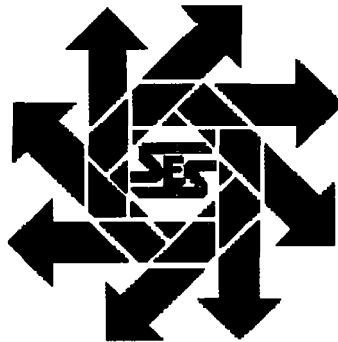
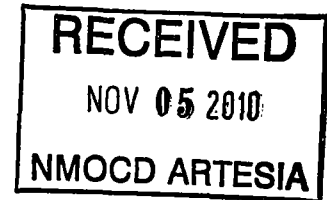


**Range Operating New Mexico, Inc.  
SCB 23-19 Injection Facility  
Section 23, Township 23 South, Range 28 East  
Eddy County, New Mexico**

**Closure Report**

**September 28, 2010**



**Prepared for:**

**Range Operating New Mexico, Inc.  
281 North New Mexico Highway 248/ P.O. Box 1570  
Eunice, New Mexico 88231**

**By:**

**Safety & Environmental Solutions, Inc.  
703 East Clinton Street  
Hobbs, New Mexico 88240  
(575) 397-0510**

**RECEIVED**

NOV 05 2010

**NMOCD ARTESIA**

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## I. Company Contacts

Representative	Company	Telephone	E-mail
Steve Almager	Range Operating NM, Inc.	575-394-1485	<a href="mailto:salmager@rangeresources.com">salmager@rangeresources.com</a>
Sergio Contreras	SESI	575-397-0510	<a href="mailto:scontreras@sesi-nm.com">scontreras@sesi-nm.com</a>

## II. Background

Safety and Environmental Solutions, Inc. (SESI) was engaged by Range Operating NM, Inc. to perform a site assessment at the SCB 23-19 Injection Facility. This is an active battery located in Section 23, Township 23 South, and Range 28 East. A 2" nipple eroded off the end of a check valve on the H-pump releasing approximately 300 barrels of produced water of which 290 was recovered.

## III. Surface and Ground Water

According to the temporary monitor well installed on August 18, 2009 located in the northwest corner of the South Culebra 23 Well #7 location, the depth to water is estimated to be approximately 28' below ground level (bgl) accounting for an increase of 8' in elevation at the SCB 23-19 Injection Facility.

## IV. Work Performed

On August 17, 2009, SESI was onsite to assess the affected area. The area was mapped using a Trimble Geo XM GPS. SESI observed that the release had runoff into the lined firewalls of the tank battery. The fluid had overflow onto the location on the north end then traveling approximately 200 yards to the east. A hand auger was utilized to attempt to delineate the spill area. A total of eight (8) auger holes were selected all resulting in auger refusal from 6" to 10" bgl.

On August 20, 2009, SESI was onsite with M&J Backhoe Services to attempt to delineate the spill area. A total of three (3) test trenches were installed to a depth of 10' bgl within the affected area. Due to the limited reach of the backhoe, the affected area was unable to be fully delineated. The backhoe was then utilized to excavate the affected areas to a depth of one (1) foot bgl removing the highly contaminated and saturated soils to prevent further migration. The excavated soils were transported to CRI a New Mexico Oil Conservation Division (NMOCD) approved facility for disposal.

On September 18, 2008 SESI was onsite with Eco Enviro Drilling to further delineate the affected areas utilizing and auger rig. A total of four (4) boreholes were installed to a depth of twenty (20) feet bgl within the affected areas. Due to the estimated depth of the water table, the affected area was unable to be fully delineated. Samples were collected from each borehole at a depth of 20' bgl. The samples were transported under chain of custody to Cardinal Labs of Hobbs, New Mexico for Chloride (EPA Method 4500-Cl<sup>-</sup>B).

