



COLORADO
Division of Reclamation,
Mining and Safety
Department of Natural Resources

February 14, 2023

Kirk Daehling
Natural Soda LLC
3200 CR 31
Rifle, CO 81650

Re: Nahcolite Project - File No. M-1983-194
Natural Soda LLC
Technical Revision (TR-50)
Drilling and completion of production wells 18H-1V and 18H-IR-W on new/extended pads,
additional roads and pipeline disturbances

Dear Kirk Daehling:

On February 14, 2023 the Division of Reclamation, Mining and Safety concluded its review of the Technical Revision application submitted to the Division on February 1, 2023, addressing the following:

Drilling and completion of production wells 18H-1V and 18H-IR-W on new/extended pads, additional roads and pipeline disturbances

The decision reached by the Division is: Approve - installation of 18H-1V and 18H-IR-W on new/extended pads, additional roads and pipeline disturbances

The terms of Technical Revision No. 50 approved by the Division are hereby incorporated into Permit No. M-1983-194. All other conditions and requirements of Permit No. M-1983-194 remain in full force and effect.

The revised liability amount exceeds the financial warranty currently held (see below), please submit additional bond or a rider to your existing bond that equals or exceeds the Revised Liability. The revision will not be final until the bond is approved by the Division.

Bond Held:	\$4,433,331.00
Prior Liability:	\$4,433,331.00
Change in Liability:	\$33,094.00
Revised Liability:	\$4,466,425.00
Prior Permit Acreage:	12,248.00



Change in Permit Acreage:	0.00
Revised Permit Acreage:	12,248.00
Prior Affected Acreage:	260.00
Change in Affected Acreage:	0.00
Revised Affected Acreage:	260.00

If you have any questions, please contact me by telephone at (303) 866-3567 x 8183, or by email at Amy.yeldell@state.co.us.

Sincerely,



Amy C. Yeldell
Environmental Protection Specialist

cc: Gerald Daub
Gerald Daub, Natural Soda LLC

M-GR-04



February 13, 2023

Kirk Daehling
Natural Soda LLC
3200 CR 31
Rifle, CO 81650

RE: Nahcolite Project, Permit No. M-1983-194, TR-50 Reclamation Cost Estimate-Changes to Bond

Dear Mr. Daehling:

This reclamation cost update was in response to the technical revision request (TR-50) which was submitted on February 1, 2023. The Division is mandated to recalculate the reclamation cost estimate to ensure that the Financial Warranty adequately, reflects the actual current cost of fulfilling the requirements of the approved reclamation plan.

Below is a table summarizing input values that have been updated with technical revision (TR-50) as compared to previous technical revision (TR-49) calculation. This table does not account for price changes resulting from inflation or other RS Means cost changes.

Task	Form Used	Change	Justification
01a	Demo	+	Adjust pipeline amount. Previous total was 34,948 LF. Add 4,717 LF for 18H1V and 18H-IR-W wells. Remove 2,977 LF from recent P&A'd wells. New pipe total 36,688 LF of pipe. (Net +1,740LF and +2 hrs.)
02a	Borehole	-	Removal of P&A'd wells cement and bridge plug if applicable. 3M-TDR, 90-1, BG-1, DS-2, EX-2, IRI-8, DVPW-1(A), DVPW-1(B), IRI-9, and 16H-R. Add wells 18H-1V and 18H-IR-W Corrected/updated data based on revised well list from D&A response 2/8/2023.



05a	Dozer	+	Adjust pad grading from 44.13 ac to 54 ac (Disturbed + Interim Rec) based on Well Pad & Road Acreage spreadsheet dated Feb 2023. 54 ac @ 24" = 174, 240 CY
05b	Dozer	+	Adjust topsoiling pads from 44.13 ac to 54 ac (Disturbed + Interim Rec) based on Well Pad & Road Acreage spreadsheet dated Feb 2023. 54 ac @ 6" = 43,560 CY
05c	Reveg	+	Adjust pad reveg from 44.13 ac to 54 ac (Disturbed + Interim Rec) based on Well Pad & Road Acreage spreadsheet dated Feb 2023.
06a	Ripper	+	Adjust ripping roads from 3.76 ac to 4 ac (Disturbed + Interim Rec) based on Well Pad & Road Acreage spreadsheet dated Feb 2023.
06b	Dozer	+	Adjust topsoiling roads from 3.76 ac to 4 ac (Disturbed + Interim Rec) based on Well Pad & Road Acreage spreadsheet dated Feb 2023. 4 ac @ 6" = 3,227 CY
06c	Reveg	+	Adjust road reveg from 3.76 ac to 4 ac (Disturbed + Interim Rec) based on Well Pad & Road Acreage spreadsheet dated Feb 2023.

Please feel free to contact me with any further questions.

