

# COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY MINERALS PROGRAM INSPECTION REPORT

PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME:	MINE/PROSPECTING ID#:	MINERAL:	COUNTY:
North River Pit	M-1999-005	Sand and gravel and	Otero
		borrow material	
INSPECTION TYPE:	INSPECTOR(S):	INSP. DATE:	INSP. TIME:
Monitoring	Amy Eschberger	January 14, 2016	09:00
OPERATOR:	OPERATOR REPRESENTATIVE:	TYPE OF OPERAT	TION:
ALL-RITE PAVING & REDI-MIX, INC.	Herb Pearson	112c - Construction I	Regular Operation

REASON FOR INSPECTION:	BOND CALCULATION TYPE:	BOND AMOUNT:
Normal I&E Program	Complete Bond	\$175,334.00
DATE OF COMPLAINT:	POST INSP. CONTACTS:	JOINT INSP. AGENCY:
NA	None	None
WEATHER:	INSPECTOR'S SIGNATURE:	SIGNATURE DATE:
Clear	ann Eschberger	March 7, 2016

The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.

# **INSPECTION TOPIC:** Hydrologic Balance

**PROBLEM:** According to the Office of the State Engineer, the operator has a valid Substitute Water Supply Plan to cover a total surface area of 8.06 acres of exposed groundwater. However, the Division's records indicate the operator has not secured a permanent plan for augmentation for the exposed groundwater on site. This is a problem pursuant to C.R.S. 34-32.5-116(4)(h) and Construction Materials Rule 3.1.6(1)(a), which obligates the operator to comply with applicable Colorado water laws and regulations governing injury to existing water rights. **CORRECTIVE ACTIONS:** The operator shall demonstrate compliance with the Office of the State Engineer (SEO) by obtaining a water court approved augmentation plan for exposed groundwater on site, or by backfilling the pits to at least two feet above the groundwater surface by the corrective action date specified. Because the approved reclamation plan for this site includes leaving exposed groundwater, the operator should be aware that permanent augmentation must be obtained for all exposed groundwater that remains for reclamation before the site can be released. As the operation continues to exposed additional groundwater during mining, the operator will be required to submit additional financial warranty to cover costs of backfilling any exposed groundwater not covered by a plan for augmentation. If, by the corrective action due date, the Division does not receive documentation that one of the actions above has been completed at the site, a notice of financial warranty increase will be mailed to the operator.

**CORRECTIVE ACTION DUE DATE:** 05/06/2016

### **OBSERVATIONS**

This was a normal monitoring inspection of the North River Pit (Permit No. M-1999-005) conducted by Amy Eschberger of the Division of Reclamation, Mining and Safety (Division). Mr. Herb Pearson represented the operator, All-Rite Paving and Redi-Mix, Inc. during the inspection. The site is located approximately 2 miles northeast of La Junta, Colorado. The site can be accessed from the north directly off of CO-194. The affected land is owned by John L. and John P. Ary. The site is bisected by the Arkansas River. The approved postmining land use is wildlife habitat for the portion located north of the river, and rangeland for the portion located south of the river.

This is a 112c operation permitted for 275.45 acres to mine sand and gravel via wet mining methods (dragline) north of the river, and via dry mining methods south of the river (see enclosed mining plan map). The north mining area includes excavating raw aggregate with a dragline, then placing the material in windrows adjacent to the actively mined pit. Excavation is performed in the naturally occurring groundwater table with limited dewatering occurring to create a stable surface from which the dragline can operate safely. Pit edges are mined to create 3H:1V slopes from 5 feet above to 10 feet below the waterline. Mined material is stockpiled in an area adjacent to the active pit, and is processed on site using mobile equipment. The approved maximum mining depth in the north mining area is approximately 36 feet. A total of approximately 142 acres will be disturbed in the north mining area in a series of five mining phases. Mining commenced in the southern portion of the north mining area (Phase 1), and will proceed generally northward through Phase 4. Then, the operation will mine Phase 5 located in the southwestern portion of the north mining area.

In the south mining area, there was approximately 12 acres of previous mining-related disturbance. No groundwater is to be exposed by excavation in this area. The approved maximum mining depth in the south mining area is approximately 15 feet, down to a shale layer that exists beneath the mineable deposit. No material processing is to occur in this area, as excavated material is to be used as fill only. A pre-existing topsoil stockpile was stored in the area which will be used in reclamation of the open pit. Additional topsoil will be salvaged as the pit is expanded. A total of approximately 30 acres will be disturbed in the south mining area.

The approved reclamation plan (**see enclosed reclamation plan map**) includes leaving three unlined ponds in the north mining area, including an east lake with an approximate surface area of 10.7 acres, a west lake with an approximate surface area of 69.5 acres, and a south lake with an approximate surface area of 33.5 acres. The ponds will have undulating shorelines (created by the dragline). Any fines not used for concrete sand will be washed back into the active pond. Disturbed land will be graded to 3H:1V or flatter. The reclaimed shorelines and setback areas will amount to approximately 14.5 acres, which will be retopsoiled and revegetated using a seed mixture recommended by the Natural Resources Conservation Service. Topsoil will be replaced at a minimum depth of 12 inches. The approved reclamation plan for the south mining area includes grading all disturbed slopes to 3H:1V, replacing topsoil at a minimum depth of 12 inches, and revegetating the disturbed land with the same seed mixture to be used in the north mining area. The post-mining land use for this area will be rangeland, with no exposed groundwater.

At the time of the inspection, the weather was clear, sunny and cool. A permit sign was posted at the main site entrance off of CO-194 (**Photo 1**). The permit boundary was delineated by property fencelines (**Photo 2**), metal posts, and existing roads. The site was active during the inspection, including processing and hauling off material from the north mining area (**Photo 3**). Mr. Pearson indicated that the pit is active more than 180 days every year, which is in compliance with its approved operational status. Several stockpiles of processed material were stored in the processing area (**Photos 4-6**). A dragline was stored west of the processing area (**shown in Photo 6**). The Division estimates the operation has disturbed approximately 32.2 acres in the north mining area. This disturbance includes two excavated ponds [a larger active pond (**Photos 7-9**) and a smaller settling pond

(**Photo 10**)], a processing and stockpiling area located just west of the ponds, and topsoil berms stored along the perimeter of the ponds. The topsoil stockpiles appeared to be stable with some vegetative cover (**Photo 11**; also shown in Photo 9). As the operation advances westward, the operator is backfilling some of the excess material along the eastern shoreline of the larger pond (**Photo 12**). The most current aerial image of the site available in Google Earth is dated 02/05/2013 (see enclosed Google Earth images of site). This image shows three ponds, including one larger one, and two smaller ones below it, with a combined surface area of 9.19 acres. However, since the date of the aerial image, the operator has backfilled the smaller pond to the left and a small portion of the larger pond to get the total exposed groundwater down to 8.06 acres (covered by the Substitute Water Supply Plan). The Division observed these backfilled areas during the inspection (**Photo 13**; also shown in **Photo 12**).

According to the operator, when active mining is taking place, the active pond must be dewatered enough to allow for safe operation of the dragline. The operator uses a floating 3,000 gpm pump regulated by a groundwater level detection sensor to pump water to the settling pond, then, after sediment settles out of the water, the cleaner water is discharged to the Arkansas River. The floating pump station was observed at the southern edge of the larger pond during the inspection (**Photo 14**). According to the operator, a discharge permit is maintained with CDPHE for this activity. The operator submitted a current discharge permit with Technical Revision No. 1 (TR-01), which was approved on 03/02/2001. This revision added the temporary utilization of groundwater reduction techniques and also changed the process area to a new location in the southwestern portion of the affected land.

