1	4.72	$15,515.00
		SUBTOTALS:		**1048.24**	**$294,803**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$5,955.02
Performance bond:	1.05	Total =	$3,095.43
Job superintendent:	255.87 hrs at $73.05/hour	Total =	$18,691.30
Profit:	10.00	Total =	$29,480.30
		TOTAL O & P =	$57,222.05
		CONTRACT AMOUNT (direct + O & P) =	$352,025.05

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	0.00	Total =	0.00
Engineering work and/or contract/bid preparation:	0.00	Total =	$0.00
Reclamation management and/or administration:	5.00		$17,601.25
CONTINGENCY:	0.00	Total =	$0.00
		TOTAL INDIRECT COST =	$74,823.30
		TOTAL BOND AMOUNT (direct + indirect) =	**$369,626.30**

DEMOLITION WORK

Task description: **Demolition of Facilities**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-001
User: JLE

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 94.70 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Mine Office - Structure	42,960 CF	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 10,000 ft. haul	42,960.00	CF	$0.19	$7,947.60
Mine Office - Floor	3,580 SF	Floor, concrete, demolition only, average reinforcing - 4 in. thick	3,580.00	SF	$0.39	$1,396.20
Maintenance Shop - Structure	108000 CF	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 10,000 ft. haul	108,000.00	CF	$0.19	$19,980.00
Maintenance Shop - Floor	7200 SF	Floor, concrete, demolition only, average reinforcing - 4 in. thick	7,200.00	SF	$0.39	$2,808.00
Covered Storage	54075 CF	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	54,075.00	CF	$0.18	$9,679.43
Concrete Batch Plant	46080	Bldg. (MC) demo./on-site disposal in existing pit or cut - Max. 10,000 ft. haul	46,080.00	CF	$0.28	$12,856.32
Aspahlt Batch Plant	2 Silos	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	2.00	EA	$760.00	$1,520.00
Various Conveyors	1000 LF ' Long X 3' W X 2	Conveyor, demolition, on-site disposal, existing pit, 50 ft. push	6,000.00	CF	$0.20	$1,200.00

Job Hours: **860.50** **Subtotal (unadjusted)**: **$57,387.55** **Total Cost (adjusted for location)**: **$54,346.01**

BULLDOZER RIPPING WORK

Task description: **Rip facilities area and primary haul road**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-002
User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

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

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$122.17	NA
Operating Cost/Hour:	$111.29	100
Ripper Ownership Cost/Hour:	$15.98	NA
Ripper Operating Cost/Hour:	$8.78	100
Operator Cost/Hour:	$40.52	NA
Total Unit Cost/Hour:	$298.74	
Total Fleet Cost/Hour:	**$597.48**	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 15.44 acres Rip Depth (ft): 1.00 Volume: 24,910 BCY or CCY

Source of estimated quantity: DRMS

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	4.49	mph
Average Ripping Width:	6.74	degrees
Average Ripping Length:	500.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.783	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.783	Acres/hr
Site Altitude:	4,800	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier
Adjusted Hourly Unit Production:	0.65	Acres/hr
Adjusted Hourly Fleet Production:	**1.30**	Acres/hr

JOB TIME AND COST

Fleet size:	2	Grader(s)	Total job time:	**11.89**	Hours
Unit cost:	$459.949	Per acre	Total job cost:	**$7,102**	

BULLDOZER WORK

Task description: **Backfill and Grade Highwalls in Phase II and III area**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-003
User: JLE

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:	$122.17	NA
Operating Cost/Hour:	$111.29	100
Ripper own. Cost/Hour:	$14.40	NA
Ripper op. Cost/Hour:	$2.06	25
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $290.44
Total Fleet Cost/Hour: **$580.89**

