

COST SUMMARY WORK

Task description: 06-2023 Update

Site: Rock School Lease
Experimental Nahcolite Mine

Permit Action:
06-2023

Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: ACY State: Colorado Abbreviation: None
Date: 6/26/2023 County: Rio Blanco Filename: M051-ACY
User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Plug and Abandon Water Monitoring wells	BOREHOLE	1	40.00	\$44,045
01b	Excavate and backfill around well head	EXCAVATE	1	16.00	\$1,378
02a	Decompact access road	RIPPER	1	3.34	\$759
03a	Grading well pads	DOZER	1	59.63	\$13,523
04a	Spread topsoil over re-graded well pads and well pad access	DOZER	1	8.09	\$1,727
05a	Revegetate 4.22 acres disturbance	REVEGE	1	16.00	\$10,157
06a	Initial Mobilization	MOBILIZE	1	11.24	\$7,218
06b	Secondary Mobilization	MOBILIZE	1	11.24	\$3,443
<u>SUBTOTALS:</u>				165.54	\$82,250

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$1,661
Performance bond:	1.05	Total =	\$864
Job superintendent:	82.77	Total =	\$6,219
Profit:	10.00	Total =	\$8,225

TOTAL O & P = \$16,969

CONTRACT AMOUNT (direct + O & P) = \$99,219

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	<u>\$500</u>	Total =	<u>\$500</u>
Engineering work and/or contract/bid preparation:	<u>4.25</u>	Total =	<u>\$4,217</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$4,961</u>

CONTINGENCY: 3.00 Total = \$2,468

TOTAL INDIRECT COST = \$29,114

TOTAL BOND AMOUNT (direct + indirect) = \$111,364

BOREHOLE SEALING WORK

Task description: Plug and Abandon Water Monitoring wells

Rock School Lease
Site: Experimental Nahcolite Mine

Permit Action:
06-2023

Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 01A
Date: 6/26/2023
User: ACY

State: Colorado
County: Rio Blanco

Abbreviation: None
Filename: M051-01a

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
MWD-1	Portland cement grout - 6 in. (labor, equip, materials)	6"	1731	1,731.00	LF	\$6.32	\$10,939.92
MWU-2	Portland cement grout - 6 in. (labor, equip, materials)	6"	687	687.00	LF	\$6.32	\$4,341.84
MWD-2	Portland cement grout - 6 in. (labor, equip, materials)	6"	1703	1,703.00	LF	\$6.32	\$10,762.96
MWA-2	Portland cement grout - 8 in. (labor, equip, materials)	8"	1200	1,200.00	LF	\$7.03	\$8,436.00
MWB-2	Portland cement grout - 6 in. (labor, equip, materials)	6"	1398	1,398.00	LF	\$6.32	\$8,835.36
AM-2	Portland cement grout - 4 in. (labor, equip, materials)	4"	88	88.00	LF	\$5.55	\$488.40
All	Borehole location/identification marker (EA, material cost only)	4-8"	N/A	6.00	EA	\$37.50	\$225.00
All	Exposed casing removal - Calculate Circumference in Linear Feet	4-6"	6 x 19"	4.75	LF	\$3.26	\$15.49

Job Hours: 40.00

Total Cost: \$44,045.00

HYDRAULIC EXCAVATOR WORK

Task description: Excavate and backfill around well head

Site: Rock School Lease Permit Action: 06-2023 Permit/Job#: M1999051
Experimental Nahcolite Mine

PROJECT IDENTIFICATION

Task #: 01B State: Colorado Abbreviation: None
Date: 6/26/2023 County: Rio Blanco Filename: M051-01b
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 307D 7'-3" Stick Horsepower: 56
Attachment 1: ROPS Cab Weight (MT): 7.23
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$29.15</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$19.66</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.32</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$86.13</u>	
Total Fleet Cost/Hour:	<u>\$86.13</u>	

MATERIAL QUANTITIES

Initial volume: 540 CCY Swell factor: 1.125
Loose volume: 608 LCY

Source of estimated volume: 10'L x 10'W x 6'D around 6 well heads for cut/cap
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.242 minutes