Sincerely,



Amy Yeldell
Environmental Protection Specialist

COST SUMMARY WORK

Task description: TR-50 updates

Site: Nahcolite Project

Permit Action: TR-50

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: ACY

State: Colorado

Abbreviation: None

Date: 2/10/2023

County: Rio Blanco

Filename: M194-ACY

User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Demo of Plant, pipelines, powerlines and parking lot	DEMOLISH	1	82.00	\$2,400,776
02a	Borehole P&A	BOREHOLE	1	610.00	\$608,864
03a	Regrade Process Ponds	DOZER	2	178.19	\$94,008
03b	Decompact Process Pond	RIPPER	2	6.85	\$3,894
03c	Topsoil Process Pond	DOZER	2	14.06	\$7,418
03d	Reveg Process Pond	REVEGE	1	28.50	\$46,361
04a	Regrade Plant Area	DOZER	2	23.69	\$12,498
04b	Decompact Plant Area	RIPPER	2	7.02	\$3,991
04c	Topsoil Plant Area	DOZER	2	7.58	\$4,001
04d	Reveg Plant Area	REVEGE	1	12.30	\$20,008
05a	Regrade Well Pads	DOZER	2	194.59	\$102,660
05b	Topsoil Well Pads	DOZER	2	39.96	\$21,081
05c	Reveg Well Pads	REVEGE	1	68.00	\$131,763
06a	Decompact Roads	RIPPER	2	3.21	\$1,830
06b	Topsoil roads	DOZER	2	2.47	\$1,301
06c	Reveg Roads	REVEGE	1	6.00	\$9,760
07a	Initial Mobilization	MOBILIZE	1	8.00	\$15,400
07b	Secondary Mobilization	MOBILIZE	1	8.00	\$2,405
<u>SUBTOTALS:</u>				1300.42	\$3,488,019

INDIRECT COSTS**OVERHEAD AND PROFIT:**

Liability insurance:	2.02	Total =	\$70,458
Performance bond:	1.05	Total =	\$36,624
Job superintendent:	650.21	Total =	\$48,850
Profit:	10.00	Total =	\$348,802
		TOTAL O & P =	\$504,734
		CONTRACT AMOUNT (direct + O & P) =	\$3,992,753

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	\$500	Total =	\$500
Engineering work and/or contract/bid preparation:	5.23	Total =	\$208,821
Reclamation management and/or administration:	4.00		\$159,710
CONTINGENCY:	3.00	Total =	\$104,641
		TOTAL INDIRECT COST =	\$978,406

TOTAL BOND AMOUNT (direct + indirect) = \$4,466,425

DEMOLITION WORK

Task description: Demo of Plant, pipelines, powerlines and parking lot

Site: Nahcolite Project

Permit Action: TR-50

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 01A

State: Colorado

Abbreviation: None

Date: 2/9/2023

County: Rio Blanco

Filename: M194-01a

User: ACY

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 95.50 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
NSI Plant	200'L x 227'W x 42.5'H	Plant (3S) demo./off-site disposal in approved landfill - Max. 30 mile haul	1,929,500.00	CF	\$0.84	\$1,618,850.50
Product Storage Dome	95'L x 95'W x 50'H	Plant (3S) demo./off-site disposal in approved landfill - Max. 30 mile haul	451,250.00	CF	\$0.84	\$378,598.75
Removal of NSI Plant Slab	200'L x 227'W x 8"	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	45,400.00	SF	\$1.61	\$73,184.80
Removal of Storage Dome Slab	95'L x 95'W x 8"	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	9,025.00	SF	\$1.61	\$14,548.30
Scale Building	108'W x 18'L x 10'H	Plant (1S) demo./off-site disposal in approved landfill - Max. 30 mile haul	19,440.00	CF	\$0.80	\$15,493.68
Removal of Scale Building Slab	108'W x 18'L x 8"	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,944.00	SF	\$1.61	\$3,133.73
Tank Farm	30'W x 50'H	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	5.00	EA	\$760.00	\$3,800.00
Removal of Flagpole/Monument	70 SqFt	USER PROVIDED ITEM	70.00	Ft^2	\$5.00	\$350.00
Demolition of Screening and Magnet System	6'W x 18'L x 10'H	Plant (3S) demo./off-site disposal in approved landfill - Max. 30 mile haul	1,080.00	CF	\$0.84	\$906.12
Pipelines averaged to 10" diam	36,688 LF	Pipe, steel, welded connections - 10 in. diameter pipe	36,688.00	LF	\$11.04	\$405,035.52

Job Hours: 82.00

Subtotal (unadjusted): \$2,513,901.40

Total Cost (adjusted for location): \$2,400,775.84

BOREHOLE SEALING WORK

Task description: Borehole P&A

Site: Nahcolite Project

Permit Action: TR-50

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 02A
Date: 2/9/2023
User: ACY