Although the operator has a valid Substitute Water Supply Plan with the Office of the State Engineer (SEO), the Division has no record showing that the operator is pursuing or has obtained a permanent augmentation plan for the exposed groundwater on site. The Division mailed a letter to all operators on 04/30/2010 (see enclosed **letter**) that identified four approaches for operators to achieve compliance in regards to mining-related exposure of groundwater. These approaches were (in summary): 1) Submit a financial warranty to cover costs for backfilling the exposed groundwater, 2) Obtain a water court approved augmentation plan prior to exposing groundwater, 3) Submit a financial warranty to cover costs of installing a clay liner or slurry wall that meets the SEO's requirements, or 4) Obtain approval from the SEO that acknowledges compliance with their requirements pursuant to § 37-90-137(11). To date, the Division has not received documentation that one of these approaches was pursued by the operator. Because the approved reclamation plan includes leaving up to approximately 142 acres of exposed groundwater in the north mining area, the operator should be aware that a permanent plan for augmentation will need to be obtained for all exposed groundwater to remain before the site can be released. Until an augmentation plan has been obtained, the operator will be required to submit additional financial warranty to cover costs for backfilling any groundwater that is exposed during the operation. A problem is cited in this report (see page 1) for noncompliance with applicable Colorado water laws and regulations governing injury to existing water rights. The corrective actions include demonstrating compliance with the Office of the State Engineer (SEO) by obtaining a water court approved augmentation plan for exposed groundwater on site, or by backfilling the pits to at least two feet above the groundwater surface by the corrective action date specified. If, by the corrective action date, the Division has not received evidence that one of the above actions has been completed, the Division will send the operator a notice of financial warranty increase to account for backfilling 8.06 acres of exposed groundwater on site.

The Division observed the 35 acre area located in the southwestern portion of the north mining area, which was added to the affected land in Amendment No. 1 (AM-01). This area was originally proposed to be mined in the permit application submitted in 1999. Prior to approval of the permit, this area was withdrawn from the proposed affected land due to concerns about the potential existence of wetlands. However, this area was still included in the approved permit area. Since the original permit application was approved, the operator had a wetlands delineation report performed by Wright Water Engineers which indicated that no wetlands exist in this

portion of the permit area. Therefore, the Division approved AM-01 which added this 35 acre area to the affected land. This portion of the permit area is to be wet mined as the rest of the north mining area, and similarly will be left as an unlined pond with limited wildlife habitat for reclamation. During the inspection, the Division observed that this area had not yet been mined (**Photo 15**). Mr. Pearson indicated this area gets flooded with at least two feet of water almost every spring. Apparently, the county hired a contractor to construct a dike across the southern edge of this area to help keep the water from flooding adjacent properties. The frequent flooding of this area is making it susceptible to weed growth. The operator should continue to monitor the growth and spread of weeds in the permit area, and implement the approved weed control and management plan as needed to keep weeds from spreading to adjacent lands.

The south mining area can only be accessed from the south side of the river. At the time of the inspection, the access road was blocked by a parked train. The Division and Mr. Pearson failed to find another workable access to this area for the inspection. This was the case in the last inspection conducted on 03/21/2011. The Division was able to observe the south mining area in the distance by standing on top of a large asphalt stockpile in an industrial facility located south of the permit area (and south of the railroad tracks; **Photo 16**). Mr. Pearson indicated that no mining activity has occurred in the south mining area in many years. In viewing historical aerial images of the site in Google Earth, it appears that the south mining area has not been active in at least 12 years. The Division estimates that approximately 19 acres have been disturbed in this area. If mining is complete in the south mining area, the Division recommends the operator begin final reclamation. If the operator intends to continue mining activity in this area at some point, the Division recommends the operator work to keep the area stable in the meantime, including erosion control and weed management.

The Division has recalculated the required financial warranty (see enclosed bond estimate) and found it to be inadequate to reclaim the site in accordance with the approved reclamation plan. The Division estimates the total required financial warranty to be in the amount of \$431,039.00, which is \$255,705.00 more than the currently held bond of \$175,334.00. The increase is directly associated with costs for backfilling the 8.06 acres of exposed groundwater. Therefore, the Division is giving the operator until the corrective action due date (see page 1) to demonstrate compliance with the SEO by either backfilling the exposed groundwater or providing evidence of having obtained a permanent plan for augmentation. If, by the corrective action date, the Division has not received documentation that one of the above actions has been completed, the Division will mail the operator a notice of financial warranty increase. At that time, the operator will have 60 days to post the additional required financial warranty in the amount of \$255,705.00.

# **PHOTOGRAPHS**



**Photo 1.** View of permit sign posted at main entrance to site off of CO-194.



**Photo 2.** View of property fenceline marking eastern permit boundary.



**Photo 3.** View of activity occurring in stockpiling and processing area located west of excavated ponds.



**Photo 4.** View looking east showing stockpiled material present in area located west of excavated ponds.



**Photo 5.** View looking east showing large material stockpile present near western shoreline of larger excavated pond.



**Photo 6.** View looking west showing stockpiled material present in area located west of excavated ponds. Note dragline present in distance.



**Photo 7.** View looking southwest across larger excavated pond in north mining area. Note shorelines much flatter than required 3H:1V slope.



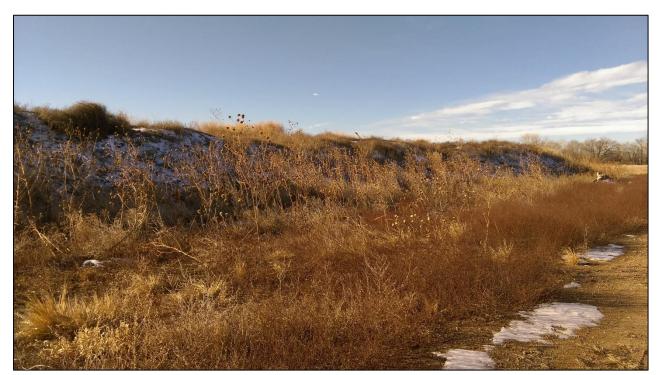
Photo 8. View looking northeast across larger excavated pond in north mining area.



**Photo 9.** View looking northwest across larger excavated pond in north mining area. Note topsoil berm stored along northern edge of pond (indicated).



Photo 10. View looking northwest across small settling pond located southeast of larger active pond.



**Photo 11.** View of northern side of large topsoil berm stored along northern edge of larger excavated pond. Note stockpile is stable with vegetative cover (consisting of grasses and annual weeds).



**Photo 12.** View looking southwest across southeastern edge of larger excavated pond that was backfilled.



**Photo 13.** View looking north across area where small settling pond was backfilled in 2013 and revegetated.



**Photo 14.** View looking east, showing floating pump station located at southern edge of larger excavated pond.



**Photo 15.** View looking east across northern portion of 35 acre area added to affected land in AM-01, not yet disturbed by mining operation. Frequent flooding has made this area susceptible to weed growth.



**Photo 16.** View looking north from outside southern permit boundary, showing south mining area (blocked by parked train). Portions of highwalls barely visible.

### **GENERAL INSPECTION TOPICS**

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS <u>Y</u>	(FN) FINANCIAL WARRANTY N	(RD) ROADS <u>Y</u>
(HB) HYDROLOGIC BALANCE PB	(BG) BACKFILL & GRADING <u>Y</u>	(EX) EXPLOSIVES <u>NA</u>
(PW) PROCESSING WASTE/TAILING <u>Y</u>	(SF) PROCESSING FACILITIES $\underline{Y}$	(TS) TOPSOIL $\underline{Y}$
(MP) GENL MINE PLAN COMPLIANCE- Y	(FW) FISH & WILDLIFE $\underline{N}$	(RV) REVEGETATION <u>Y</u>
(SM) SIGNS AND MARKERS <u>Y</u>	(SW) STORM WATER MGT PLAN <u>Y</u>	(CI) COMPLETE INSP <u>Y</u>
(ES) OVERBURDEN/DEV. WASTE <u>Y</u>	(SC) EROSION/SEDIMENTATION $\underline{Y}$	(RS) RECL PLAN/COMP Y
(AT) ACID OR TOXIC MATERIALS NA	(OD) OFF-SITE DAMAGE <u>N</u>	(ST) STIPULATIONS <u>NA</u>

