



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

August 27, 2014

Mr. Bob Warneke
Natural Soda, Inc.
3200 Rio Blanco CR 31
Rifle, CO 81650

Re: Nahcolite Project, Permit No. M-1983-194, Surety Increase, Revision No. SI-3

Dear Mr. Warneke

On August 27, 2014 the Division of Reclamation, Mining and Safety increased the current Financial Warranty for this permit to \$3,098,807.55, in accordance with Rule 4.2.1 of the Rules and Regulations. This is an increase of \$245,861.89 over the currently held \$2,852,945.66 financial warranty. The reason for the surety increase is to cover reclamation costs for an additional 8 monitoring wells that were not included in the previous reclamation cost estimate.

The Division ordered amendment of the current Financial Warranty or submittal of a new Financial Warranty reflecting the increase is due within 60 days from the date of this letter. If you wish to submit a different type of Financial Warranty or have questions regarding modification of the existing financial warranty please contact Barbara Coria at (303) 866-3567 extension 8148.

If you have any other questions regarding this permit activity please contact me at 970.241.2042.

Sincerely,

Travis Marshall
Environmental Protection Specialist

Enclosure - Reclamation Cost Estimate

cc: Russ Means, DRMS
Barbara Coria, DRMS

Paul Daggett
BLM - WRFO
220 East Market Street
Meeker, CO 81641

Gerald Daub
Daub & Associates, Inc
1985 1/2 South Broadway
Grand Junction, CO 81507



COST SUMMARY WORK

Task description: _____

Site: Nahcolite Project Permit Action: SI-3 Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 8/27/2014 County: Rio Blanco Filename: _____
User: THM

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Demo. of NSI Plant, Pipelines and Powerlines	DEMOLISH	1	80.00	\$656,170.36
02a	Borehole P&A	BOREHOLE	1	460.00	\$1,474,618.58
03a	Re-grade Process Ponds	DOZER	2	141.43	\$59,092.00
04a	Re-grade Plant Area	DOZER	2	41.97	\$17,537.00
05a	Re-grade Well Pads	DOZER	2	100.17	\$41,851.00
06a	Distribute 6" of topsoil over 8 acre process pond area	DOZER	2	5.92	\$2,473.00
07a	Distribute 6" topsoil over 6.2 acre process area	DOZER	2	4.59	\$1,916.00
08a	Replace topsoil over re-graded well pads and access roads	DOZER	2	25.45	\$10,631.00
09a	Rip compacted areas	RIPPER	2	14.08	\$6,276.00
10a	Distribute 6" topsoil over 18.7 acres of decompacted area	DOZER	2	10.27	\$4,292.00
11a	Revegetate 73.76 acres	REVEGE	1	73.76	\$136,105.00
12a	Mobilization	MOBILIZE	1	8.00	\$6,399.00
<u>SUBTOTALS:</u>				965.64	\$2,417,361

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02%	Total =	\$48,830.69
Performance bond:	1.05%	Total =	\$25,382.29
Job superintendent:	482.82 hrs	Total =	\$36,288.75
Profit:	10.00%	Total =	\$241,736.10
		TOTAL O & P =	\$352,237.83
		CONTRACT AMOUNT (direct + O & P) =	\$2,769,598.83

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	4.25%	Total =	\$117,707.95
Reclamation management and/or administration:	5.00%		\$138,479.94

