



August 25, 2020

Gregory Larson
14977 Co. Rd. 97
Haxtun, CO 80731

**RE: Larson Pit, Permit File No. M-2007-012
Technical Revision 2 (TR-2)
Adequacy Letter #1**

Dear Mr. Larson:

On August 18, 2020, the Division of Reclamation, Mining and Safety received your Technical Revision Application package for the Larson Pit, File No. M-2007-012. A review of the information received determined that the following item needs to be addressed before the Division can approve your application.

1. The map submitted with the application shows that the area to be removed from the permit is in the shape of a semi-circle or an arc. This feature can be difficult to mark in the field. The Division suggests that the 3.5 acres to be removed be in a squared format for easier identification on the ground. The south side of Area 2 is approximately 850 feet wide. If you remove the southernmost 180 feet of Area 2 this will equal 3.5 acres ($850' \times 180' = 153,000\text{ft}^2$ or 3.5124 acres). Please submit an updated map showing the 3.5 acres section to be removed in a squared format for easy field marking.

An updated reclamation cost estimate has been enclosed you to review.

The decision date for TR-2 is September 24, 2020. Please be advised that if you are unable to satisfactorily address any concerns identified in this review before the decision date, **it will be your responsibility to request an extension of the review period.** If there are outstanding issues that have not been adequately addressed prior to the end of the review period, and no extension has been requested, the Division may deny this Technical Revision.

If you have any questions, please contact me at (720) 774-0040 or brock.bowles@state.co.us.

Sincerely,

Brock Bowles
Environmental Protection Specialist

Enclosure: 2020 Reclamation Cost Estimate
CC: Michael Cunningham, DRMS



COST SUMMARY WORK

Task description: Sitewide- remove 3.5 acres from area 2,

Site: Larson Pit

Permit Action: TR02 Sitewide RCE

Permit/Job#: M2007012

PROJECT IDENTIFICATION

Task #: 100

State: Colorado

Abbreviation: None

Date: 8/24/2020

County: Phillips

Filename: M012-100

User: BFB

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Transport Concrete Waste to Pit	LOADER	1	5.81	\$611
002	Backfill and Grade Slopes to 3H:1V	DOZER	1	3.71	\$962
003	Replace Topsoil	DOZER	1	16.92	\$4,185
004	Rip Access Road and Concrete Pile Area	RIPPER	1	2.42	\$651
005	Plant Cover Crop	REVEGE	1	16.00	\$3,850
006	Plant Reclamation Seed Mix	REVEGE	1	16.00	\$6,936
007	Mobilization/demobilization of reclamation equipment	MOBILIZE	1	3.80	\$3,619
<u>SUBTOTALS:</u>				64.66	\$20,814

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$420

Performance bond: 1.05

Total = \$219

Job superintendent: 27.22

Total = \$1,893

Profit: 10.00

Total = \$2,081

TOTAL O & P = \$4,614

CONTRACT AMOUNT (direct + O & P) = \$25,428

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): \$500

Total = \$500

Engineering work and/or contract/bid preparation: 0.00

Total = \$0

Reclamation management and/or administration: 5.00

\$1,271

CONTINGENCY: 0.00

Total = \$0

TOTAL INDIRECT COST = \$6,385

TOTAL BOND AMOUNT (direct + indirect) = \$27,199

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport Concrete Waste to PitSite: Larson PitPermit Action: TR02 Sitewide RCEPermit/Job#: M2007012**PROJECT IDENTIFICATION**Task #: 001State: ColoradoAbbreviation: NoneDate: 8/24/2020County: PhillipsFilename: 001User: BFBAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 950HAttachment 1: ROPS CabHorsepower: 197Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$28.79	NA
Operating Cost/Hour:	\$35.52	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$105.01	
Total Fleet Cost/Hour:	\$105.01	

MATERIAL QUANTITIESInitial volume: 200

CCY

Swell factor: 1.000Loose volume: 200

LCY

Source of estimated volume: Operator EstimateSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Loader Cycle Time:**Unadjusted Basic Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	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:	Small target 0.04	0.040	(Cat HB)
Net Cycle Time Adjustment:		0.100	minutes
Adjusted Basic Cycle Time:		0.600	minutes