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

### **Inspection Contact Address**

Herb Pearson ALL-RITE PAVING & REDI-MIX, INC. P.O. Box 1128 La Junta, CO 81050

Enclosure(s): Approved mining plan map

Approved reclamation plan map

(3) Google Earth images of site: one showing entire permit area, one showing close up view of disturbance in north mining area, and one showing close up view of disturbance in south mining

Division's letter Re: Mining operations with exposed groundwater, dated 04/30/2010

Division's bond estimate

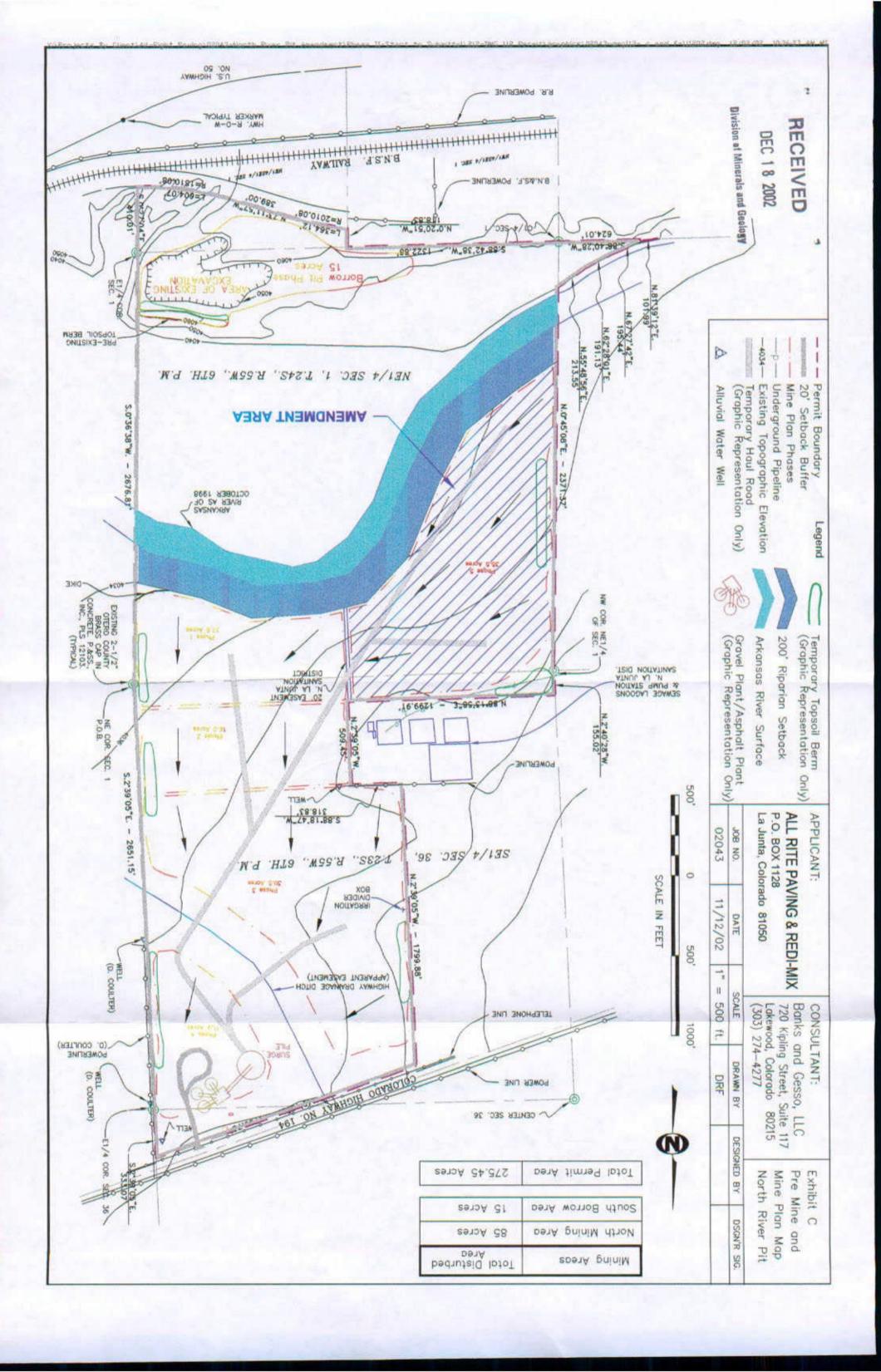
CC: Jodi Ricker

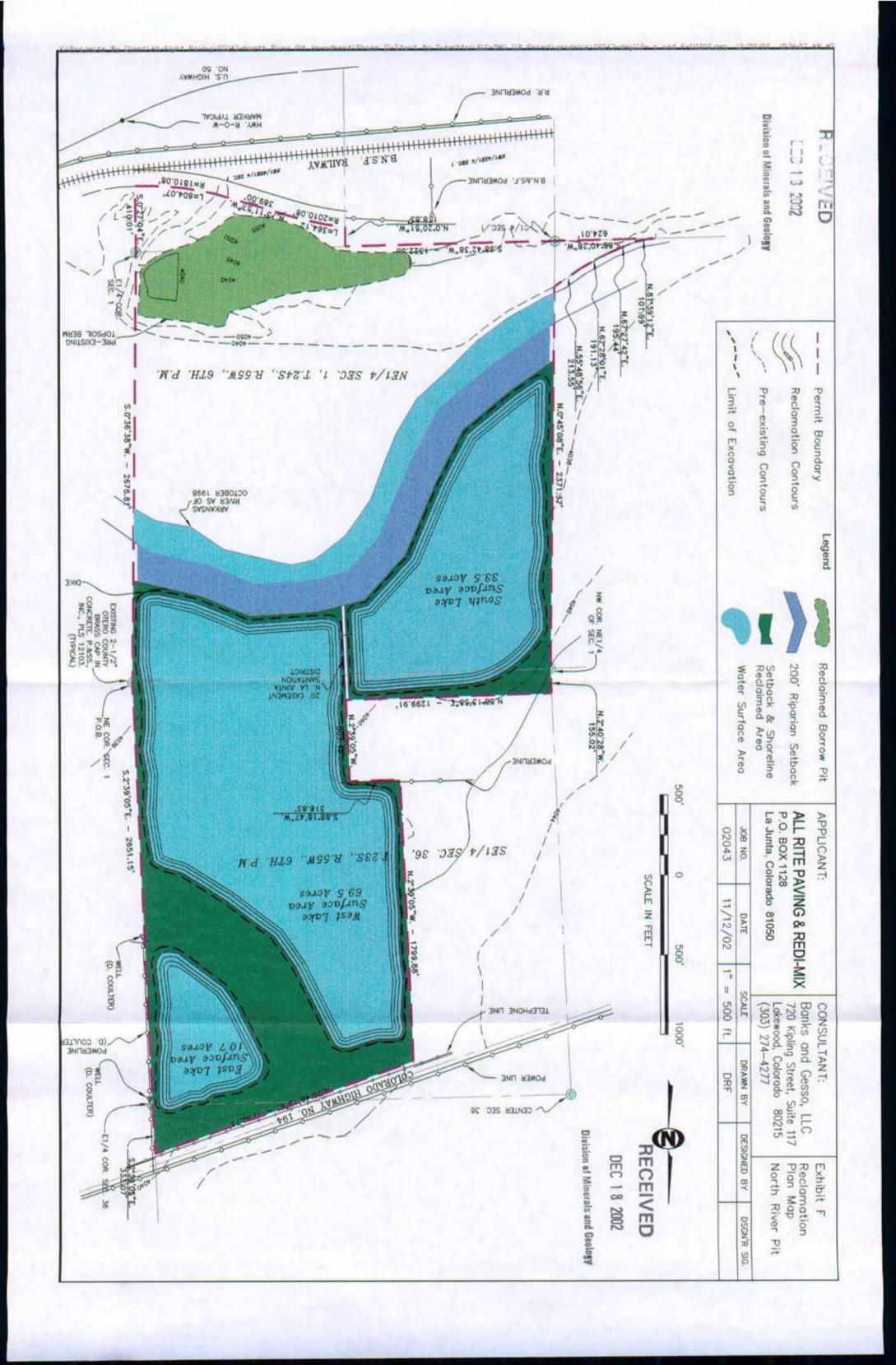
All-Rite Paving & Redi-Mix, Inc.