MATERIAL QUANTITIES

Initial Volume: 13,611
Swell factor: 1.115
Loose volume: **15,176** LCY

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

HOURLY PRODUCTION

Average push distance: 60 feet
Unadjusted hourly production: 2,551.3 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -30 %
Average site altitude: 4,800 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.700	(FND-MF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8250

Adjusted unit production: 2,104.82 LCY/hr

Adjusted fleet production: **4209.64** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: $0.138/LCY

Total job time: **3.61** Hours

Total job cost: **$2,094**

PUMPING WORK

Task description: **Pump water from de-watering pit to remove embankment**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #:	004	State:	Colorado	Abbreviation:	None
Date:	5/30/2017	County:	Larimer	Filename:	M056-004
User:	JLE				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

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

Horsepower: 70
Shift Basis: 1 per day
Weight: 1.95 (US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$9.05	NA
Operating Cost/Hour:	$16.86	100
Operator Cost/Hour:	$28.53	NA
Total Unit Cost/Hour:	$54.44	

Total Fleet Cost/Hour: $54.44

PUMPING QUANTITIES

Initial Pond Volume:	25.00		Conversion factor:	325850.5800
Final Pond Volume:	**8,146,264.50**	gallons		
Total Pond Inflow Surface Area:	72,310	Sq. ft.	Unit inflow rate in gph/sq. ft.:	0.1758
Total Pond Inflow Volume per Hour:	12,712.10	gallons		

Source of estimated volume: Pond 1.66 Acres in size and about 15 feet deep

PUMPING TIME

Maximum Pump Capacity:	200,000	gph/pump
Estimated Suction Head:	10	feet
Estimated Discharge Head:	0	feet
Total Head:	10	feet
CPB Pump Capacity:	201,000	gph/pump
Site Altitude:	4,800	feet

Adjusted Pumping Capacity:	201,000	gph
Initial Unadjusted Pumping Time:	40.53	hours
Inflow during Initial Pumping:	515,205	gallons
Net Unadjusted Pumping Time:	43.09	Hours
Altitude Adjustment Factor:	0.9700	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	38.32	hours

JOB TIME AND COST

Total job time: **38.32** Hours

Unit cost: $0.000241 /Gallon

Total job cost: **$2,086**

BULLDOZER WORK

Task description: **Remove dewatering pond embankment**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-005
User: JLE

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:	$122.17	NA
Operating Cost/Hour:	$111.29	100
Ripper own. Cost/Hour:	$14.40	NA
Ripper op. Cost/Hour:	$0.83	10
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $289.21
Total Fleet Cost/Hour: **$578.41**

MATERIAL QUANTITIES

Initial Volume: 36,296
Swell factor: 1.125
Loose volume: **40,833** LCY

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

HOURLY PRODUCTION

Average push distance: 150 feet
Unadjusted hourly production: 1,243.2 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 4,800 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5458

Adjusted unit production: 678.54 LCY/hr

Adjusted fleet production: **1357.08** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: $0.426/LCY

Total job time: **30.09** Hours

Total job cost: **$17,404**

SCRAPER TEAM WORK

Task description: **Spread Topsoil Over Affected Area**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-006
User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 657G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D10T - 10SU
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	50	50	25
Ownership cost/hour:	$181.43	NA	NA	$122.17	$54.68	$24.01
Operating cost/hour:	$188.71	NA	NA	$55.65	$23.50	$8.53
%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:	$41.67	NA	NA	$40.52	$38.16	$39.38
Unit Subtotals:	$411.81	NA	NA	$218.34	$116.33	$71.93
Number of Units:	4	0	0	1	1	1
Group Subtotals:	Work:	$1,647.24	Support:	$218.34	Maint:	$188.26

Total work team cost/hour: **$2,053.84**

MATERIAL QUANTITIES

Initial volume: 69,777 CCY Swell factor: 1.000
Loose volume: **69,777** LCY

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

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 104,000 pounds
Payload Capacity: 65.00 LCY