Load Bucket Capacity

Rated Capacity: 0.20 LCY (heaped) Bucket Size Class: Small
Bucket Fill Factor: 1.025 Rock - Earth Mixture (100%-105%) 1.025
Adjusted Capacity: 0.21 LCY

Job Condition Correction Factors

Site Altitude: 6600 feet

		Source
Altitude Adj:	<u>0.90</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.75</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 50.83 LCY/Hour
Adjusted Hourly Unit Production: 37.97 LCY/Hour
Adjusted Hourly Fleet Production: 37.97 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 16.00 Hours
Unit cost: \$2.269 /LCY Total job cost: \$1,378

BULLDOZER RIPPING WORK

Task description: Decompact access road

Site: Rock School Lease Permit Action: 06-2023 Permit/Job#: M1999051
Experimental Nahcolite Mine

PROJECT IDENTIFICATION

Task #: 02A State: Colorado Abbreviation: None
Date: 6/26/2023 County: Rio Blanco Filename: M051-02a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS Series II LGP Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$92.78	NA
Operating Cost/Hour:	\$79.33	100
Ripper Ownership Cost/Hour:	\$8.37	NA
Ripper Operating Cost/Hour:	\$4.99	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$226.77	
Total Fleet Cost/Hour:	\$226.77	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 1.52 acres Rip Depth (ft): 2.00 Volume: 4,905 BCY or CCY

Source of estimated quantity: Staff estimate of road length 4452 LF X 15'W

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.45 feet/pass
Average Ripping Width: 6.50 feet/pass
Average Ripping Length: 50.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.547 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.547 Acres/hr
Site Altitude: 6,660 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.45 Acres/hr
Adjusted Hourly Fleet Production: **0.45** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **3.35** Hours

Unit cost: \$499.356 Per acre Total job cost: **\$759**

BULLDOZER WORKTask description: Grading well pads

Site: Rock School Lease Permit Action: _____
Experimental Nahcolite Mine 06-2023 Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 03A State: Colorado Abbreviation: None
 Date: 6/26/2023 County: Rio Blanco Filename: M051-03a
 User: ACY

Agency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: Cat D7R DS Series II LGP
 Horsepower: 240
 Blade Type: Straight
 Attachment: 3-shank ripper
 Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$92.78</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$79.33</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$8.37</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$4.99</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>

Total unit Cost/Hour: \$226.77
 Total Fleet Cost/Hour: \$226.77

MATERIAL QUANTITIES

Initial Volume: 8,712
 Swell factor: 1.250
 Loose volume: 10,890 LCY

Source of estimated volume: 2.7 ac of pads grade an avg of 2 ft cut/fill to blend
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 150 feet
 Unadjusted hourly production: 369.6 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
 Average site altitude: 6,600 feet

Material weight: 2,550 lbs/LCYWeight description: Earth - Dry packed**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.100</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>

Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4941

Adjusted unit production: 182.62 LCY/hr

Adjusted fleet production: **182.62** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$1.242/LCY

Total job time: **59.63** Hours

Total job cost: **\$13,523**

BULLDOZER WORKTask description: Spread topsoil over re-graded well pads and well pad accessSite: Rock School Lease
Experimental Nahcolite MinePermit Action: 06-2023Permit/Job#: M1999051**PROJECT IDENTIFICATION**Task #: 04A
Date: 6/26/2023
User: ACYState: Colorado
County: Rio BlancoAbbreviation: None
Filename: M051-04aAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D7R DS Series II LGP
Horsepower: 240
Blade Type: Straight
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$92.78</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$79.33</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>

Total unit Cost/Hour: \$213.41
Total Fleet Cost/Hour: **\$213.41****MATERIAL QUANTITIES**Initial Volume: 3,404
Swell factor: 1.215
Loose volume: **4,136 LCY**Source of estimated volume: 6" over 4.22 ac
Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 75 feet
Unadjusted hourly production: 594.6 LCY/hrMaterials consistency description: Consolidated stockpile 1.0Average 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:	<u>0.900</u>	<u>(AB.AVG.)</u>
Material consistency:	<u>1.000</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>

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: 510.94 LCY/hr

Adjusted fleet production: **510.94** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.418/LCY