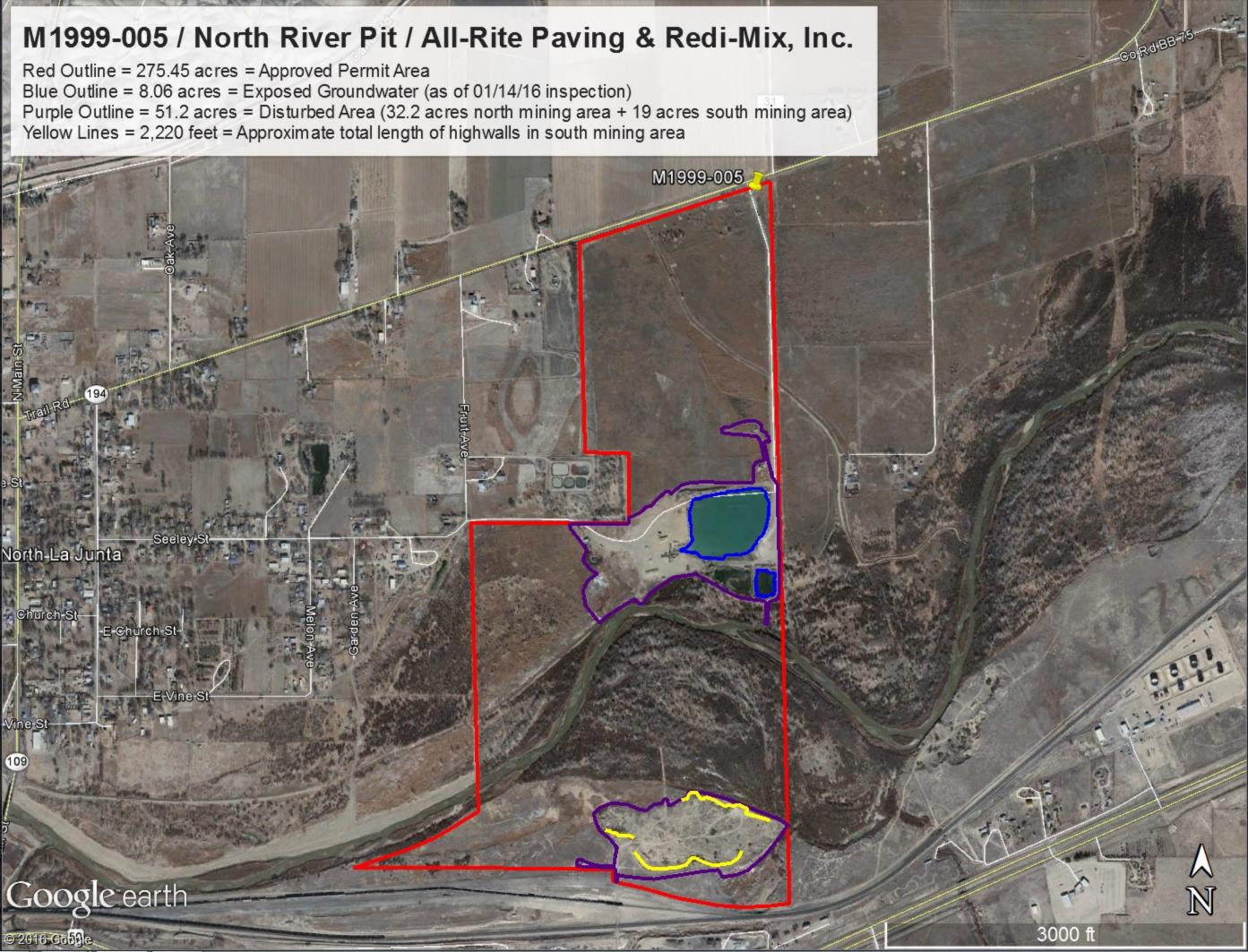
P.O. Box 165

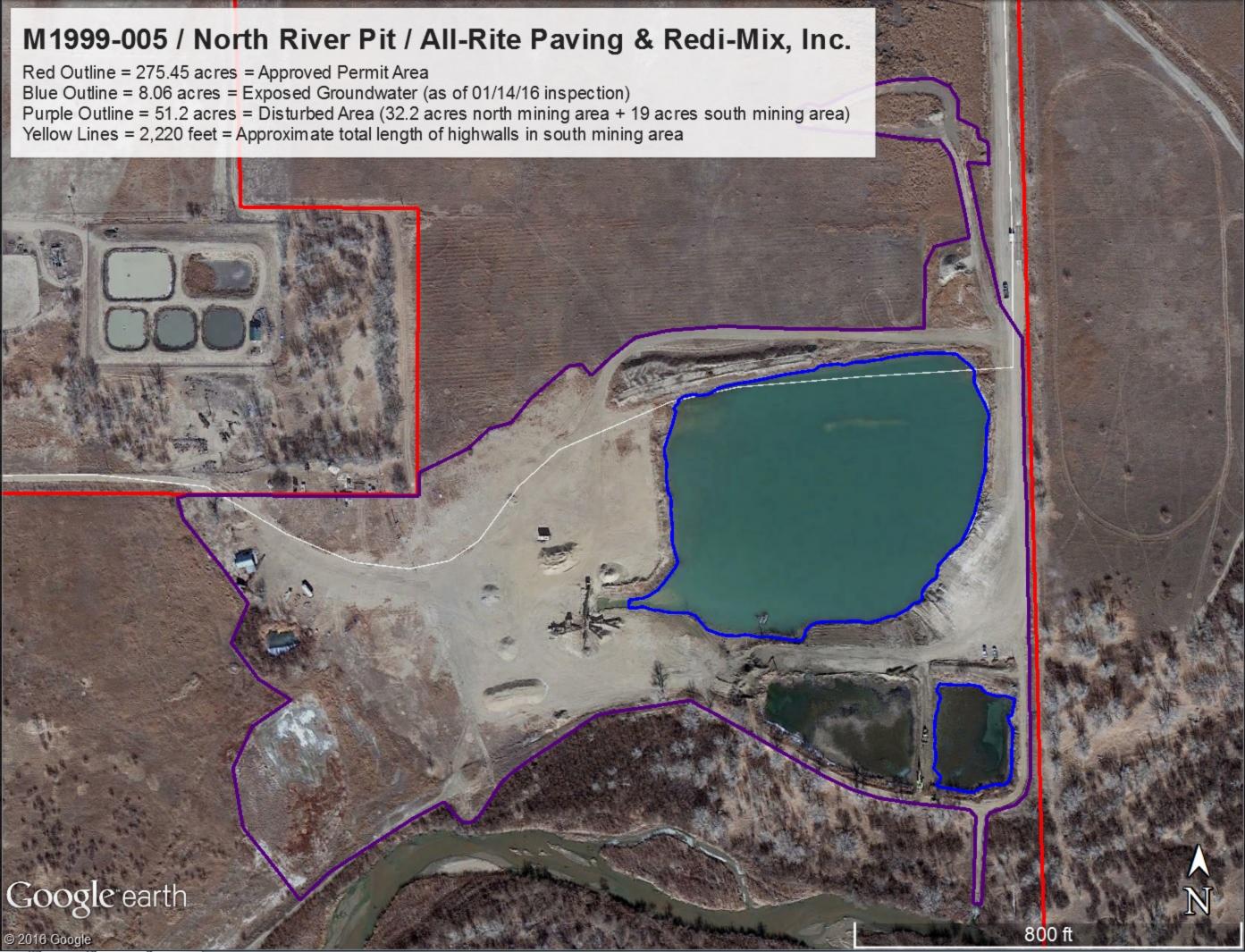
Canon City, CO 81215

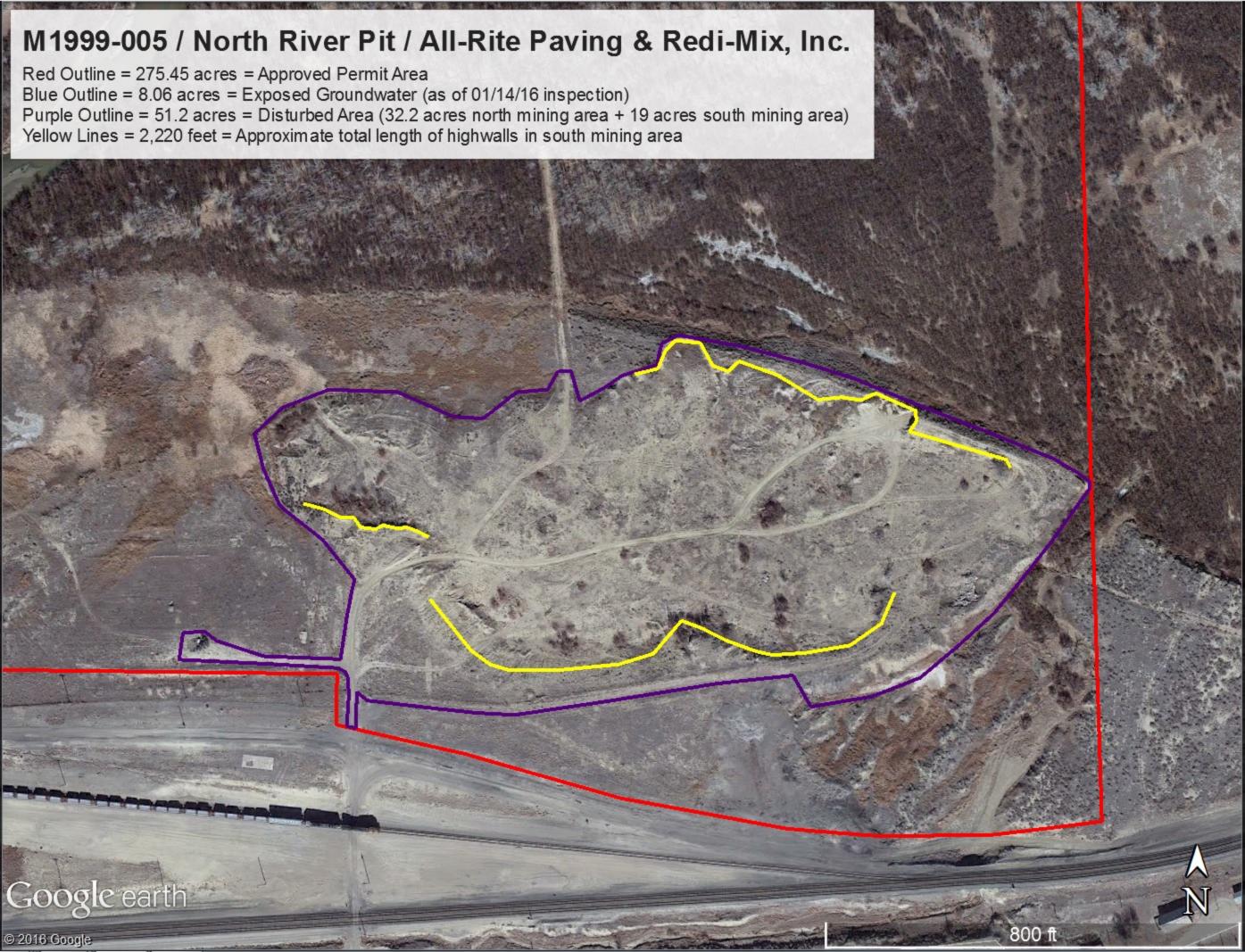
Wally Erickson, DRMS











# 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



April 30, 2010

RE:

All Rite Paving & Redi Mix, Inc. 839 Mackenzie Ave. P.O. Box 165 Canon City, CO 81215

Mining Operations with Exposed Ground water

To Whom It May Concern:

SAFETY

Bill Ritter, Jr.

Governor

James B. Martin Executive Director

Loretta E. Piñeda Director

The Division of Reclamation Mining and Safety is responsible for ensuring that Sand and Gravel mining operators comply with the requirements of the Colorado Land Reclamation Act for the Extraction of Construction Materials (Act) and the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials (Rules). Among these requirements are provisions for the protection of water resources. The Act requires that reclamation plans must ensure minimization of disturbances to the prevailing hydrologic balance, including disturbances to the quantity of water in the area affected by mining and in the surrounding areas. § 34-32.5-116(4)(h). Rule 3.1.6(1)(a) requires compliance with Colorado water laws and regulations governing injury to existing water rights both during and after mining. Permits must specify how the permittee will comply with applicable Colorado water laws and regulations governing injury to existing water right rights. Rule 6.3.3(j); Rule 6.4.5(2)(c). After an extensive review, the Division determined that several operators may not have appropriate permit conditions to address certain reclamation liabilities arising from impacts to water resources.

In September 2009 the Division of Water Resources (DWR) updated its Guidelines for Sand and Gravel Pits. These guidelines provide guidance on achieving compliance with state law regarding replacement of depletions from sand and gravel mining, thus the guidelines provide a benchmark for the protection of hydrologic balance required under the Act and Rules. As noted in the Guidelines, sand and gravel operations which expose groundwater without complying with state law create a reclamation liability by impacting available groundwater.