State: Colorado
County: Rio Blanco

Abbreviation: None
Filename: M194-02a

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
89-1	Portland cement grout - 4 in. (labor, equip, materials)	4	1627	1,627.00	LF	\$5.55	\$9,029.85
89-2	Portland cement grout - 4 in. (labor, equip, materials)	4	1417	1,417.00	LF	\$5.55	\$7,864.35
89-3	Portland cement grout - 4 in. (labor, equip, materials)	4	347	347.00	LF	\$5.55	\$1,925.85
90-3	Portland cement grout - 4 in. (labor, equip, materials)	4	1627	1,627.00	LF	\$5.55	\$9,029.85
90-4	Portland cement grout - 4 in. (labor, equip, materials)	4	1417	1,417.00	LF	\$5.55	\$7,864.35
BG-4	Portland cement grout - 4 in. (labor, equip, materials)	4	1627	1,627.00	LF	\$5.55	\$9,029.85
DS-3	Portland cement grout - 4 in. (labor, equip, materials)	4	1876	1,876.00	LF	\$5.55	\$10,411.80
IRI-1	Portland cement grout - 4 in. (labor, equip, materials)	4	347	347.00	LF	\$5.55	\$1,925.85
IRI-4	Portland cement grout - 4 in. (labor, equip, materials)	4	1417	1,417.00	LF	\$5.55	\$7,864.35
IRI-5	Portland cement grout - 4 in. (labor, equip, materials)	4.1	347	347.00	LF	\$5.55	\$1,925.85
IRI-6	Portland cement grout - 4 in. (labor, equip, materials)	4	1627	1,627.00	LF	\$5.55	\$9,029.85
IRI-7	Portland cement grout - 4 in. (labor, equip, materials)	4	1876	1,876.00	LF	\$5.55	\$10,411.80
12H-I	Portland cement grout - 8 in. (labor, equip, materials)	7	2100	2,100.00	LF	\$7.03	\$14,763.00
12H-I Bridge Plug	PVC plug - 8 in. diameter borehole	7	1	1.00	EA	\$84.15	\$84.15
12H-R	Portland cement grout - 8	7	2100	2,100.00	LF	\$7.03	\$14,763.00

	in. (labor, equip, materials)						
12H-R Bridge Plug	PVC plug - 8 in. diameter borehole	7	1	1.00	EA	\$84.15	\$84.15
BG-6	Portland cement grout - 4 in. (labor, equip, materials)	4	1639	1,639.00	LF	\$5.55	\$9,096.45
WSW-2	Portland cement grout - 8 in. (labor, equip, materials)	7	1460	1,460.00	LF	\$7.03	\$10,263.80
13H-RI-E (13H-R)	Portland cement grout - 8 in. (labor, equip, materials)	7	2100	2,100.00	LF	\$7.03	\$14,763.00
13H-RI-E Bridge Plug	PVC plug - 8 in. diameter borehole	7	1	1.00	EA	\$84.15	\$84.15
14H-RI-E (14H-R)	Portland cement grout - 8 in. (labor, equip, materials)	7	2110	2,110.00	LF	\$7.03	\$14,833.30
14H-RI-E Bridge Plug	PVC plug - 8 in. diameter borehole	7	1	1.00	EA	\$84.15	\$84.15
WSW-3	Portland cement grout - 8 in. (labor, equip, materials)	7	1420	1,420.00	LF	\$7.03	\$9,982.60
WSW-4	Portland cement grout - 8 in. (labor, equip, materials)	7	1431	1,431.00	LF	\$7.03	\$10,059.93
DS-8 (I, Phase 1)	Portland cement grout - 4 in. (labor, equip, materials)	4	1882	1,882.00	LF	\$5.55	\$10,445.10
AG-1 (J, Phase 1)	Portland cement grout - 4 in. (labor, equip, materials)	4	1487	1,487.00	LF	\$5.55	\$8,252.85
BG-7 (K, Phase 1)	Portland cement grout - 4 in. (labor, equip, materials)	4	1593	1,593.00	LF	\$5.55	\$8,841.15
DS-9 (M, Phase 1)	Portland cement grout - 4 in. (labor, equip, materials)	4	1917	1,917.00	LF	\$5.55	\$10,639.35
DS-7	Portland cement grout - 4 in. (labor, equip, materials)	4	1897	1,897.00	LF	\$5.55	\$10,528.35
O-GWM-A (O, Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	7	1294	1,294.00	LF	\$7.03	\$9,096.82
DS-6	Portland cement grout - 4 in. (labor, equip, materials)	4	1882	1,882.00	LF	\$5.55	\$10,445.10
IRI-11	Portland cement grout - 4 in. (labor, equip, materials)	4	1550	1,550.00	LF	\$5.55	\$8,602.50
15H-I	Portland cement grout - 8 in. (labor, equip, materials)	6.4	1960	1,960.00	LF	\$7.03	\$13,778.80
15H-1 Bridge Plug	PVC plug - 6 in. diameter borehole	6.4	1	1.00	EA	\$61.43	\$61.43
15H-RI (15H-R)	Portland cement grout - 8 in. (labor, equip, materials)	6.4	1960	1,960.00	LF	\$7.03	\$13,778.80