Rolling Resistance – Road ConditionsHaul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Return: 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:	1250	-1.50	5.00	3.50	1.0745	(Cat HB)

Return Route:	1250	1.50	5.00	6.50	1.1278	(Cat HB)
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Total Travel Time: 2.2023 minutes
Total Cycle Time: 2.8023 minutes

Load Bucket Capacity

Rated Capacity: 4.30 LCY (heaped)
Bucket Fill Factor: 0.450 Rock - Poorly blasted (40% - 50%) 0.450
Adjusted Capacity: 1.94 LCY

Job Condition Correction Factors

Site Altitude: 4020 feet

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

Unadjusted Hourly Unit Production: 41.43 LCY/Hour
Adjusted Hourly Unit Production: 34.39 LCY/Hour
Adjusted Hourly Fleet Production: 34.39 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 5.82 Hours
Unit cost: \$3.054 /LCY Total job cost: \$611

BULLDOZER WORKTask description: **Backfill and Grade Slopes to 3H:1V**Site: **Larson Pit**Permit Action: **TR02 Sitewide RCE**Permit/Job#: **M2007012****PROJECT IDENTIFICATION**Task #: **002**State: **Colorado**Abbreviation: **None**Date: **8/24/2020**County: **Phillips**Filename: **002**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$116.22	NA
Operating Cost/Hour:	\$89.77	100
Ripper own.	\$12.00	NA
Cost/Hour:		
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$259.28**Total Fleet Cost/Hour: **\$259.28****MATERIAL QUANTITIES**Initial Volume: **1,538**Swell factor: **1.120**Loose volume: **1,723 LCY**Source of estimated volume: **DRMS 700' of 15' tall highwall**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**Unadjusted hourly production: **852.6 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **-10 %**Average site altitude: **4,020 feet**Material weight: **2,550 lbs/LCY**Weight description: **Gravel - Dry****Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.100	(50% SL)
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:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5448

Adjusted unit
production: 464.50 LCY/hr
Adjusted fleet
production: **464.5** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.558/LCY

Total job time: **3.71** Hours
Total job cost: **\$962**

BULLDOZER WORKTask description: **Replace Topsoil**Site: **Larson Pit**Permit Action: **TR02 Sitewide RCE**Permit/Job#: **M2007012****PROJECT IDENTIFICATION**Task #: **003**State: **Colorado**Abbreviation: **None**Date: **8/24/2020**County: **Phillips**Filename: **003**User: **BFB**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **NA**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$116.22</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$89.77</u>	<u>100</u>
Ripper own.		
Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>

Total unit Cost/Hour: **\$247.28**Total Fleet Cost/Hour: **\$247.28****MATERIAL QUANTITIES**Initial Volume: **8,466**Swell factor: **1.215**Loose volume: **10,286 LCY**Source of estimated volume: **Operator 5"; DRMS 12.8 ac; 6 ac for stream-no topsoil**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **200 feet**Unadjusted hourly production: **491.9 LCY/hr**Materials consistency description: **Partly consolidated stockpile 1.1**Average push gradient: **-20 %**Average site altitude: **4,020 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor****Source**

Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.426	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 1.2356

Adjusted unit
production: 607.79 LCY/hr

Adjusted fleet
production: **607.79** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.407/LCY

Total job time: **16.92** Hours

Total job cost: **\$4,185**

BULLDOZER RIPPING WORK

Task description: Rip Access Road and Concrete Pile Area

Site: Larson Pit

Permit Action: TR02 Sitewide RCE

Permit/Job#: M2007012

PROJECT IDENTIFICATION

Task #: 004

State: Colorado

Abbreviation: None

Date: 8/24/2020

County: Phillips

Filename: 004

User: BFB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$116.22	NA
Operating Cost/Hour:	\$89.77	100
Ripper Ownership Cost/Hour:	\$12.00	NA
Ripper Operating Cost/Hour:	\$9.18	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$268.46	
Total Fleet Cost/Hour:	\$268.46	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 1.20 acres