State law requires that any person exposing ground water must obtain a well permit from the SEO pursuant to § 37-90-137(11). Because exposed groundwater results in out-of-priority water depletions, operations which expose ground water must also eventually obtain a water-court approved augmentation plan. Currently, several operators do not have either an augmentation plan or bonding to provide an alternative method to mitigate injurious stream depletions that result from mining-related exposure of ground water. The Division has a statutory duty to ensure that lands affected by mining are reclaimed in a manner that complies with state law and to ensure that operators have sufficient bonding to achieve reclamation. In order to assist operators in achieving compliance with these requirements, the Division proposes that, by April 30, 2011, operators should contact the Division and agree upon a plan for achieving compliance.

The Division has identified four approaches for operators:

- 1. File a financial warranty that will ensure backfilling of the pit to cover the exposed ground water to a depth of two feet above the static ground water level or,
- 2. Obtain a court approved augmentation plan prior to exposing ground water or,
- 3. File a financial warranty to cover the cost of installing a clay liner or slurry wall that meets the Division of Water Resources requirements for preventing ground water exposure or,
- 4. Obtain approval from the Division of Water Resources that acknowledges compliance with the SEO's requirements pursuant to § 37-90-137(11).

The Division will work with operators on an individual basis as they move to implement one of these plans. It is likely that options 1 and 3 will require the submittal of a technical revision or an amendment to the existing permit depending on the nature of the current mining and reclamation plan and the proposed changes. Increased financial warranties, as a result of these modifications, may be posted in a phased manner not to exceed three years. Amendments or revisions currently under review will be required to be approved by April 30, 2011 and may use the phased financial warranty approach described above. New applications going forward or presently under review by the Division will be required to meet the requirements of one of the options 1-4 at the time of application approval. Failure of affected operators to initiate contact with the Division and gain compliance as described above could result in an enforcement action being issued by the Division.