15H-RI Bridge Plug	PVC plug - 6 in. diameter borehole	6.4	1	1.00	EA	\$61.43	\$61.43
16H-I	Portland cement grout - 8 in. (labor, equip, materials)	6.4	1960	1,960.00	LF	\$7.03	\$13,778.80
16H-I Bridge Plug	PVC plug - 6 in. diameter borehole	6.4	1	1.00	EA	\$61.43	\$61.43
17H-I	Portland cement grout - 8 in. (labor, equip, materials)	6.4	1960	1,960.00	LF	\$7.03	\$13,778.80
17H-I Bridge Plug	PVC plug - 6 in. diameter borehole	6.4	1	1.00	EA	\$61.43	\$61.43
17H-R	Portland cement grout - 10 in. (labor, equip, materials)	9	2000	2,000.00	LF	\$9.75	\$19,500.00
17H-R Bridge Plug	PVC plug - 10 in. diameter borehole	9	1	1.00	EA	\$115.29	\$115.29
12H-IR	Portland cement grout - 10 in. (labor, equip, materials)	9	2100	2,100.00	LF	\$9.75	\$20,475.00
12H-IR Bridge Plug	PVC plug - 10 in. diameter borehole	9	1	1.00	EA	\$115.29	\$115.29
13H-IR	Portland cement grout - 10 in. (labor, equip, materials)	9	2100	2,100.00	LF	\$9.75	\$20,475.00
13H-IR Bridge Plug	PVC plug - 10 in. diameter borehole	9	1	1.00	EA	\$115.29	\$115.29
15H-SSMW	Portland cement grout - 4 in. (labor, equip, materials)	4	1760	1,760.00	LF	\$5.55	\$9,768.00
17H-SSMW	Portland cement grout - 4 in. (labor, equip, materials)	4	1720	1,720.00	LF	\$5.55	\$9,546.00
DS-10	Portland cement grout - 4 in. (labor, equip, materials)	4	1882	1,882.00	LF	\$5.55	\$10,445.10
14H-1V	Portland cement grout - 10 in. (labor, equip, materials)	8.9	1945	1,945.00	LF	\$9.75	\$18,963.75
14H-1V Bridge Plug	PVC plug - 8 in. diameter borehole	8.9	1	1.00	EA	\$84.15	\$84.15
15H-1V	Portland cement grout - 10 in. (labor, equip, materials)	8.9	1898	1,898.00	LF	\$9.75	\$18,505.50
16H-1V	Portland cement grout - 10 in. (labor, equip, materials)	8.9	1976	1,976.00	LF	\$9.75	\$19,266.00
17H-1V	Portland cement grout - 10 in. (labor, equip, materials)	8.9	2100	2,100.00	LF	\$9.75	\$20,475.00
15H-IR-E	Portland cement grout - 10 in. (labor, equip, materials)	8.9	2135	2,135.00	LF	\$9.75	\$20,816.25
15H-IR-E Bridge Plug	PVC plug - 8 in. diameter borehole	8.9	1	1.00	EA	\$84.15	\$84.15
16H-IR-E	Portland cement grout - 10 in. (labor, equip, materials)	8.9	2131	2,131.00	LF	\$9.75	\$20,777.25

16H-IR-E Bridge Plug	PVC plug - 8 in. diameter borehole	8.9	1	1.00	EA	\$84.15	\$84.15
17H-IR-E	Portland cement grout - 10 in. (labor, equip, materials)	8.9	2138	2,138.00	LF	\$9.75	\$20,845.50
17H-IR-E Bridge Plug	PVC plug - 8 in. diameter borehole	8.9	1	1.00	EA	\$84.15	\$84.15
BG-11	Portland cement grout - 4 in. (labor, equip, materials)	4	1677	1,677.00	LF	\$5.55	\$9,307.35
PA-1	Portland cement grout - 4 in. (labor, equip, materials)	4	490	490.00	LF	\$5.55	\$2,719.50
AG-2	Portland cement grout - 4 in. (labor, equip, materials)	4	1230	1,230.00	LF	\$5.55	\$6,826.50
BG-10	Portland cement grout - 4 in. (labor, equip, materials)	4	1420	1,420.00	LF	\$5.55	\$7,881.00
17H-E SSMW	Portland cement grout - 4 in. (labor, equip, materials)	4	1828	1,828.00	LF	\$5.55	\$10,145.40
18H-1V	Portland cement grout - 10 in. (labor, equip, materials)	8.9	1972	172.00	LF	\$9.75	\$1,677.00
18H-1V Bridge Plug	PVC plug - 8 in. diameter borehole	8.9	1	1.00	EA	\$84.15	\$84.15
18H-IR-W	Portland cement grout - 10 in. (labor, equip, materials)	8.9	2278	2,278.00	LF	\$9.75	\$22,210.50
18H-IR-W Bridge Plug	PVC plug - 8 in. diameter borehole	8.9	1	1.00	EA	\$84.15	\$84.15

