

# STATE OF COLORADO

## DIVISION OF RECLAMATION, MINING AND SAFETY Department of Natural Resources

1313 Sherman St., Room 215  
Denver, Colorado 80203  
Phone: (303) 866-3567  
FAX: (303) 832-8106



March 13, 2013

Mr. Robert Warneke  
Natural Soda, Inc.  
3200 RBC 31  
Rifle, CO 81650

John W. Hickenlooper  
Governor

Mike King  
Executive Director

Loretta Piñeda  
Director

**Re: Nahcolite Project, Permit No. M-1983-194, Technical Revision Approval, Revision No. TR-33**

Dear Mr. Warneke:

On March 13, 2013 the Division of Reclamation, Mining and Safety approved the Technical Revision application submitted to the Division on March 11, 2013, addressing the following:

- *Addition of wells 10H-V, 13H-I and 13H-R.*
- *Addition of stone monument and three flagpoles at entrance of site.*

The terms of the Technical Revision No. 33 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 estimated liability amount of \$2,022,014.28 exceeds the \$1,935,536.19 performance bond currently held. If you have not already done so, please submit additional bond in the amount of (\$15,236.44). The revision will not be final until the bond is approved by the Division.

If you have any questions, please contact me at (970) 241-2042.

Sincerely,

A handwritten signature in black ink, appearing to read "Travis Marshall".

Travis Marshall  
Environmental Protection Specialist

Enclosure – Reclamation Cost Estimate

cc: Gerald Daub  
Daub & Associates, Inc.  
1985 ½ South Broadway  
Grand Junction, CO 81507

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

## COST SUMMARY WORK

Task description: \_\_\_\_\_

Site: Nahcolite Project

Permit Action: TR-33

Permit/Job#: M1983194

### PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 3/13/2013

County: Rio Blanco

Filename: M194-001

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	\$521,677.97
02a	Borehole P&A	BOREHOLE	1	460.00	\$861,355.97
03a	Re-grade Process Ponds	DOZER	2	141.43	\$56,045.00
04a	Re-grade Plant Area	DOZER	2	41.97	\$16,632.39
05a	Re-grade Well Pads	DOZER	2	31.60	\$12,520.87
06a	Distribute 6" of topsoil over 8 acre process pond area	DOZER	2	5.92	\$2,345.73
07a	Distribute 6" topsoil over 6.2 acre process area	DOZER	2	4.59	\$1,817.55
08a	Distribute 6" topsoil over 12 acres of re-graded well pads	DOZER	2	6.59	\$2,612.40
09a	Rip 18.7 acres of road and compacted areas	RIPPER	2	14.08	\$5,945.00
10a	Distribute 6" topsoil over 18.7 acres of decompact area	DOZER	2	10.27	\$4,070.86
11a	Revegetate 44.9 acres	REVEGE	1	24.00	\$82,851.55
12a	Mobilization	MOBILIZE	1	8.00	\$6,399.36
<b><u>SUBTOTALS:</u></b>				<b>828.45</b>	<b>\$1,574,274.65</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02%

Total = \$31,800.35

Performance bond: 1.05%

Total = \$16,529.88

Job superintendent: 414.23 hrs

Total = \$27,094.46

Profit: 10.00%

Total = \$157,427.47

TOTAL O & P = \$232,852.16

CONTRACT AMOUNT (direct + O & P) = \$1,807,126.81

#### 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 = \$76,802.89

Reclamation management and/or administration: 5.00%

\$90,356.34

CONTINGENCY: 3.00

Total = \$47,228.24

TOTAL INDIRECT COST = \$447,739.63

**TOTAL BOND AMOUNT (direct + indirect) = \$2,022,014.28**



## DEMOLITION WORK

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

Site: Nahcolite Project

Permit Action: TR-33

Permit/Job#: M1983194

### PROJECT IDENTIFICATION

Task #: 01A

State: Colorado

Abbreviation: None

Date: 11/21/2011

County: Rio Blanco

Filename: M194-01a

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	\$0.19	\$330,750.00
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	\$0.19	\$94,500.00
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	\$2.26	\$79,240.00
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	\$2.22	\$22,200.00
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	\$0.16	\$4,680.00
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	\$1.70	\$3,396.00
Removal of Conveyor System	200'L	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	200.00	LF	\$43.17	\$8,634.00
Removal of Overhead Powerline	2100'L	Powerline or utility line, overhead, wood - Double or "H" pole	2,100.00	LF	\$5.23	\$10,978.80
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	\$1.85	\$6,660.00
Removal of Flagpoles/Monument	70 sq feet	USER PROVIDED ITEM	70.00	FT^2	\$5.00	\$350.00