If you have any questions, please contact Tony Waldron at 303-866-3567, extension 8150.

cc: M2004055

**Proctor Pit** 

M1987079

Lamar Pit

M2009054

Proctor Pit

M1999005

North River Pit

### **COST SUMMARY WORK**

North Ri	ver Pit	Pe	rmit Action:	Inspection 1/14/16	Permit/Jol	o#: <u>M1999005</u>
	IDENTIFIC		G 1 1		A11	N
Task #:	000	State:	Colorado		Abbreviation:	None
Date:	2/22/2016	County:	Otero		Filename:	M005-000
User:	AME					

# TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill 8.06 acres exposed groundwater	SCRAPER1	1	290.38	\$268,985.00
002	Rip stockpiling/processing area, 12.5 acres (N Side)	RIPPER	2	9.16	\$4,071.00
003	Replace topsoil on 32.2 acres (N Side)	SCRAPER1	1	39.21	\$22,202.00
004	Revegetate 32.2 acres (N Side)	REVEGE	1	120.00	\$26,311.00
005	Grade highwalls to 3H:1V (S Side)	DOZER	2	4.53	\$1,888.00
006	Replace topsoil on 19 acres (S Side)	SCRAPER1	1	12.05	\$6,821.00
007	Revegetate 19 acres (S Side)	REVEGE	1	76.00	\$15,525.00
008	Mobilization/Demobilization	MOBILIZE	1	4.24	\$7,615.00
		SUBTOTALS:			\$353,418

### **INDIRECT COSTS**

# **OVERHEAD AND PROFIT:**

Liability insurance: 2.02 Total = \$7,139.04 Performance bond: 1.05 Total = \$3,710.89 Job superintendent: 140.00 Total = \$10,427.20 Profit: 10.00 Total = \$35,341.80

TOTAL O & P =  $\frac{$56,618.93}{}$ 

CONTRACT AMOUNT (direct + O & P) = 410,036.93

### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00 Total = 500.00

Engineering work and/or contract/bid preparation: 0.00 Total = \$0.00

Reclamation management and/or administration: 5.00 \$20,501.85

CONTINGENCY: 0.00 Total = \$0.00

TOTAL INDIRECT COST = \$77,620.78

TOTAL BOND AMOUNT (direct + indirect) = \$431,038.78

75% Earth

Rated Payload: 81,600 pounds

Payload Capacity: 30.79 LCY

# SCRAPER TEAM WORK

Task description: Backfill 8.06 acres exposed groundwater						
Site: North River Pit		Permit Action:	Inspection 1/14	/16 Per	rmit/Job#: N	11999005
PROJECT IDENT	<u> TIFICATION</u>					
Task #: 001  Date: 2/22/20  User: AME  Agency or o		State: Colorado Unity: Otero  DRMS				one 005-001
HOURLY EQUIP	MENT	Б.		hift basis: 1 per	<u>day</u>	
		Scraper: Cat 631	ent Description			
	rt Equipment -Loa -Dum intenance –Motor	-Dozer: Cat D8' d Area: NA p Area: NA Grader: CAT 14	Γ - 8SU	L		
	· · · · · · · · · · · · · · · · · · ·	Truck. Water 1	2,500 04			
Cost Breakdown:	Scraper Wo		Support Equi			ance Equipment
	Scraper	Dozer	Load Area	Dump Area	Motor Gra	der Water Truck
%Utilization-machine:	100	100	NA	NA	75	50
Ownership cost/hour:	\$91.86	\$66.85	NA	NA	\$46.96	\$7.54
Operating cost/hour:	\$157.03	\$102.51	NA	NA	\$51.71	\$9.78
Ripper op. cost/hour:	NA	\$0.00	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$34.24	\$38.89	NA	NA	\$35.83	\$0.00
Unit Subtotals:	\$283.13	\$208.25	NA	NA	\$134.50	\$17.32
Number of Units:	2	1	0	0	1	1
Group Subtotals:	Work:	\$774.51	Support:	\$0.00	Ma	int: \$151.82
Total work team cost.  MATERIAL QUA						
Initial volume: Loose volume:	288,966 <b>325,087</b>	CCY LCY	Swell fac	tor: 1.125		
	rce of estimated vo of estimated swell:	<del></del>	avg 25' deep (ui dbook	naugmented)		
HOURLY PRODU	<u>UCTION</u>					
			Scraper B	owl (volume) Ba	sis:	
Material weight: Material description:	2,650 lbs/LCY Decomposed roc	k - 25% Rock,		Volume: 24.00 Volume: 34.00		_ LCY LCY

LCY

LCY

Average Volume:

Adjusted Capacity: 29.00

29.00

Site Altitude: 4040 feet

Cvc	le	Time	:
$\sim$ y $\sim$	ı	I IIIIC	٠

Job Condition Correction:

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

#### **Travel Time:**

Road Condition: Very hard, smooth, asphalt or concrete, no tire penetration 1.2

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	1.00	1.20	2.20	2806	0.69

Haul Time: **0.69** minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	-1.00	1.20	0.20	2937	0.39

Return Time: 0.39 minutes Total Scraper team cycle time: 2.58 minutes Adjusted for job conditions: 559.77 LCY/Hour Selected Number of Scrapers: 2 Scraper(s) Adjusted single scraper team (unit) hourly production: 1,119.53 LCY/Hour Adjusted multiple scraper team (fleet) hourly production: 1,119.53 LCY/Hour

Unadjusted unit production/hour: 674.42 LCY/Hour Optimal Number of Scrapers per push dozer:

### **JOB TIME AND COST**

Fleet size:	1	Team(s)	Total job time:	290.38	Hours
Unit cost:	\$0.827	/LCY	Total job cost:	\$268,985	

# **BULLDOZER RIPPING WORK**

	Task description	: <b>Rip</b>	stockpiling/processing	g area, 12.5 acres (	(N Side)	
Site:	North River I	Pit	Permit Action	n: Inspection 1/14	Permit/Job#	M1999005
	PROJECT ID	ENTIFICAT	ION			
	Task #: 00	2	State: Colorad	lo	Abbreviation:	None
		22/2016	County: Otero		Filename:	M005-002
	User: AN	ME				
	Agency	or organization	n name: DRMS			
	<b>HOURLY EQ</b>	UIPMENT C	OST			
	Basic	Machine: Ca	at D8T - 8SU		Horsepower:	310
	Ripper At	tachment: 3-	Shank Ripper			per day
					Data Source: (	CRG)
	Cost Breakdown	<u>:</u>		1	Utilization %	
		Ownership C	Cost/Hour: \$	\$73.32	NA	
		Operating C	Cost/Hour: \$	102.51	100	
	Rip	per Operating C		\$7.46	100 NA	
		Operator C Total Unit C		\$38.89 222.18	NA	
		Total Fleet C	<del></del>	444.37		
	MATERIAL (					
			2 5	Selected estimating	method: Area	
	Alternate Method	<u>as:</u>				
smic: Area:	NA 12.50	acres	Bank Volume Rip Depth (ft):		BCY BCY	NA BCY or C
Aica.	12.30				<del>-                                    </del>	BC1 01 C
		Source of esti	mated quantity: 12.5	acres x 0.5 feet de	pth	
	<b>HOURLY PR</b>	<u>ODUCTION</u>				
	Seismic:					
			Seismic Velocity:	NA	feet/second	
	Area:		D' ' D 4	2.56		
			ge Ripping Depth: ge Ripping Width:	2.56 7.08	mph degrees	
			e Ripping Length:	500.00	feet	
		Ave	rage Dozer Speed:	88.00	feet	
			e Maneuver Time:	0.25	feet	
			ction per unit area:	0.822	acres/hour	
	Job Condition Co	orrection Factor	<u>'S</u>			
	Ur	nadjusted Hourl	y Unit Production:	0.822	Acres/hr	
			Site Altitude:	4,040	feet	
			Altitude Adj:	1.00	(CAT HB)	
			Job Efficiency: Net Correction:	0.83	(1 shift/day) multiplier	
		A 1'				
		•	l Hourly Unit Productio Hourly Fleet Productio		Acres/hr Acres/hr	
	IOR TIME AN	· ·	110dily 110ct 110ddetto		1 101 0.0/ III	
	JOB TIME AN		Grader(s)	Total :=1- 4:	0.16	House
	Fleet size:	2	_ Grader(s)	Total job time		Hours
	Unit cost:	\$325.648	Per acre	Total job cos	t: <b>\$4,071</b>	