The results of the analysis are as follows:

Sample ID	Chlorides (mg/kg)
BH#1. 20'	2,000
BH#2. 20'	496
BH#3. 20'	288
BH#4. 20'	768

On September 24, 2009, SESI conducted a background sampling investigation to determine the chloride concentrations of the surrounding area. Soil samples were collected from the adjacent fields at the Range 4B, 23-11 and 23-7 locations. A water sample was also collected from an irrigation system in the adjacent field from the Range 23-6 location. The samples were transported under chain of custody to Cardinal Labs of Hobbs, New Mexico for Chloride (Method 4500-Cl<sup>-</sup>B). The results of the analysis are as follows:

Sample ID	Chlorides (mg/kg)
4B	6,320
23-11	3,280
23-7	8,000
23-6	3,040

On September 17, 2010, SESI was onsite to begin excavation of release area. The area was excavated to a depth of four (4) feet below grade surface. The highly contaminated soils were transported to a New Mexico Oil Conservation Division (NMOCD) approved facility for disposal. Approximately 1,340 yards of contaminated soils were transported to disposal. Five (5) samples were retrieved at a depth of 4 feet below grade surface at bottom of excavation and transported under Chain of Custody to Cardinal Laboratories to be analyzed for Chlorides (EPA Method 4500 B). The results are as follows:

Sample ID	Chlorides (mg/kg)
SP #1 4'bgs	768
SP #2 4'bgs	416
SP #3 4'bgs	80
SP #4 4'bgs	1,540
SP #5 4'bgs	960

A 162' X 40' 20-mil reinforced geo-membrane liner was installed at bottom of excavation. The area was then backfilled with approximately 1,500 yards of caliche from an offsite facility and contoured to its natural grade.

Upon backfilling the firewall was then raised on the south side of location battery and injection well to a height of four (4) feet above ground to prevent any future contamination.

## V. Conclusion

Remedial actions at this site have all been performed with the approval of, and in accordance with all New Mexico Oil Conservation Division (NMOCD) requirements.

As a result, we respectfully submit this closure report for your consideration and approval.