Struck Volume: 32.00 LCY
Heaped Volume: 44.00 LCY
Average Volume: 38.00 LCY
Adjusted Capacity: **38.00** LCY

Cycle Time:

Scraper Loading Time: 1.10 Minutes
Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction: Site Altitude: 4800 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	1284.00	0.00	3.00	3.00	2883	0.70

Haul Time: **0.70** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1284.00	0.00	3.00	3.00	2958	0.60

Return Time: **0.60** minutes

Total Scraper team cycle time: **3.00** minutes
Adjusted for job conditions: 1,261.60 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,261.60 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **2,523.20** LCY/Hour

Unadjusted unit production/hour: 1,520.00 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 2 Team(s) Total job time: **27.65** Hours

Unit cost: $0.814 /LCY Total job cost: **$56,797**

REVEGETATION WORK

Task description: **Revegetation of Dryland Area**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-007
User: JLE

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
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
Alkali Sacaton	1.50	58.54	$42.48
Blue Grama - Lovington	1.60	26.12	$26.00
Buffalograss - Native/Plains	15.00	14.46	$177.45
Foxtail Barley	1.00	3.44	$212.03
Totals Seed Mix	19.10	102.56	**$457.96**

Application

Description	Cost /Acre

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

MULCHING and MISCELLANEOUS

Materials

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

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$165.34**

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:	30.02	Cost /Acre:	$1,483.59
Estimated Failure Rate:	20%	Cost /Acre*:	$689.96
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$44,537.37**
Reseeding Job Cost:	**$4,142.52**
Total Job Cost:	**$48,680**
Job Hours:	**15.00**

REVEGETATION WORK

Task description: **Revegetation of Wet Meadow Area**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 008 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-008
User: JLE

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
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
Alkali Sacaton	1.20	46.83	$33.98
Foxtail Barley	1.50	5.17	$318.05
Streambank Wheatgrass - Sodar	4.00	13.04	$24.36
Saltgrass, Inland	1.60	22.18	$69.65
Totals Seed Mix	8.30	87.22	**$446.04**

Application

Description	Cost /Acre

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

MULCHING and MISCELLANEOUS

Materials

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

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$165.34**

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:	56.48	Cost /Acre:	$1,471.67
Estimated Failure Rate:	20%	Cost /Acre*:	$678.04
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$83,119.92**
Reseeding Job Cost:	**$7,659.14**
Total Job Cost:	**$90,779**
Job Hours:	**56.48**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization of Equipment**

Site: **Timnath Pit** Permit Action: May 2017 Estimate Permit/Job#: M1989056

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 5/30/2017 County: Larimer Filename: M056-009
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
Cat D10T - 10SU	93.31	$136.57	$125.45	2	$524.04	$250.90	$500.00
Centrifugal pump - 200M, 10 in.	1.95	$8.43	$88.67	1	$97.10	$88.67	$250.00
Cat 657G w/push-pull	80.25	$181.43	$125.45	4	$1,227.52	$501.80	$1,000.00
CAT 14M	23.57	$54.68	$88.67	1	$143.35	$88.67	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$12.22	$88.67	2	$201.78	$177.34	$250.00
Power Mulcher (Bowie LD-90)	6.00	$7.03	$88.67	1	$95.70	$88.67	$250.00
Subtotals:					**$2,289.49**	**$1,196.05**	**$2,500.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 5,000 Gal.	$97.52	1	$97.52	$97.52
Fuel Tanker, 6x4, 210 HP	$74.87	2	$149.74	$149.74
Subtotals:			**$247.26**	**$247.26**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	FORT COLLINS	
Total one-way travel distance:	10.00	miles
Average Travel Speed:	55.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$15,425.43	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$89.91	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.18	0.18
Return Time (Hours):	0.18	0.18
Loading Time (Hours):	1.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	2.36	0.36

JOB TIME AND COST

Total job time:	**4.73**	Hours
Total job cost:	**$15,515**	