Job Hours: 610.00Total Cost: \$608,864.00

BULLDOZER WORKTask description: **Regrade Process Ponds**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **03A**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-03a**User: **ACY**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:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$263.78**Total Fleet Cost/Hour: **\$527.56****MATERIAL QUANTITIES**Initial Volume: **66,147**Swell factor: **1.115**Loose volume: **73,754 LCY**Source of estimated volume: **TR-50**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **175 feet**Unadjusted hourly production: **562.2 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **0 %**Average site altitude: **6,600 feet**Material weight: **2,100 lbs/LCY**Weight description: **Earth - Loam****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.600	(FND-SF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3681

Adjusted unit production: 206.95 LCY/hr

Adjusted fleet production: **413.9** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$1.275/LCY

Total job time: **178.19** Hours

Total job cost: **\$94,008**

BULLDOZER RIPPING WORK

Task description: Decompact Process Pond

Site: Nahcolite Project Permit Action: TR-50 Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 03B State: Colorado Abbreviation: None
Date: 2/10/2023 County: Rio Blanco Filename: M194-03b
User: ACY

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:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$13.10	NA
Ripper Operating Cost/Hour:	\$7.30	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$284.18	
Total Fleet Cost/Hour:	\$568.36	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 8.00 acres Rip Depth (ft): 2.00 Volume: 25,813 BCY or CCY

Source of estimated quantity: TR-42

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 feet/pass
Average Ripping Width: 7.08 feet/pass
Average Ripping Length: 100.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.703 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.703 Acres/hr
Site Altitude: 6,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.58 Acres/hr
Adjusted Hourly Fleet Production: 1.17 Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: 6.85 Hours

Unit cost: \$486.739 Per acre Total job cost: \$3,894

BULLDOZER WORKTask description: **Topsoil Process Pond**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **03C**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-03c**User: **ACY**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:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$263.78**Total Fleet Cost/Hour: **\$527.56****MATERIAL QUANTITIES**Initial Volume: **15,327**Swell factor: **1.000**Loose volume: **15,327 LCY**Source of estimated volume: **19 ac @ 6" depth**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **150 feet**Unadjusted hourly production: **634.3 LCY/hr**Materials consistency description: **Loose stockpile 1.2**Average push gradient: **0 %**Average site altitude: **6,600 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 545.05 LCY/hr

Adjusted fleet production: **1090.1** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.484/LCY

Total job time: **14.06** Hours

Total job cost: **\$7,418**

REVEGETATION WORKTask description: **Reveg Process Pond**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **03D**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-03d**User: **ACY**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)	\$117.18
Weed control spraying (MEANS 31 31 16.13 3100)	\$290.40
Total Tilling Cost/Acre	\$407.58

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.85
Crested Wheatgrass - Ephraim	4.00	18.37	\$17.30
Blue Wildrye - Arlington or Elkton	1.50	5.17	\$9.99
Russian Wildrye - Bozoiisky	1.50	6.03	\$9.72
Hard Fescue - Discovery	1.00	12.97	\$2.93
Pubescent Wheatgrass - Luna	1.50	3.10	\$5.10
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.41
Tall Wheatgrass - Jose	1.80	3.26	\$6.08
Thickspike Wheatgrass - Critana	4.30	15.20	\$29.56

Sweetvetch, Utah or Northern	0.10	0.05	\$7.50
Western Wheatgrass - Barton	1.50	3.79	\$10.50
Yarrow, Western	0.20	12.16	\$8.36
Totals Seed Mix	18.00	86.97	\$111.29

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
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$3.04	\$6.08
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$421.36	\$842.72
Total Mulch Materials Cost/Acre				\$848.80

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$73.00
Power mulcher (MEANS 32 91 13.16 0350)	\$141.57
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$277.29

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: 19
 Estimated Failure Rate: 30%
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Cost /Acre: \$1,876.96

Cost /Acre*: \$1,876.96

Initial Job Cost: **\$35,662.24**
 Reseeding Job Cost: **\$10,698.67**
 Total Job Cost: **\$46,361**
 Job Hours: **28.50**