Total job time: **8.09** Hours

Total job cost: **\$1,727**

REVEGETATION WORKTask description: Revegetate 4.22 acres disturbanceSite: Rock School Lease
Experimental Nahcolite MinePermit Action: 06-2023Permit/Job#: M1999051**PROJECT IDENTIFICATION**Task #: 05A
Date: 6/26/2023
User: ACYState: Colorado
County: Rio BlancoAbbreviation: None
Filename: M051-05aAgency 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
Total Tilling Cost/Acre	\$117.18

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bitterbrush, Antelope	1.00	0.31	\$19.50
Great Basin Wildrye - Magnar	0.50	2.03	\$5.78
Alfalfa - Ladak (inoculated)	1.50	7.23	\$3.83
Russian Wildrye - Vinal	0.50	2.01	\$3.09
Pubescent Wheatgrass - Luna	0.50	1.03	\$1.70
Milk Vetch, Cicer - Monarch	0.50	1.66	\$4.10
Streambank Wheatgrass - Sodar	0.50	1.63	\$2.85
Thickspike Wheatgrass - Critana	0.50	1.77	\$3.44
Western Wheatgrass - Arriba	1.00	2.53	\$6.50

Flax, Lewis Blue	0.20	1.33	\$3.30
Saltbush, Four Wing	1.50	2.07	\$18.75
Globemallow, Scarlet (or copper)	0.20	2.26	\$27.10
Winter Fat	0.50	1.27	\$10.25
Penstemon, Palmer	0.20	4.42	\$10.90
Totals Seed Mix	9.10	31.55	\$121.08

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	1.00	ACRE	\$3.04	\$3.04
Herbicide - Plateau @ 1.0 pt/ac	1.00	ACRE	\$11.21	\$11.21
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$421.36	\$842.72
Total Mulch Materials Cost/Acre				\$856.97

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: 4.22 Cost /Acre: \$1,604.52
 Estimated Failure Rate: 50% Cost /Acre*: \$1,604.52
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$6,771.07
 Reseeding Job Cost: \$3,385.54
 Total Job Cost: \$10,157
 Job Hours: 16.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Initial Mobilization**Site: **Rock School Lease**
Experimental Nahcolite MinePermit Action:
06-2023

Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 06A State: Colorado Abbreviation: None
 Date: 6/26/2023 County: Rio Blanco Filename: M051-06a
 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 D7R DS Series II LGP	38.49	\$101.15	\$101.82	1	\$202.97	\$101.82	\$250.00
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
Cat 307D 7'-3" Stick	7.95	\$29.15	\$68.22	1	\$97.37	\$68.22	\$250.00

Subtotals: **\$457.82** **\$306.48** **\$1,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	\$51.72	1	\$51.72	\$51.72
Light Duty Pickup, 4x4, 3/4 T.	\$114.71	1	\$114.71	\$114.71

Subtotals: **\$166.43** **\$166.43**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION	
Total one-way travel distance:	104.00	miles
Average Travel Speed:	45.00	mph

Total Non-Roadable Mob/Demob Cost *	\$6,448.40
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	\$769.28
'** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	2.31	2.31
Return Time (Hours):	2.31	2.31
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	5.62	4.62

JOB TIME AND COST

Total job time:	11.24	Hours
Total job cost:	\$7,218	

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Secondary Mobilization**

Rock School Lease
 Site: **Experimental Nahcolite Mine**

Permit Action: 06-2023
 Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 06B State: Colorado Abbreviation: None
 Date: 6/26/2023 County: Rio Blanco Filename: M051-06b
 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
Water Tanker, 2,500 Gal.	\$51.72	1	\$51.72	\$51.72
Light Duty Pickup, 4x4, 3/4 T.	\$114.71	1	\$114.71	\$114.71
Subtotals:			\$166.43	\$166.43

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>104.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$2,673.52</u>
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$769.28</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>2.31</u>	<u>2.31</u>
Return Time (Hours):	<u>2.31</u>	<u>2.31</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>5.62</u>	<u>4.62</u>

JOB TIME AND COST

Total job time:	<u>11.24</u>	Hours
-----------------	--------------	-------

Total job cost:	<u>\$3,443</u>
-----------------	----------------