CONTINGENCY: 3.00 Total = \$72,520.83

TOTAL INDIRECT COST = \$681,446.55

TOTAL BOND AMOUNT (direct + indirect) = \$3,098,807.55

DEMOLITION WORK

Task description: Demo. of NSI Plant, Pipelines and Powerlines

Site: Nahcolite Project

Permit Action: SI-3

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 01A

State: Colorado

Abbreviation: None

Date: 8/21/2014

County: Rio Blanco

Filename: SI-3

User: THM

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 91.30 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
NSI Plant	200'L x 175'W x 50'H	Plant (3S) demo./on-site disposal in excavated pit - Max. 200 ft. push	1,750,000.00	CF	\$0.25	\$434,000.00
Product Storage Dome	100'L x 100'W x 50'H	Plant (3S) demo./on-site disposal in excavated pit - Max. 200 ft. push	500,000.00	CF	\$0.25	\$124,000.00
Removal of NSI Plant Slab	200'L x 175'W	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	35,000.00	SF	\$2.33	\$81,550.00
Removal of Storage Dome slab	100'L x 100'W	Demo. and on-site disposal in existing pit, 8 in. thick - Max. 200 ft. push	10,000.00	SF	\$2.28	\$22,800.00
Scale Building	20'W x 100'L x 15'H	Plant (1S) demo./on-site disposal in excavated pit - Max. 200 ft. push	30,000.00	CF	\$0.20	\$5,880.00
Removal of Scale Building Slab	20'W x 100'L	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	2,000.00	SF	\$1.75	\$3,500.00
Removal of Conveyor System	200'L	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	200.00	LF	\$44.42	\$8,884.00
Removal of Overhead Powerline	2100'L	Powerline or utility line, overhead, wood - Double or "H" pole	2,100.00	LF	\$5.38	\$11,298.00
Tank Farm	30'W x 50'H	Tank Removal and disposal in pit	5.00	Tank	\$2,000.00	\$10,000.00
Removal of Pipeline	3600	Pipe, steel, welded connections - 10 in. diameter pipe	3,600.00	LF	\$1.90	\$6,840.00
Removal of Flagpoles/Monument	70 sq feet	USER PROVIDED ITEM	70.00	FT^2	\$5.00	\$350.00
Removal of 12" barren liquor pipeline	5050 LF	Pipe, steel, welded connections - 10 in. diameter pipe	5,050.00	LF	\$1.90	\$9,595.00

Job Hours: 80.00

Subtotal
(unadjusted): \$718,697.00

Total Cost
(adjusted for location): \$656,170.36

BOREHOLE SEALING WORK

Task description: Borehole P&A

Site: Nahcolite Project

Permit Action: SI-3

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 02A
Date: 8/21/2014
User: THM

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
3M-TDR	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$8.04	\$15,090.73
89-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$8.04	\$13,087.75
89-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$8.04	\$11,398.49
89-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$8.04	\$2,791.30
90-1	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	1417	1,417.00	LF	\$18.36	\$26,018.25
90-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$8.04	\$13,087.75
90-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$8.04	\$11,398.49
94-1M	Portland cement grout - 6 in. (labor, equip, materials)	5"	2200	2,200.00	LF	\$11.24	\$24,722.28
BG-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$8.04	\$13,087.75
BG-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$8.04	\$13,087.75
DS-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$8.04	\$15,090.73
DS-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$8.04	\$15,090.73
EX-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$8.04	\$15,090.73
IRI-1	Portland cement grout - 4 in. (labor, equip, materials)	4"	347	347.00	LF	\$8.04	\$2,791.30

IRI-4	Portland cement grout - 4 in. (labor, equip, materials)	4"	1417	1,417.00	LF	\$8.04	\$11,398.49
IRI-5	Portland cement grout - 4 in. (labor, equip, materials)	4.625"	347	347.00	LF	\$8.04	\$2,791.30
IRI-6	Portland cement grout - 4 in. (labor, equip, materials)	4"	1627	1,627.00	LF	\$8.04	\$13,087.75
IRI-7	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$8.04	\$15,090.73
IRI-8	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$8.04	\$2,791.30
7H-1R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$12.22	\$22,927.72
7H-1V	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$12.22	\$22,927.72
7H-2I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$12.22	\$22,927.72
12H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$12.22	\$23,648.80
12H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$12.22	\$23,648.80
10H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$12.22	\$23,648.80
11H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$12.22	\$23,648.80
10H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$12.22	\$23,648.80
11H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$12.22	\$23,648.80
DS-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$8.04	\$15,090.73
BG-5	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1645	1,645.00	LF	\$8.04	\$13,232.54
DS-5	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1902	1,902.00	LF	\$8.04	\$15,299.88
BG-6	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1639	1,639.00	LF	\$8.04	\$13,184.28
WSW-2	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1460	1,460.00	LF	\$12.22	\$17,843.54
DVPW-1(A)	Portland cement grout - 8 in. (labor, equip, materials)	7"	2350	2,350.00	LF	\$12.22	\$28,720.76