## VI. Figures & Appendices

Figure 1 – Vicinity Map

Figure 2 – Site Plan

Appendix A – Analytical Results

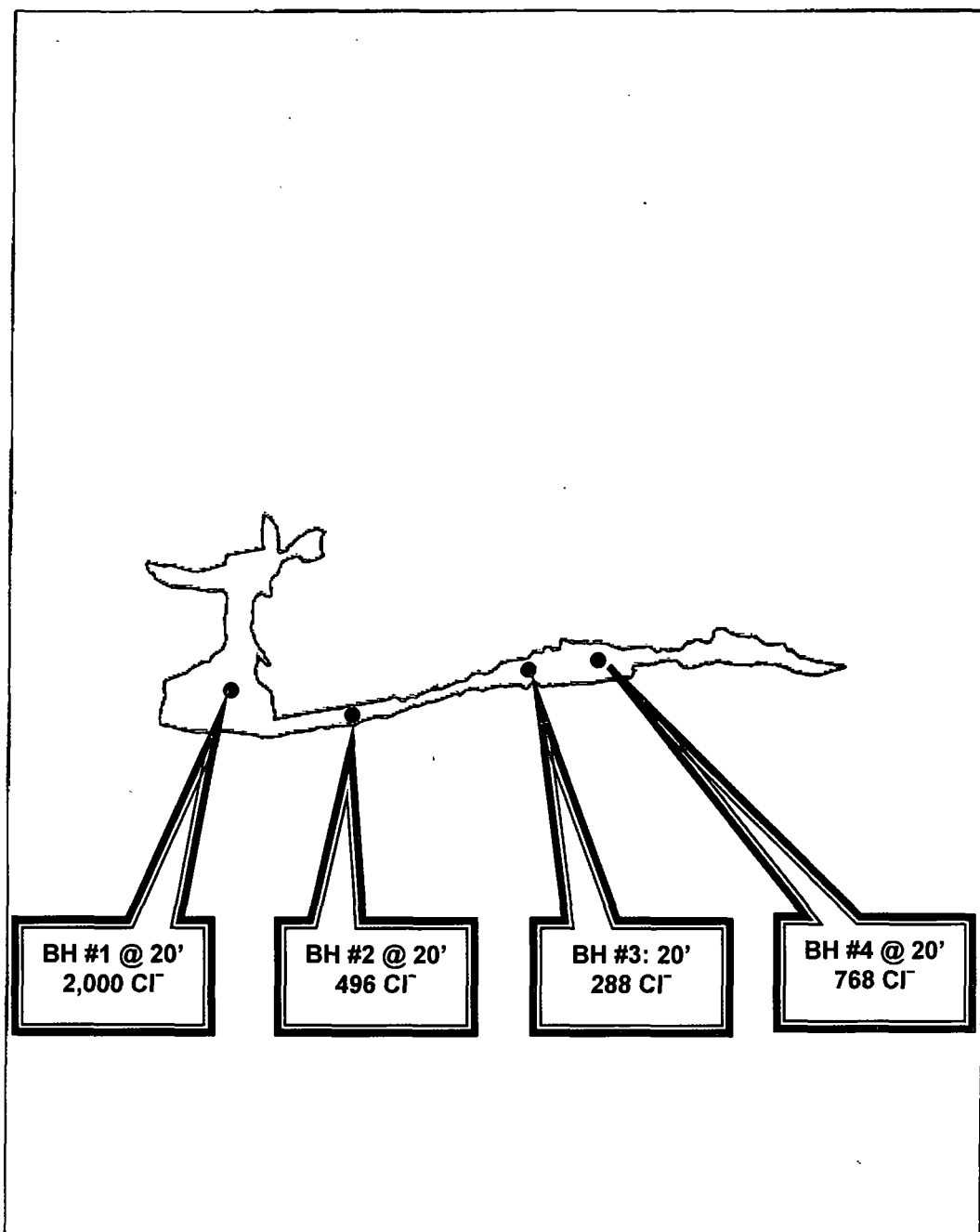
Appendix B – Site Photos

Appendix C – C-141

**Figure 1**  
**Vicinity Map**



**Figure 2**  
**Site Plan**



## SCB 23-19 Injection Facility

Lat/Long  
WGS 1984

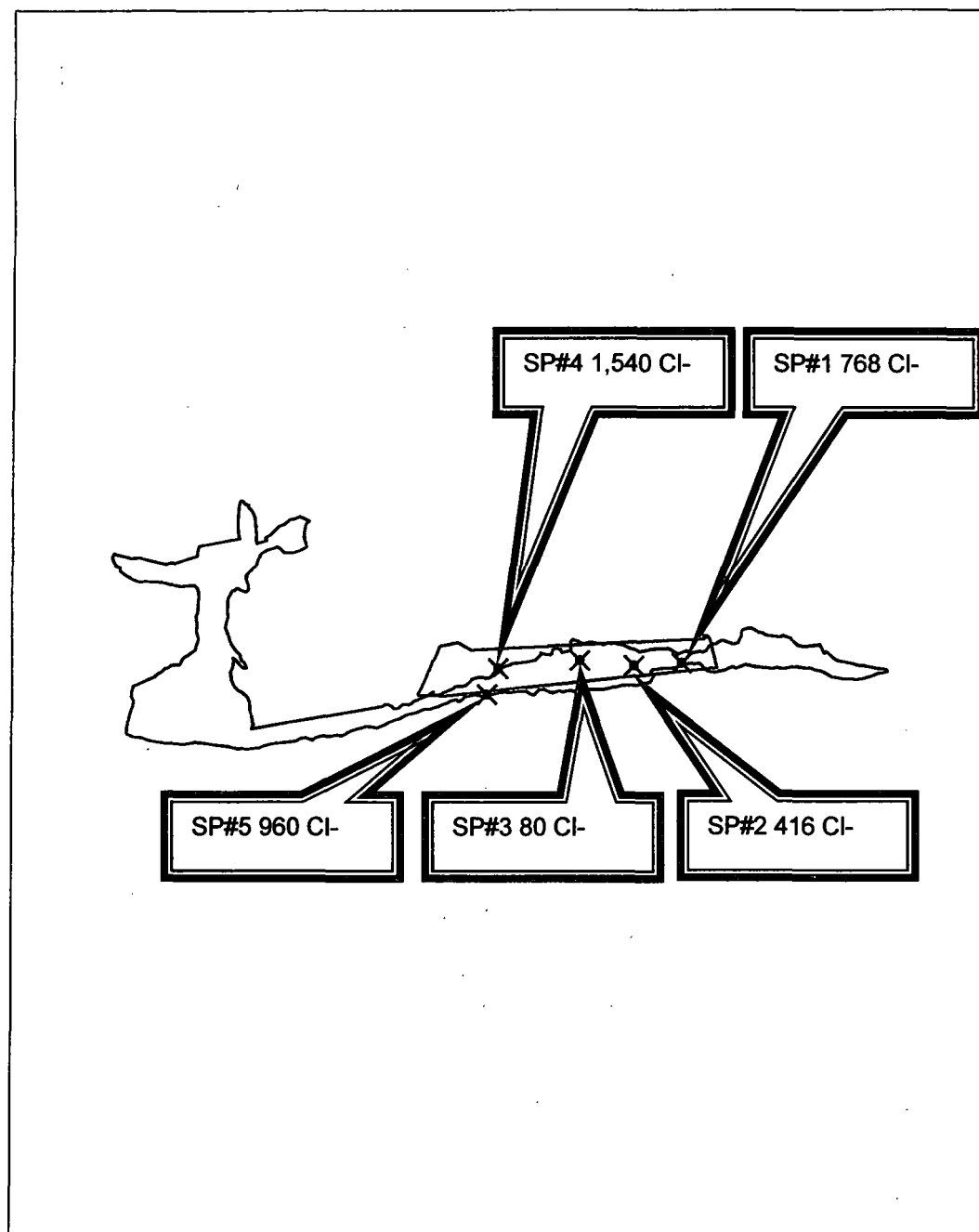


Scale 1:2,000  
0 0.040  
Miles

site plan.cor

GPS Pathfinder<sup>®</sup> Office  
 **Trimble.**





## SCB 23-19

Lat/Long  
WGS 1984



Scale 1 in : 150 ft  
0 200.0  
Feet

combined maps.cor  
11/3/2010

GPS Pathfinder<sup>®</sup>Office





Map Name: SE LOVING, NM  
Scale: 1 inch = 500 ft.

Map Center: 032.2922841° N 104.0587044° W  
Horizontal Datum: WGS84



## **Appendix A**

### **Analytical Results**



**ANALYTICAL RESULTS FOR  
SAFETY & ENVIRONMENTAL SOLUTIONS  
ATTN: BRIAN CUELLAR  
703 E. CLINTON, #102  
HOBBS, NM 88240  
FAX TO: (575) 393-4388**

Analysis Date: 09/21/09  
Sampling Date: 09/18/09  
Sample Type: SOIL  
Sample Condition: INTACT @ 24.0°C  
Sample Received By: ML  
Analyzed By: HM

LAB NO.	SAMPLE ID	Cl <sup>-</sup> (mg/kg)
H18275-1	BH #1. 20'	2,000