BULLDOZER WORKTask description: **Regrade Plant Area**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **04A**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-04a**User: **ACY**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:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$263.78**Total Fleet Cost/Hour: **\$527.56****MATERIAL QUANTITIES**Initial Volume: **13,229**Swell factor: **1.115**Loose volume: **14,750 LCY**Source of estimated volume: **8.2 ac @ 12"**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **150 feet**Unadjusted hourly production: **634.3 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **0 %**Average site altitude: **6,600 feet**Material weight: **2,100 lbs/LCY**Weight description: **Earth - Loam****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4908

Adjusted unit production: 311.31 LCY/hr

Adjusted fleet production: **622.62** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.847/LCY

Total job time: **23.69** Hours

Total job cost: **\$12,498**

BULLDOZER RIPPING WORK

Task description: Decompact Plant Area

Site: Nahcolite Project

Permit Action: TR-50

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 04B

State: Colorado

Abbreviation: None

Date: 2/10/2023

County: Rio Blanco

Filename: M194-04b

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Ripper Attachment: 3-Shank Ripper

Horsepower: 310

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$13.10	NA
Ripper Operating Cost/Hour:	\$7.30	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$284.18	
Total Fleet Cost/Hour:	\$568.36	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 8.20 acres

Rip Depth (ft): 2.00

Volume: 26,459

BCY or CCY

Source of estimated quantity: TR-42

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	2.56	feet/pass
Average Ripping Width:	7.08	feet/pass
Average Ripping Length:	100.00	feet/pass
Average Dozer Speed:	88.00	feet/minute
Average Maneuver Time:	0.25	minutes/pass
Production per unit area:	0.703	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.703 Acres/hr

Site Altitude: 6,600 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.58 Acres/hr

Adjusted Hourly Fleet Production: **1.17** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **7.02** Hours

Unit cost: \$486.739 Per acre Total job cost: **\$3,991**

BULLDOZER WORKTask description: Topsoil Plant AreaSite: Nahcolite ProjectPermit Action: TR-50Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 04CState: ColoradoAbbreviation: NoneDate: 2/10/2023County: Rio BlancoFilename: M194-04cUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: \$263.78Total Fleet Cost/Hour: \$527.56**MATERIAL QUANTITIES**Initial Volume: 6,615Swell factor: 1.000Loose volume: 6,615 LCYSource of estimated volume: 8.2 ac @ 6" depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	0.800	(POOR)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6875

Adjusted unit production: 436.08 LCY/hr

Adjusted fleet production: **872.16** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.605/LCY

Total job time: **7.58** Hours

Total job cost: **\$4,001**

REVEGETATION WORKTask description: Reveg Plant AreaSite: Nahcolite ProjectPermit Action: TR-50Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 04DState: ColoradoAbbreviation: NoneDate: 2/10/2023County: Rio BlancoFilename: M194-04dUser: ACYAgency 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)	\$117.18
Weed control spraying (MEANS 31 31 16.13 3100)	\$290.40
Total Tilling Cost/Acre	\$407.58

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.85
Crested Wheatgrass - Ephraim	4.00	18.37	\$17.30
Blue Wildrye - Arlington or Elkton	1.50	5.17	\$9.99
Russian Wildrye - Bozoiisky	1.50	6.03	\$9.72
Hard Fescue - Discovery	1.00	12.97	\$2.93
Pubescent Wheatgrass - Luna	1.50	3.10	\$5.10
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.41
Tall Wheatgrass - Jose	1.80	3.26	\$6.08
Thickspike Wheatgrass - Critana	4.30	15.20	\$29.56

Sweetvetch, Utah or Northern	0.10	0.05	\$7.50
Western Wheatgrass - Barton	1.50	3.79	\$10.50
Yarrow, Western	0.20	12.16	\$8.36
Totals Seed Mix	18.00	86.97	\$111.29

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
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$3.04	\$6.08
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$421.36	\$842.72
Total Mulch Materials Cost/Acre				\$848.80

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$73.00
Power mulcher (MEANS 32 91 13.16 0350)	\$141.57
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$277.29

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: 8.2 Cost /Acre: \$1,876.96
 Estimated Failure Rate: 30% Cost /Acre*: \$1,876.96
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$15,391.07
 Reseeding Job Cost: \$4,617.32
 Total Job Cost: \$20,008
 Job Hours: 12.30

BULLDOZER WORKTask description: **Regrade Well Pads**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **05A**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-05a**User: **ACY**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:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$263.78**Total Fleet Cost/Hour: **\$527.56****MATERIAL QUANTITIES**Initial Volume: **174,240**Swell factor: **1.115**Loose volume: **194,278 LCY**Source of estimated volume: **54 ac of pads grade 24" depth**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **75 feet**Unadjusted hourly production: **1,017.1 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **0 %**Average site altitude: **6,600 feet**Material weight: **2,100 lbs/LCY**Weight description: **Earth - Loam****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4908