# **SCRAPER TEAM WORK**

Task description:	Replace to	psoil on 32.2	2 acres	(N Side)				
Site: North River Pit		Permit Ac	ction:	Inspection 1/14	<u>/16                                    </u>	ermit/Job#:	M1999	005
PROJECT IDEN	<u>TIFICATION</u>							
Task #: 003	S	State: Colo	orado		Abb	reviation:	None	
Date: 2/22/2	016 Co	unty: Oter	ro			Filename:	M005-0	03
User: AME								
Agency or	organization name:	DRMS						
HOURLY EQUI	PMENT_			COSTSI	nift basis: <u>1 pe</u>	r day		
		Egi	uipmen	t Description				
	-S		at 631G					
		-Dozer: N						
Suppo	ort Equipment -Loa							
Pood M	-Dum aintenance –Motor	p Area: N. Grader: N.						
Road Ma		Truck: N						<del></del>
	,, 4001	2100111						
Cost Breakdown:	Scraper Wo	rk Team		Support Equip	oment	Mair	ntenance I	Equipment
	Scraper	Dozer		Load Area	Dump Area	Motor	Grader	Water Truck
%Utilization-machine:	100	NA		NA	NA	N.	A	NA
Ownership cost/hour:	\$91.86	NA		NA	NA	N	A	NA
Operating cost/hour:	\$157.03	NA		NA	NA	N	A	NA
Ripper op. cost/hour:	NA	NA		NA	NA	N.	A	NA
Operator cost/hour:	\$34.24	NA		NA	NA	N.	A	NA
Unit Subtotals:	\$283.13	NA		NA	NA	N	A	NA
Number of Units:	2	0		0	0	(	)	0
Group Subtotals:	Work:	\$566.26	5	Support:	\$0.00		Maint:	\$0.00
Total work team cos	t/hour: \$566.26		,i					
MATERIAL QU	<u>ANTITIES</u>							
Initial volume:	42,756	CC	CY	Swell fact	or: 1.215			
Loose volume:	51,949	LC	CY					
Soi	arce of estimated vo	olume: 32.	.2 acres	x 1 foot depth				
Source	of estimated swell		t Handb					
HOURLY PROD	<u>UCTION</u>							
				Scraper Bo	owl (volume) B	asis:		
Material weight:	1,600 lbs/LCY			Struck \	Volume: 24.0	00	LC	CY
Material description:	Top Soil			Heaped '			LC	
Rated Payload:				Average `	Volume: 29.0		LC	
Payload Capacity:	51.00 LCY			Adjusted C	Capacity: <b>29.0</b>	00	LC	CY

Cycle Time:

 $\begin{array}{lll} \text{Scraper Loading Time:} & \underline{0.80} \text{ Minutes} \\ \text{Maneuver and Spread Time:} & \underline{0.70} \text{ Minutes} \end{array}$ 

<u>Job Condition Correction:</u> Site Altitude: 4040 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	400.00	1.00	3.00	4.00	1667	0.35

Haul Time: **0.35** minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	400.00	-1.00	3.00	2.00	2914	0.33

Return Time: 0.33 minutes

Total Scraper team cycle time:

Adjusted for job conditions:
Selected Number of Scrapers:
Adjusted single scraper team (unit) hourly production:
Adjusted multiple scraper team (fleet) hourly production:

1,324.95
LCY/Hour

1,324.95
LCY/Hour

Unadjusted unit production/hour: 798.17 LCY/Hour Optimal Number of Scrapers per push dozer:

#### **JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: 39.21 Hours

Unit cost: \$0.427 /LCY Total job cost: \$22,202

# **REVEGETATION WORK**

OJECT IDENTIFICATION  Task #: 004	North River Pit	Per	mit Action:	Inspection 1/14/16	Permit/Jol	o#: <u>M1999005</u>
	OJECT IDENTIFIC	CATION				
User: AME	Date: 2/22/2016	State: County:	Colorado Otero		Abbreviation: Filename:	None M005-004

#### Materials

	Units /			
Description	Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	40.00	pound	\$0.37	\$14.80
Triple superphosphate, 0-46-0	40.00	pound	\$0.51	\$20.40
			Total Fertilizer Materials	
			Cost/Acre	\$35.20

Application

Description		Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)		\$21.34
	<b>Total Fertilizer Application Cost/Acre</b>	\$21.34

# **TILLING**

Description	Cost /Acre
	\$
Total Tilling Cost/Acre	\$0.00

# **SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Blackwell	1.00	8.93	\$5.42
Blue Grama - Lovington	0.30	4.90	\$3.26
Little Bluestem - Pastura	1.40	8.36	\$22.18
Sideoats Grama - El Reno	1.80	5.91	\$20.27
Galleta	0.40	1.46	\$10.10
Western Wheatgrass - Arriba	3.20	8.08	\$11.81
Totals Seed Mix	8.10	37.63	\$73.04

Application

Description		Cost /Acre
Drill seeding (MEANS 32 92 19.13 0020)		\$434.00
	<b>Total Seed Application Cost/Acre</b>	\$434.00

# **MULCHING and MISCELLANEOUS**

### Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
Total Mulch Materials Cost/Acre				\$0.00

**Application** 

Description	Cost /Acre
	\$
Total Mulch Application Cost/Acre	\$0.00

# **NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre	
					\$	
		Totals 2	Nursery Stoc	ek Cost / Acre	\$0.00	

# **JOB TIME AND COST**

No. of Acres: 32.2 Cost /Acre: \$563.58

Estimated Failure Rate: 50% Cost /Acre\*: \$507.04

\*Selected Replanting Work Items: SEEDING

Initial Job Cost: \$18,147.28

Reseeding Job Cost: \$8,163.34

Total Job Cost: Job Hours: 120.00

# **BULLDOZER WORK**

Task descr	ription:	Gr	ade highwalls	to 3H:1V (S	S Side)		
: North F	River Pit		Per	mit Action:	Inspection 1/14/16	Permit/Job#:	M1999005
PROJEC	T IDEN	TIFICAT	<u> ION</u>				
Task #:	005		State:	Colorado		Abbreviation:	None
Date:	2/22/2	016	County:	Otero		Filename:	M005-005
User:	AME		-				
A	gency or	organizatio	n name: DF	RMS			
HOURLY	Y EQUII	PMENT (	COST				
Basic M	-	Cat D8T	- 8 <b>S</b> U				
	epower:	310					
	le Type:	Semi-Uni	versal		<u> </u>		
	chment:	NA					
	ft Basis:	1 per day			<u> </u>		
Data	Source:	(CRG)					
Cost Break	<u>kdown</u> :				i		
_					<u>Utilization %</u>		
	ip Cost/Ho		\$66.85		NA 100		
	ng Cost/Ho		\$102.51		100		
	p. Cost/Ho		\$0.00		0		
Operato	or Cost/Ho	our:	\$38.89		NA		
	factor:	4,625 1.250		<u> </u>			
Loose ve	olume: _	5,781 LCY	<b>7</b> :				
Source of	estimated	volume:	2.220 ft t	otal L x 15 f	t H, from 1H:1V= 4,625	CY	
Source of	estimated	swell facto			, , , , , , , , , , , , , , , , , , , ,		
			<del></del>				
<b>HOURL</b>	Y PROD	<b>UCTION</b>					
Average p	ush distan	ce:	50 feet				
Unadjusted			1,400.0 LC	Y/hr			
<b>J</b>	J F		,	<del></del>			
Materials of	consistenc	y description	on: Compa	cted fill or e	mbankment 0.9		
Average p	ush gradie	nt: -5 %	ó				
Average si	-		10 feet	<del>_</del>			
Material w	eight:	2,65	50 lbs/LCY				
Weight des	scription:	Dec	omposed rock	- 25% Rock	, 75% Earth		
Job Condit					Source		
		ator Skill:		.750	(AVG.)		
N		nsistency:		.900	(CAT HB))		
		g method:		200	(SLOT)		
		Visibility:		.000	(AVG.)		
	Ioh e	efficiency:	0	830	(1 SHIFT/DA	<b>V</b> )	