H18275-2	BH #2. 20'	496
H18275-3	BH #3. 20'	288
H18275-4	BH #4. 20'	768
Quality Control		500
True Value QC		500
% Recovery		100
Relative Percent Difference		2.0

4500-CIB

**Note:** Analyses performed on 1:4 w:v aqueous extracts.

*Chad Kene*  
Chemist

Date 09/21/09

H18275 SESI

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PHONE (575) 393-2328 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR  
SAFETY & ENVIRONMENTAL SOLUTIONS  
ATTN: BOB ALLEN  
703 E. CLINTON, #102  
HOBBS, NM 88240  
FAX TO: (575) 393-4388

Receiving Date: 09/25/09  
Reporting Date: 10/07/09\*\*  
Project Number: RANGE OPERATING  
Project Name: RANDOM SAMPLING  
Project Location: LOVING, NM

Analysis Date: 09/27/09  
Sampling Date: 09/24/09  
Sample Type: SOIL & WATER  
Sample Condition: INTACT @ 13.0°C  
Sample Received By: ML  
Analyzed By: HM

LAB NO.	SAMPLE ID	Cl <sup>-</sup> (ppm)
H18344-2	4B	* 6320
H18344-3	23-11	* 3280
H18344-6	23-7	* 8000
H18344-7	23-8	3,040
Quality Control		500
True Value QC		500
% Recovery		100
Relative Percent Difference		< 0.1

METHOD: Standard Methods

4500-Cl<sup>-</sup>B

\* Note: Analyses performed on 1:4 w:v aqueous extracts.