Adjusted unit production: 499.19 LCY/hr

Adjusted fleet production: **998.38** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.528/LCY

Total job time: **194.59** Hours

Total job cost: **\$102,660**

BULLDOZER WORKTask description: Topsoil Well PadsSite: Nahcolite ProjectPermit Action: TR-50Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 05BState: ColoradoAbbreviation: NoneDate: 2/10/2023County: Rio BlancoFilename: M194-05bUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: \$263.78Total Fleet Cost/Hour: \$527.56**MATERIAL QUANTITIES**Initial Volume: 43,560Swell factor: 1.000Loose volume: 43,560 LCYSource of estimated volume: 54 ac @ 6" depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 545.05 LCY/hr

Adjusted fleet production: **1090.1** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.484/LCY

Total job time: **39.96** Hours

Total job cost: **\$21,081**

REVEGETATION WORKTask description: Reveg Well PadsSite: Nahcolite ProjectPermit Action: TR-50Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 05CState: ColoradoAbbreviation: NoneDate: 2/10/2023County: Rio BlancoFilename: M194-05cUser: ACYAgency 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)	\$117.18
Weed control spraying (MEANS 31 31 16.13 3100)	\$290.40
Total Tilling Cost/Acre	\$407.58

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.85
Crested Wheatgrass - Ephraim	4.00	18.37	\$17.30
Blue Wildrye - Arlington or Elkton	1.50	5.17	\$9.99
Russian Wildrye - Bozoiisky	1.50	6.03	\$9.72
Hard Fescue - Discovery	1.00	12.97	\$2.93
Pubescent Wheatgrass - Luna	1.50	3.10	\$5.10
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.41
Tall Wheatgrass - Jose	1.80	3.26	\$6.08
Thickspike Wheatgrass - Critana	4.30	15.20	\$29.56

Sweetvetch, Utah or Northern	0.10	0.05	\$7.50
Western Wheatgrass - Barton	1.50	3.79	\$10.50
Yarrow, Western	0.20	12.16	\$8.36
Totals Seed Mix	18.00	86.97	\$111.29

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
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$3.04	\$6.08
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$421.36	\$842.72
Total Mulch Materials Cost/Acre				\$848.80

Application

Application	
Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$73.00
Power mulcher (MEANS 32 91 13.16 0350)	\$141.57
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$277.29

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:	54	Cost /Acre:	\$1,876.96
Estimated Failure Rate:	30%	Cost /Acre*:	\$1,876.96
*Selected Replanting Work Items:	TILLING,SEEDING,MULCHING		
Initial Job Cost:	\$101,355.84		
Reseeding Job Cost:	\$30,406.75		
Total Job Cost:	\$131,763		
Job Hours:	68.00		

BULLDOZER RIPPING WORK

Task description: Decompact Roads

Site: Nahcolite Project Permit Action: TR-50 Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 06A State: Colorado Abbreviation: None
Date: 2/10/2023 County: Rio Blanco Filename: M194-06a
User: ACY

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:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$13.10	NA
Ripper Operating Cost/Hour:	\$7.30	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$284.18	
Total Fleet Cost/Hour:	\$568.36	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 4.00 acres Rip Depth (ft): 2.00 Volume: 12,907 BCY or CCY

Source of estimated quantity: TR-50 D&A Provided Table

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 feet/pass
Average Ripping Width: 7.08 feet/pass
Average Ripping Length: 150.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.748 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.748 Acres/hr
Site Altitude: 6,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **1.24** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **3.22** Hours

Unit cost: \$457.481 Per acre Total job cost: **\$1,830**

BULLDOZER WORKTask description: Topsoil roadsSite: Nahcolite ProjectPermit Action: TR-50Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 06BState: ColoradoAbbreviation: NoneDate: 2/10/2023County: Rio BlancoFilename: M194-06bUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$124.85	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: \$263.78Total Fleet Cost/Hour: \$527.56**MATERIAL QUANTITIES**Initial Volume: 3,227Swell factor: 1.000Loose volume: 3,227 LCYSource of estimated volume: 4 ac @ 6" depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.900	(AB.AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 1.0312

Adjusted unit production: 654.09 LCY/hr

Adjusted fleet production: **1308.18** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.403/LCY

Total job time: **2.47** Hours

Total job cost: **\$1,301**

REVEGETATION WORKTask description: **Reveg Roads**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **06C**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-06c**User: **ACY**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)	\$117.18
Weed control spraying (MEANS 31 31 16.13 3100)	\$290.40
Total Tilling Cost/Acre	\$407.58