	in. (labor, equip, materials)						
DVPW-(B)	Portland cement grout - 8 in. (labor, equip, materials)	7"	2350	2,350.00	LF	\$12.22	\$28,720.76
10H-1V	Portland cement grout - 8 in. (labor, equip, materials)	7"	2010	2,010.00	LF	\$12.22	\$24,565.42
13H-I	Portland cement grout - 8 in. (labor, equip, materials)	8"	2335	2,335.00	LF	\$12.22	\$28,537.44
13H-R	Portland cement grout - 8 in. (labor, equip, materials)	8"	2310	2,310.00	LF	\$12.22	\$28,231.90
8H-I	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$12.22	\$25,787.58
8H-R	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$12.22	\$25,787.58
14H-I	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$12.22	\$25,787.58
14H-R	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$12.22	\$25,787.58
WSW-3	Portland cement grout - 8 in. (labor, equip, materials)	7"	1420	1,431.00	LF	\$12.22	\$17,489.11
WSW-4	Portland cement grout - 8 in. (labor, equip, materials)	7"	1431	1,431.00	LF	\$12.22	\$17,489.11
A (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1844	1,844.00	LF	\$12.22	\$22,536.63
B (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1879	1,879.00	LF	\$12.22	\$22,964.39
C (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1898	1,898.00	LF	\$12.22	\$23,196.60
D (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1949	1,949.00	LF	\$12.22	\$23,819.90
E (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1967	1,967.00	LF	\$12.22	\$24,039.89
F (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1933	1,933.00	LF	\$12.22	\$23,624.35
G (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	2012	2,012.00	LF	\$12.22	\$24,589.86
H (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1983	1,983.00	LF	\$12.22	\$24,235.43
I (Phase 1)	Portland cement grout - 8 in. (labor, equip,	6.5"	1986	1,986.00	LF	\$12.22	\$24,272.10

	materials)						
J (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	2038	2,038.00	LF	\$12.22	\$24,907.62
K (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1963	1,963.00	LF	\$12.22	\$23,991.00
L (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1901	1,901.00	LF	\$12.22	\$23,233.26
M (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1917	1,917.00	LF	\$12.22	\$23,428.81
DS-7 (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1897	1,897.00	LF	\$12.22	\$23,184.38
N (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1859	1,859.00	LF	\$12.22	\$22,719.95
O (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1807	1,807.00	LF	\$12.22	\$22,084.43
P (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1817	1,817.00	LF	\$12.22	\$22,206.65
Q (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1836	1,836.00	LF	\$12.22	\$22,438.86
R (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1835	1,835.00	LF	\$12.22	\$22,426.64
S (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1744	1,744.00	LF	\$12.22	\$21,314.47
T (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1739	1,739.00	LF	\$12.22	\$21,253.36
U (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1694	1,694.00	LF	\$12.22	\$20,703.39
DS-6 (Phase 3)	Portland cement grout - 4 in. (labor, equip, materials)	4"	1882	1,882.00	LF	\$8.04	\$15,139.00
9H-I	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$12.22	\$25,787.58
9H-R	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$12.22	\$25,787.58
IRI-2	Portland cement grout - 4 in. (labor, equip, materials)	4"	604	604.00	LF	\$8.04	\$4,858.64
IRI-3	Portland cement grout - 4 in. (labor, equip, materials)	4"	1100	1,100.00	LF	\$8.04	\$8,848.51
IRI-9	Portland cement grout - 4 in. (labor, equip, materials)	4"	1710	1,710.00	LF	\$8.04	\$13,755.41