\*\*Revised Report.

*Cathy Steens*  
Chemist

Date

10/07/09

H18344 SESI

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PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

September 24, 2010

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: RAN-09-007

Enclosed are the results of analyses for samples received by the laboratory on 09/22/10 15:50.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 09/22/2010  
 Reported: 09/24/2010  
 Project Name: RAN-09-007  
 Project Number: SCB 23-19 INJECTION FACILITY  
 Project Location: LOVING, NM

 Sampling Date: 09/21/2010  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Jodi Henson

**Sample ID: SP #1 4' BGS (H020900-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	768	16.0	09/24/2010	ND	432	108	400	3.77	

**Sample ID: SP #2 4' BGS (H020900-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	09/24/2010	ND	432	108	400	3.77	

**Sample ID: SP #3 4' BGS (H020900-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	09/24/2010	ND	432	108	400	3.77	

**Sample ID: SP #4 4' BGS (H020900-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1540	16.0	09/24/2010	ND	432	108	400	3.77	

**Sample ID: SP #5 4' BGS (H020900-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	960	16.0	09/24/2010	ND	432	108	400	3.77	

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

---

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

## CARDINAL LABORATORIES

101 East Martland, Hobbs, NM 88240

(505) 393-2326 Fax (505) 393-2476

Page 1 of 1

Company Name: <b>Safety &amp; Environmental Solutions, Inc.</b>		P.O. #:		<b>BILL TO</b>		ANALYSIS REQUEST	
Project Manager: <b>Bob Allen</b>		Company: <b>Same</b>					
Address: <b>703 East Clinton</b>		City: <b>Hobbs</b>		State: <b>NM</b>		Zip: <b>88240</b>	
Phone #: <b>575-397-0510</b>		Fax #: <b>575-393-4388</b>					
Project #: <b>RA-05-07</b>		Project Owner: <b>Rape</b>					
Project Name: <b>SD 23-19 injection facility</b>							
Project Location: <b>Loving, NM</b>							
Sampler Name: <b>Isaac Garcia</b>							
FOR LAB USE ONLY		PRESERV		SAMPLING			
Lab I.D.		MATRIX		DATE		TIME	
		WASTEWATER					
		GROUNDWATER					
		SLUDGE					
		OIL					
		ACID/BASE					
		OTHER					
		ICE/COOL					
		OTHER					
		# CONTAINERS					
		(G)RAB OR (C)OMP					
1720901 SP4 4' bgs		6		5/21/05		0755	
2 SP4 2 4' bgs		11		5/21/05		0800	
3 SP4 3 4' bgs		11		5/21/05		0805	
4 SP4 4 4' bgs		11		5/21/05		0810	
5 SP4 5 4' bgs		11		5/21/05		0810	

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Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished: Isaac Garcia Date: 5/21/05 Time: 13:50