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.85
Crested Wheatgrass - Ephraim	4.00	18.37	\$17.30
Blue Wildrye - Arlington or Elkton	1.50	5.17	\$9.99
Russian Wildrye - Bozoiisky	1.50	6.03	\$9.72
Hard Fescue - Discovery	1.00	12.97	\$2.93
Pubescent Wheatgrass - Luna	1.50	3.10	\$5.10
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.41
Tall Wheatgrass - Jose	1.80	3.26	\$6.08
Thickspike Wheatgrass - Critana	4.30	15.20	\$29.56

Sweetvetch, Utah or Northern	0.10	0.05	\$7.50
Western Wheatgrass - Barton	1.50	3.79	\$10.50
Yarrow, Western	0.20	12.16	\$8.36
Totals Seed Mix	18.00	86.97	\$111.29

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
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$3.04	\$6.08
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$421.36	\$842.72
Total Mulch Materials Cost/Acre				\$848.80

Application

Application	
Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$73.00
Power mulcher (MEANS 32 91 13.16 0350)	\$141.57
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$277.29

NURSERY STOCK PLANTING

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

JOB TIME AND COST

No. of Acres:	4	Cost /Acre:	\$1,876.96
Estimated Failure Rate:	30%	Cost /Acre*:	\$1,876.96
*Selected Replanting Work Items:	TILLING,SEEDING,MULCHING		
Initial Job Cost:	\$7,507.84		
Reseeding Job Cost:	\$2,252.35		
Total Job Cost:	\$9,760		
Job Hours:	6.00		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Initial Mobilization**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **07A**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-07a**User: **ACY**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:	\$15.25	\$23.06	\$37.58
Operating Cost/Hour:	\$25.26	\$30.83	\$51.41
Operator Cost/Hour:	\$27.71	\$27.71	\$27.71
Helper Cost/Hour:	\$0.00	\$20.22	\$20.22
Total Unit Cost/Hour:	\$68.22	\$101.82	\$136.92

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 D8T - 8SU	53.08	\$137.95	\$136.92	2	\$549.74	\$273.84	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$6.25	\$68.22	1	\$74.47	\$68.22	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$14.79	\$68.22	1	\$83.01	\$68.22	\$250.00
Grove RT650E, 105', 45.4 MT	28.74	\$127.07	\$101.82	1	\$228.89	\$101.82	\$250.00
Broderson IC-200- 2F, 45', 13.6MT	8.68	\$35.88	\$68.22	1	\$104.10	\$68.22	\$250.00
Cat 345D L 12'- 10" Stick	54.31	\$110.45	\$136.92	1	\$247.37	\$136.92	\$250.00
CAT 973D	29.07	\$153.23	\$101.82	1	\$255.05	\$101.82	\$250.00

Subtotals: **\$1,542.63** **\$819.06** **\$2,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 3/4 T.	\$69.59	1	\$69.59	\$69.59
Generic 12-18 cy, 6x4	\$113.40	3	\$340.20	\$340.20

Subtotals:

\$409.79	\$409.79
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EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: RIFLE
 Total one-way travel distance: 60.00 miles
 Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost * \$14,170.33
 '* two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** \$1,229.37
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>1.50</u>	<u>1.50</u>
Return Time (Hours):	<u>1.50</u>	<u>1.50</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>4.00</u>	<u>3.00</u>

JOB TIME AND COST

Total job time: 8.00 Hours

Total job cost: \$15,400

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Secondary Mobilization**Site: **Nahcolite Project**Permit Action: **TR-50**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **07B**State: **Colorado**Abbreviation: **None**Date: **2/10/2023**County: **Rio Blanco**Filename: **M194-07b**User: **ACY**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:	\$15.25	\$23.06	\$37.58
Operating Cost/Hour:	\$25.26	\$30.83	\$51.41
Operator Cost/Hour:	\$27.71	\$27.71	\$27.71
Helper Cost/Hour:	\$0.00	\$20.22	\$20.22
Total Unit Cost/Hour:	\$68.22	\$101.82	\$136.92

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
Drill/Broadcast Seeder with Tractor	25.00	\$6.25	\$68.22	1	\$74.47	\$68.22	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$14.79	\$68.22	1	\$83.01	\$68.22	\$250.00
Subtotals:					\$157.48	\$136.44	\$500.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 3/4 T.	\$69.59	1	\$69.59	\$69.59
Subtotals:			\$69.59	\$69.59

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: RIFLE
 Total one-way travel distance: 60.00 miles
 Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost * \$2,196.72
 * two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** \$208.77
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	1.50	1.50
Return Time (Hours):	1.50	1.50
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	4.00	3.00

JOB TIME AND COST

Total job time: 8.00 Hours

Total job cost: \$2,405