Rip Depth (ft): 1.50

Volume: 2,904

BCY or CCY

Source of estimated quantity: 1300'x20' road, 150'x25' pile, .5 acre pit area (all PhaseI)

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.56</u>	feet/pass
Average Ripping Width:	<u>7.08</u>	feet/pass
Average Ripping Length:	<u>50.00</u>	feet/pass
Average Dozer Speed:	<u>88.00</u>	feet/minute
Average Maneuver Time:	<u>0.25</u>	minutes/pass
Production per unit area:	<u>0.596</u>	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.596 Acres/hr

Site Altitude: 4,020 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.49 Acres/hr

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

JOB TIME AND COST

Fleet size: 1

Grader(s)

Total job time: **2.43**

Hours

Unit cost: \$542.731

Per acre

Total job cost: **\$651**

REVEGETATION WORKTask description: **Plant Cover Crop**Site: **Larson Pit**Permit Action: **TR02 Sitewide RCE**Permit/Job#: **M2007012****PROJECT IDENTIFICATION**Task #: **005**State: **Colorado**Abbreviation: **None**Date: **8/25/2020**County: **Phillips**Filename: **005**User: **BFB**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
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Sorghum, Sudan - Arapahoe	6.00	3.44	\$4.20
Totals Seed Mix	6.00	3.44	\$4.20

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:	16.3	Cost /Acre:	\$236.20
Estimated Failure Rate:	0%	Cost /Acre*:	\$0.00
*Selected Replanting Work Items:	NONE		

Initial Job Cost:	\$3,850.06
Reseeding Job Cost:	\$0.00
Total Job Cost:	\$3,850
Job Hours:	16.00

REVEGETATION WORKTask description: **Plant Reclamation Seed Mix**Site: **Larson Pit**Permit Action: **TR02 Sitewide RCE**Permit/Job#: **M2007012****PROJECT IDENTIFICATION**Task #: **006**State: **Colorado**Abbreviation: **None**Date: **8/24/2020**County: **Phillips**Filename: **M012-006**User: **BFB**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
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	\$7.99
Prairie Clover, Purple - Kaneb	0.60	4.10	\$33.92
Little Bluestem - Pastura	2.10	12.53	\$28.31
Sideoats Grama - Vaughn	2.70	8.86	\$22.61
Western Wheatgrass - Arriba	2.40	6.06	\$15.60
Totals Seed Mix	8.30	39.72	\$108.43

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:	16.3	Cost /Acre:	\$340.43
Estimated Failure Rate:	25%	Cost /Acre*:	\$340.43
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$5,549.01
Reseeding Job Cost:	\$1,387.25
Total Job Cost:	\$6,936
Job Hours:	16.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization/demobilization of reclamation equipment**Site: **Larson Pit**Permit Action: **TR02 Sitewide RCE**Permit/Job#: **M2007012****PROJECT IDENTIFICATION**

Task #: 007 State: Colorado Abbreviation: None
 Date: 8/24/2020 County: Phillips Filename: 007
 User: BFB

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 950H	20.13	\$28.79	\$67.39	1	\$96.18	\$67.39	\$250.00
Cat D8T - 8SU	47.71	\$116.22	\$123.81	1	\$240.03	\$123.81	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$6.72	\$67.39	1	\$74.11	\$67.39	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$6.72	\$67.39	1	\$74.11	\$67.39	\$250.00

Subtotals: **\$484.43** **\$325.98** **\$1,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
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Subtotals: **\$0.00** **\$0.00**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: YUMA
 Total one-way travel distance: 35.00 miles
 Average Travel Speed: 50.00 mph

Total Non-Roadable Mob/Demob Cost * \$3,619.00
 * two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** \$0.00
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.70</u>	<u>0.70</u>
Return Time (Hours):	<u>0.70</u>	<u>0.70</u>
Loading Time (Hours):	<u>0.25</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.25</u>	<u>NA</u>
Subtotals:	<u>1.90</u>	<u>1.40</u>

JOB TIME AND COST

Total job time: 3.80 Hours

Total job cost: \$3,619