Relinquished By: Isaac Garcia Date: 5/21/05 Time: 13:50

Delivered By: (Circle One) Isaac Garcia Date: 5/21/05 Time: 13:50

Sampler - UPS - Bus - Other: UPS

Received By: Isaac Garcia Date: 5/21/05 Time: 13:50

Checked By: Isaac Garcia Date: 5/21/05 Time: 13:50

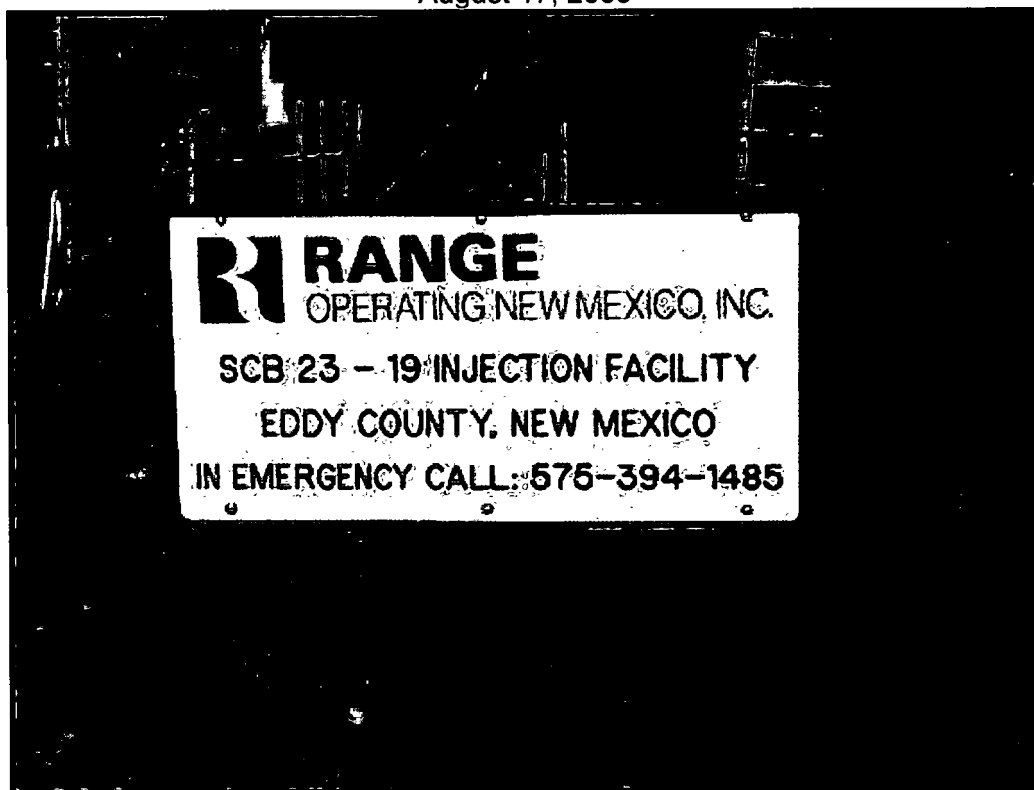
Phone Result: Yes Fax Result: Yes Add'l Phone #: 505-393-2476 Add'l Fax #: 505-393-2476