0.700

(FND-MF)

Spoil pile:

Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4555

Adjusted unit production: 637.70 LCY/hr
Adjusted fleet production: 1275.4 LCY/hr

# **JOB TIME AND COST**

Fleet size: 2 Dozer(s)
Unit cost: \$0.327/LCY

Total job time: 4.53 Hours
Total job cost: \$1,888

# **SCRAPER TEAM WORK**

Task description:	Replace to	psoil on	19 acres	(S Side)			
Site: North River Pit		Permi	t Action:	Inspection 1/14	/16 Per	mit/Job#: <u>M199</u>	9005
PROJECT IDEN	TIFICATION						
Task #: 006 Date: 2/22/2 User: AME			Colorado Otero			eviation: None M005-	006
Agency or	organization name:	DRM	IS				
HOURLY EQUI	<u>PMENT</u>			COSTS	hift basis: 1 per o	<u>day</u>	
		Scraper: -Dozer:	Equipme Cat 631 NA	ent Description G			
	ort Equipment -Loa -Dum aintenance –Motor	d Area: p Area:	NA NA NA NA				
Cost Breakdown:	Scraper Wo	rk Team Do	zer	Support Equi Load Area	pment  Dump Area	Maintenance Motor Grader	Equipment Water Truck
%Utilization-machine:	100	N.	A	NA	NA	NA	NA
Ownership cost/hour:	\$91.86	N.	A	NA	NA	NA	NA
Operating cost/hour:	\$157.03	N	A	NA	NA	NA	NA
Ripper op. cost/hour:	NA	N.	A	NA	NA	NA	NA
Operator cost/hour:	\$34.24	N.	A	NA	NA	NA	NA
Unit Subtotals:	\$283.13	N	A	NA	NA	NA	NA
Number of Units:	2	(	)	0	0	0	0
Group Subtotals:	Work:	\$560	6.26	Support:	\$0.00	Maint:	\$0.00
Total work team cos							
Initial volume Loose volume	,		CCY LCY	Swell fact	tor: 1.215		
	urce of estimated vo of estimated swell		19 acres Cat Hand	x 6 inches depth dbook			
HOURLY PROL	<u>DUCTION</u>						
				Scraper B	owl (volume) Bas	sis:	
Material weight:	1,600 lbs/LCY			Struck	Volume: 24.00		.CY
Material description:					Volume: 34.00		.CY
Rated Payload:				Average			CY
Payload Capacity:	51.00 LCY			Adjusted (	Capacity: <b>29.00</b>	L	.CY

Cycle Time:

 $\begin{array}{lll} \text{Scraper Loading Time:} & \underline{0.80} \text{ Minutes} \\ \text{Maneuver and Spread Time:} & \underline{0.70} \text{ Minutes} \end{array}$ 

<u>Job Condition Correction:</u> Site Altitude: 4040 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Travel Time:

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg#	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	1.00	3.00	4.00	1667	0.41

Haul Time: **0.41** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-1.00	3.00	2.00	2914	0.36

Return Time: 0.36 minutes

Total Scraper team cycle time:
Adjusted for job conditions:
Selected Number of Scrapers:
Adjusted single scraper team (unit) hourly production:
Adjusted multiple scraper team (fleet) hourly production:

1,272.42
LCY/Hour
LCY/Hour

Unadjusted unit production/hour: 766.52 LCY/Hour Optimal Number of Scrapers per push dozer:

**JOB TIME AND COST** 

 Fleet size:
 1
 Team(s)
 Total job time:
 12.05
 Hours

 Unit cost:
 \$0.445
 /LCY
 Total job cost:
 \$6,821

CIRCES Cost Estimating Software

# **REVEGETATION WORK**

<b>DJECT</b>	<b>IDENTIFI</b>	CATION			
Task #: Date: User:	007 2/22/2016 AME	State: County:	Colorado Otero	Abbreviation: Filename:	None M005-007

#### Materials

	Units /			
Description	Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	40.00	pound	\$0.37	\$14.80
Triple superphosphate, 0-46-0	40.00	pound	\$0.51	\$20.40
			Total Fertilizer Materials	
			Cost/Acre	\$35.20

Application

Description		Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)		\$21.34
	<b>Total Fertilizer Application Cost/Acre</b>	\$21.34

# **TILLING**

Description	Cost /Acre
	\$
Total Tilling Cost/Acre	\$0.00

# **SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Blackwell	1.00	8.93	\$5.42
Blue Grama - Lovington	0.30	4.90	\$3.26
Little Bluestem - Pastura	1.40	8.36	\$22.18
Sideoats Grama - El Reno	1.80	5.91	\$20.27
Galleta	0.40	1.46	\$10.10
Western Wheatgrass - Arriba	3.20	8.08	\$11.81
Totals Seed Mix	8.10	37.63	\$73.04

Application

Description		Cost /Acre
Drill seeding (MEANS 32 92 19.13 0020)		\$434.00
	<b>Total Seed Application Cost/Acre</b>	\$434.00

# **MULCHING and MISCELLANEOUS**

### Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre	
			\$	\$	
Total Mulch Materials Cost/Acre				\$0.00	

**Application** 

	Cost /Acre
	\$
Mulch Application Cost/Acre	\$0.00
	Mulch Application Cost/Acre

# **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 Cost /Acre: \$563.58
Estimated Failure Rate: 50% Cost /Acre\*: \$507.04

\*Selected Replanting Work Items: SEEDING

Initial Job Cost: \$10,708.02

Reseeding Job Cost: \$4,816.88

Total Job Cost: \$15,525

76.00

# EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: Mo	bilization/Demo	bilization			
e: North River Pit	Permit	t Action: Inspec	tion 1/14/16	Permit/Job	o#: <u>M1999005</u>
PROJECT IDENTIFICATI	ON				
Task #: 008	State: C	colorado		Abbreviation:	None
Date: 2/22/2016 User: AME	County: O	Otero		Filename:	M005-008
Agency or organization	n name: DRMS	S			
EQUIPMENT TRANSPOR	T RIG COST				
	1110 0001		Sh	ift basis:	l per day
			Cost Data		CRG Data
Truck Tractor Desc	ription: GENI	ERIC ON-HIGHW	VAY TRUCK TRA 400 HP (2ND H		DIESEL POWERED,
Truck Trailer Desc	ription:	GENERIC FOLDI	NG GOOSENEC		K EQUIPMENT
		T	RAILER (25T, 50	T, 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		

# **NON ROADABLE EQUIPMENT:**

Total Unit Cost/Hour:

\$88.67

Machine	Weight/	Owner ship	Haul Rig	Fleet	Haul Trip	Return Trip	DOT Permit
Description	Unit	Cost/hr/ unit	Cost/hr/uni	Size	Cost/hr/	Cost/hr/ fleet	Cost/ fleet
	(TONS)		t		fleet		
Cat D8T - 8SU	53.08	\$73.32	\$125.45	2	\$397.53	\$250.90	\$500.00
CAT 14M	23.57	\$50.42	\$88.67	1	\$139.09	\$88.67	\$250.00
Cat 631G	52.50	\$91.86	\$125.45	2	\$434.62	\$250.90	\$500.00
Drill/Broadcast	25.00	\$39.59	\$88.67	1	\$128.26	\$88.67	\$250.00
Seeder with							
Tractor							

\$117.55

\$125.45

\$1,099.50 \$679.14 \$1,500.00 Subtotals:

# **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.	\$27.11	1	\$27.11	\$27.11

Subtotals: \$27.11 \$27.11

# **EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:

Total one-way travel distance:

Average Travel Speed:

LA JUNTA
miles
50.00
mph

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

\$7,611.44

\$3.25

#### **Transportation Cycle Time:**

	Non-	
	Roadable	Roadable
	Equipment	Equipment
Haul Time (Hours):	0.06	0.06
Return Time (Hours):	0.06	0.06
Loading Time (Hours):	1.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	2.12	0.12

### **JOB TIME AND COST**

Total job cost: 4.24 Hours

Total job cost: \$7,615