IRI-10	Portland cement grout - 4 in. (labor, equip, materials)	4"	1761	1,761.00	LF	\$8.04	\$14,165.66
IRI-11	Portland cement grout - 4 in. (labor, equip, materials)	4"	1550	1,550.00	LF	\$8.04	\$12,468.36
IRI-MW-1	Portland cement grout - 6 in. (labor, equip, materials)	5.5"	1770	1,770.00	LF	\$11.24	\$19,890.20
IRI-PW-1	Portland cement grout - 6 in. (labor, equip, materials)	5.5	1849	1,849.00	LF	\$11.24	\$20,777.95
IRI-PW-2	Portland cement grout - 6 in. (labor, equip, materials)	5.5	600	600.00	LF	\$11.24	\$6,742.44

Job Hours: 460.00Total Cost: \$1,474,619.00

BULLDOZER WORKTask description: Re-grade Process PondsSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 03AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 52,723Swell factor: 1.110Loose volume: 58,523 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 175 feetUnadjusted hourly production: 562.2 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 2,800 lbs/LCYWeight description: Clay - Natural bed**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:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3680

Adjusted unit production: 206.89 LCY/hr

Adjusted fleet production: 413.78 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$1.010/LCY

Total job time: 141.43 Hours

Total job cost: \$59,092

BULLDOZER WORKTask description: Re-grade Plant AreaSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 04AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 19,682Swell factor: 1.110Loose volume: 21,847 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: -5 %Average site altitude: 6,600 feetMaterial weight: 2,800 lbs/LCYWeight description: Clay - Natural bed**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:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4103

Adjusted unit production: 260.25 LCY/hr

Adjusted fleet production: 520.5 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.803/LCY

Total job time: 41.97 Hours

Total job cost: \$17,537

BULLDOZER WORKTask description: Re-grade Well PadsSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 05AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 74,547Swell factor: 1.110Loose volume: 82,747 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 75 feetUnadjusted hourly production: 1,017.1 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push gradient: 5 %Average site altitude: 6,600 feetMaterial weight: 2,800 lbs/LCYWeight description: Clay - Natural bed**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(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:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4061

Adjusted unit production: 413.04 LCY/hr

Adjusted fleet production: 826.08 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.506/LCY

Total job time: 100.17 Hours

Total job cost: \$41,851

BULLDOZER WORKTask description: Distribute 6" of topsoil over 8 acre process pond areaSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 06AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 6,453Swell factor: 1.000Loose volume: 6,453 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource 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: \$0.383/LCY

Total job time: 5.92 Hours

Total job cost: \$2,473

BULLDOZER WORKTask description: Distribute 6" topsoil over 6.2 acre process areaSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 07AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 5,000Swell factor: 1.000Loose volume: 5,000 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource 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: \$0.383/LCY

Total job time: 4.59 Hours

Total job cost: \$1,916

BULLDOZER WORKTask description: Replace topsoil over re-graded well pads and access roadsSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 08AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 28,394Swell factor: 1.000Loose volume: 28,394 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 852.6 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 2,100 lbs/LCYWeight description: Earth - Loam**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:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6544

Adjusted unit production: 557.94 LCY/hr

Adjusted fleet production: 1115.88 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.374/LCY

Total job time: 25.45 Hours

Total job cost: \$10,631

BULLDOZER RIPPING WORK

Task description: Rip compacted areas

Site: Nahcolite Project

Permit Action: SI-3

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 09A

State: Colorado

Abbreviation: None

Date: 8/27/2014

County: Rio Blanco

Filename: SI-3

User: THM

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:	<u>\$69.05</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$108.22</u>	<u>100</u>
Ripper Operating Cost/Hour:	<u>\$7.46</u>	<u>100</u>
Operator Cost/Hour:	<u>\$38.01</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$222.73</u>	
Total Fleet Cost/Hour:	<u>\$445.46</u>	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 18.70 acres