Job Hours: 80.00

Subtotal  
(unadjusted): \$571,388.80

Total Cost  
(adjusted for location): \$521,677.97

## BOREHOLE SEALING WORK

Task description: Borehole P&A

Site: Nahcolite Project

Permit Action: TR-33

Permit/Job#: M1983194

### PROJECT IDENTIFICATION

Task #: 02A

State: Colorado

Abbreviation: None

Date: 3/12/2013

County: Rio Blanco

Filename: M194-02a

User: THM

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	\$7.82	\$14,665.44
4A-1V	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	1876	1,876.00	LF	\$17.84	\$33,475.34
4A-5M	Portland cement grout - 4 in. (labor, equip, materials)	2.375"	1876	1,876.00	LF	\$7.82	\$14,665.44
88-1	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	2200	2,200.00	LF	\$17.84	\$39,256.80
89-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
89-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$7.82	\$11,077.26
89-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$7.82	\$2,712.64
90-1	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	1417	1,417.00	LF	\$17.84	\$25,284.95
90-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
90-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
90-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$7.82	\$11,077.26
94-1M	Portland cement grout - 6 in. (labor, equip, materials)	5"	2200	2,200.00	LF	\$10.92	\$24,025.54
BG-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
BG-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91

DS-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
DS-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
EX-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
IRI-1	Portland cement grout - 4 in. (labor, equip, materials)	4"	347	347.00	LF	\$7.82	\$2,712.64
IRI-4	Portland cement grout - 4 in. (labor, equip, materials)	4"	1417	1,417.00	LF	\$7.82	\$11,077.26
IRI-5	Portland cement grout - 4 in. (labor, equip, materials)	4.625"	347	347.00	LF	\$7.82	\$2,712.64
IRI-6	Portland cement grout - 4 in. (labor, equip, materials)	4"	1627	1,627.00	LF	\$7.82	\$12,718.91
IRI-7	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
IRI-8	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$7.82	\$2,712.64
MU-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
MWA-2	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	347	347.00	LF	\$11.88	\$4,121.39
MWB-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1627	1,627.00	LF	\$10.92	\$17,767.98
MWD-1	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
MWD-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
1-3A	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	1876	1,876.00	LF	\$17.84	\$33,475.34
7H-1R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
7H-1V	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
7H-2I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
12H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
12H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38

	in. (labor, equip, materials)						
10H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
11H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
10H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
11H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
DS-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
BG-5	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1645	1,645.00	LF	\$7.82	\$12,859.62
DS-5	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1902	1,902.00	LF	\$7.82	\$14,868.69
BG-6	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1639	1,639.00	LF	\$7.82	\$12,812.72
WSW-2	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1460	1,460.00	LF	\$11.88	\$17,340.71
DVPW-1(A)	Portland cement grout - 8 in. (labor, equip, materials)	7"	2350	2,350.00	LF	\$11.88	\$27,911.42
DVPW-(B)	Portland cement grout - 8 in. (labor, equip, materials)	7"	2350	2,350.00	LF	\$11.88	\$27,911.42
10H-1V	Portland cement grout - 8 in. (labor, equip, materials)	7"	2010	2,010.00	LF	\$11.88	\$23,873.17
13H-I	Portland cement grout - 8 in. (labor, equip, materials)	8"	2335	2,335.00	LF	\$11.88	\$27,733.26
13H-R	Portland cement grout - 8 in. (labor, equip, materials)	8"	2310	2,310.00	LF	\$11.88	\$27,436.33

Job Hours: 460.00Total Cost: \$861,355.95

**BULLDOZER WORK**Task description: **Re-grade Process Ponds**Site: **Nahcolite Project**Permit Action: **TR-33**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **03A**State: **Colorado**Abbreviation: **None**Date: **03/13/2013**County: **Rio Blanco**Filename: **M194-03a**User: **THM**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:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: **\$198.13**Total Fleet Cost/Hour: **\$396.26****MATERIAL QUANTITIES**Initial Volume: **52,723**Swell factor: **1.110**Loose volume: **58,523 LCY**Source of estimated volume: **Division of Reclamation, Mining & Safety**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: **2,800 lbs/LCY**Weight 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: \$0.958/LCY

Total job time: 141.43 Hours

Total job cost: \$56,045.00

**BULLDOZER WORK**Task description: Re-grade Plant AreaSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 04AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-04aUser: 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:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**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: \$0.761/LCY