Rip Depth (ft): 2.00

Volume: 60,339 BCY or CCY

Source of estimated quantity: Staff Estimate

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.56</u>	<u>mph</u>
Average Ripping Width:	<u>7.08</u>	<u>degrees</u>
Average Ripping Length:	<u>300.00</u>	<u>feet</u>
Average Dozer Speed:	<u>88.00</u>	<u>feet</u>
Average Maneuver Time:	<u>0.25</u>	<u>feet</u>
Production per unit area:	<u>0.800</u>	<u>acres/hour</u>

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.800 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: 0.66 Acres/hr

Adjusted Hourly Fleet Production: 1.33 Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s)

Total job time: 14.09 Hours

Unit cost: \$335.626 Per acre

Total job cost: \$6,276

BULLDOZER WORKTask description: Distribute 6" topsoil over 18.7 acres of decompacted areaSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 10AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency 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:	\$62.67	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$208.90Total Fleet Cost/Hour: \$417.81**MATERIAL QUANTITIES**Initial Volume: 15,053Swell factor: 1.000Loose volume: 15,053 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 852.6 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: 732.64 LCY/hr

Adjusted fleet production: 1465.28 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.285/LCY

Total job time: 10.27 Hours

Total job cost: \$4,292

REVEGETATION WORKTask description: Revegetate 73.76 acresSite: Nahcolite ProjectPermit Action: SI-3Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 11AState: ColoradoAbbreviation: NoneDate: 8/27/2014County: Rio BlancoFilename: SI-3User: THMAgency or organization name: DRMSFERTILIZING**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)	\$98.01
Weed control spraying (MEANS 31 31 16.13 3100)	\$145.20
Total Tilling Cost/Acre	\$243.21

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.28
Crested Wheatgrass - Ephraim	4.00	18.37	\$8.92
Blue Wildrye - Arlington or Elkton	1.50	5.17	\$17.88
Russian Wildrye - Bozoisky	1.50	6.03	\$9.36
Hard Fescue - Discovery	1.00	12.97	\$2.09
Pubescent Wheatgrass - Luna	1.50	3.10	\$3.36
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.28
Tall Wheatgrass - Jose	1.80	3.26	\$4.05
Thickspike Wheatgrass - Critana	4.30	15.20	\$22.23
Sweetvetch, Utah or Northern	0.10	0.05	\$4.09

Western Wheatgrass - Barton	1.50	3.79	\$5.52
Yarrow, Western	0.20	12.16	\$6.13
Totals Seed Mix	18.00	86.97	\$87.18

Application

Description	Cost /Acre
Drill seeding (MEANS 32 92 19.13 0020)	\$404.00
Total Seed Application Cost/Acre	\$404.00

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$1.23	\$2.46
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$265.00	\$530.00
Total Mulch Materials Cost/Acre				\$532.46

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$65.89
Power mulcher (MEANS 32 91 13.16 0250)	\$86.68
Total Mulch Application Cost/Acre	\$152.57

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: 73.76 Cost /Acre: \$1,419.42
 Estimated Failure Rate: 30% Cost /Acre*: \$1,419.42
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$104,696.42
 Reseeding Job Cost: \$31,408.93
 Total Job Cost: \$136,105
 Job Hours: 73.76

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization**Site: **Nahcolite Project**Permit Action: **SI-3**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **12A**State: **Colorado**Abbreviation: **None**Date: **8/27/2014**County: **Rio Blanco**Filename: **SI-3**User: **THM**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 D8T - 8SU	53.08	\$65.28	\$125.45	2	\$381.46	\$250.90	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$39.59	\$88.67	1	\$128.26	\$88.67	\$250.00
Power Mulcher (Reinco M90)	6.00	\$7.03	\$88.67	1	\$95.70	\$88.67	\$250.00

Subtotals: **\$605.42** **\$428.24** **\$1,000.00****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.	\$14.59	2	\$29.18	\$29.18

Subtotals: **\$29.18** **\$29.18**

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 *	\$6,311.82
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	\$87.54
** 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
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Total job cost:	\$6,399
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