Total job time: **41.97 Hours**

Total job cost: **\$16,632.39**

BULLDOZER WORKTask description: Re-grade Well PadsSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 05AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-05aUser: THMAgency or organization name: DRMSHOURLY EQUIPMENT COSTBasic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26MATERIAL QUANTITIESInitial Volume: 29,040Swell factor: 1.110Loose volume: 32,234 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat HandbookHOURLY PRODUCTIONAverage 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 bedJob 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:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5015

Adjusted unit production: 510.08 LCY/hr

Adjusted fleet production: 1020.16 LCY/hr

### **JOB TIME AND COST**

Fleet size: 2 Dozer(s)

Unit cost: \$0.388/LCY

Total job time: 31.60 Hours

Total job cost: \$12,520.87

**BULLDOZER WORK**Task description: Distribute 6" of topsoil over 8 acre process pond areaSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 06AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-06aUser: 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:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**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: \$0.364/LCY

Total job time: 5.92 Hours

Total job cost: \$2,345.73

BULLDOZER WORKTask description: Distribute 6" topsoil over 6.2 acre process areaSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 07AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-07aUser: THMAgency or organization name: DRMSHOURLY EQUIPMENT COSTBasic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26MATERIAL QUANTITIESInitial Volume: 5,000Swell factor: 1.000Loose volume: 5,000 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat HandbookHOURLY PRODUCTIONAverage 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 SoilJob 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: \$0.364/LCY

Total job time: 4.59 Hours  
 Total job cost: \$1,817.55

**BULLDOZER WORK**Task description: Distribute 6" topsoil over 12 acres of re-graded well padsSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 08AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-08aUser: 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:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**MATERIAL QUANTITIES**Initial Volume: 9,660Swell factor: 1.000Loose volume: 9,660 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: \$0.270/LCY

Total job time: 6.59 Hours

Total job cost: \$2,612.40

## BULLDOZER RIPPING WORK

Task description: Rip 18.7 acres of road and compacted areas

Site: Nahcolite Project

Permit Action: TR-33

Permit/Job#: M1983194

### PROJECT IDENTIFICATION

Task #: 09A

State: Colorado

Abbreviation: None

Date: 03/13/2013

County: Rio Blanco

Filename: M194-09a

User: THM

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:	<u>\$63.00</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$104.03</u>	<u>100</u>
Ripper Operating Cost/Hour:	<u>\$6.53</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.41</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$210.98</u>	
Total Fleet Cost/Hour:	<u>\$421.97</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: 2.56 mph  
Average Ripping Width: 7.08 degrees  
Average Ripping Length: 300.00 feet  
Average Dozer Speed: 88.00 feet  
Average Maneuver Time: 0.25 feet  
Production per unit area: 0.800 acres/hour

#### 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: \$317.920 Per acre Total job cost: \$5,945.00

**BULLDOZER WORK**Task description: Distribute 6" topsoil over 18.7 acres of decompacted areaSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 10AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-10aUser: 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:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**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: \$0.270/LCY

Total job time: 10.27 Hours

Total job cost: \$4,070.86

REVEGETATION WORKTask description: Revegetate 44.9 acresSite: Nahcolite ProjectPermit Action: TR-33Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 11AState: ColoradoAbbreviation: NoneDate: 03/13/2013County: Rio BlancoFilename: M194-11aUser: THMAgency or organization name: DRMSFERTILIZING**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$0.00</b>

**Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

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
<b>Total Tilling Cost/Acre</b>	<b>\$243.21</b>

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 - Bozoiisky	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
<b>Totals Seed Mix</b>	<b>18.00</b>	<b>86.97</b>	<b>\$87.18</b>

**Application**

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

**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
<b>Total Mulch Materials Cost/Acre</b>				<b>\$532.46</b>

**Application**

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

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres: 44.9                      Cost /Acre: \$1,419.42  
 Estimated Failure Rate: 30%                      Cost /Acre\*: \$1,419.42  
 \*Selected Replanting Work Items: TILLING, SEEDING, MULCHING

Initial Job Cost: \$63,731.96  
 Reseeding Job Cost: \$19,119.59  
 Total Job Cost: \$82,851.55  
 Job Hours: 24.00



**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mobilization**Site: **Nahcolite Project**Permit Action: **TR-33**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **12A**State: **Colorado**Abbreviation: **None**Date: **03/13/2013**County: **Rio Blanco**Filename: **M194-12a**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:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
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:	<u>RIFLE</u>	
Total one-way travel distance:	<u>60.00</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$6,311.82</u>
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$87.54</u>
'** 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:	<u>8.00</u>	Hours
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Total job cost:	<u>\$6,399.36</u>
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