REMARKS: Chlorides

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

**Appendix B**  
**Site Photos**

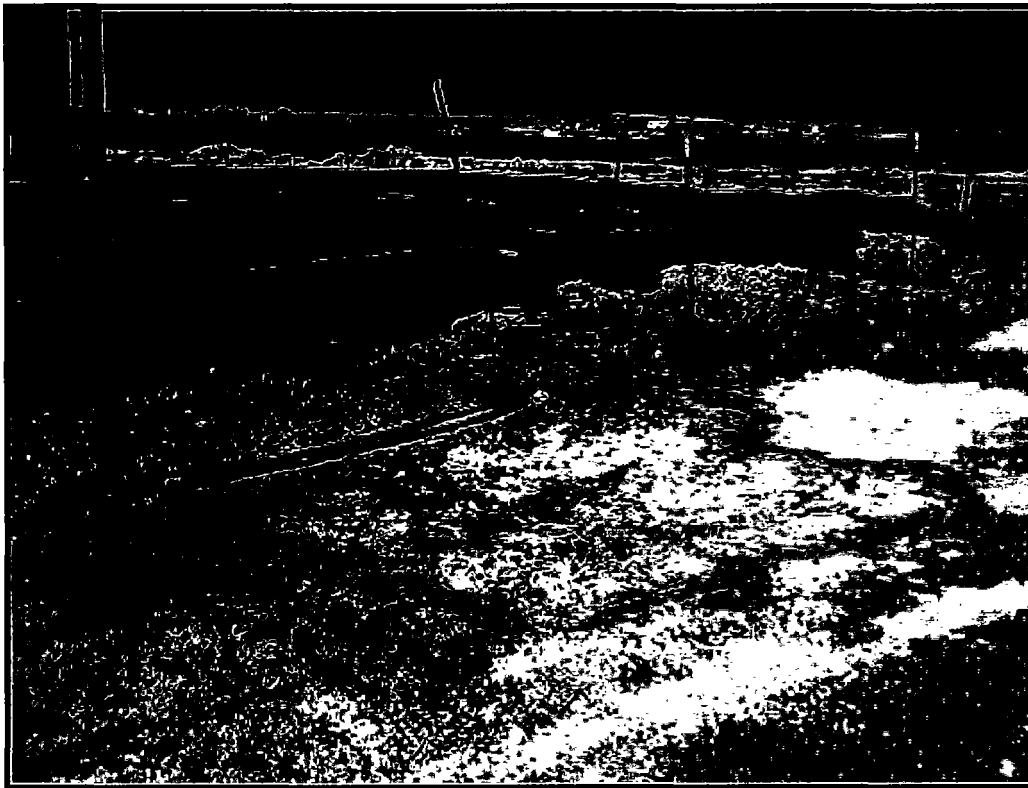
August 17, 2009



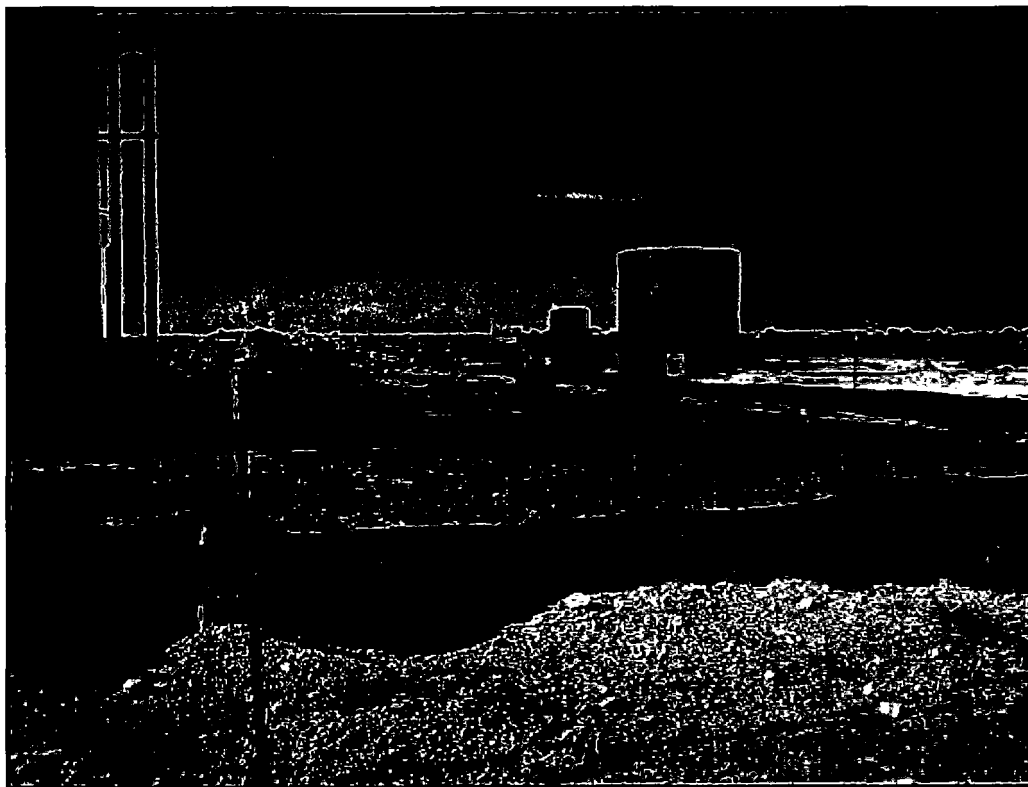
Lease Sign



Inside Firewalls Facing SW



Release Facing SW



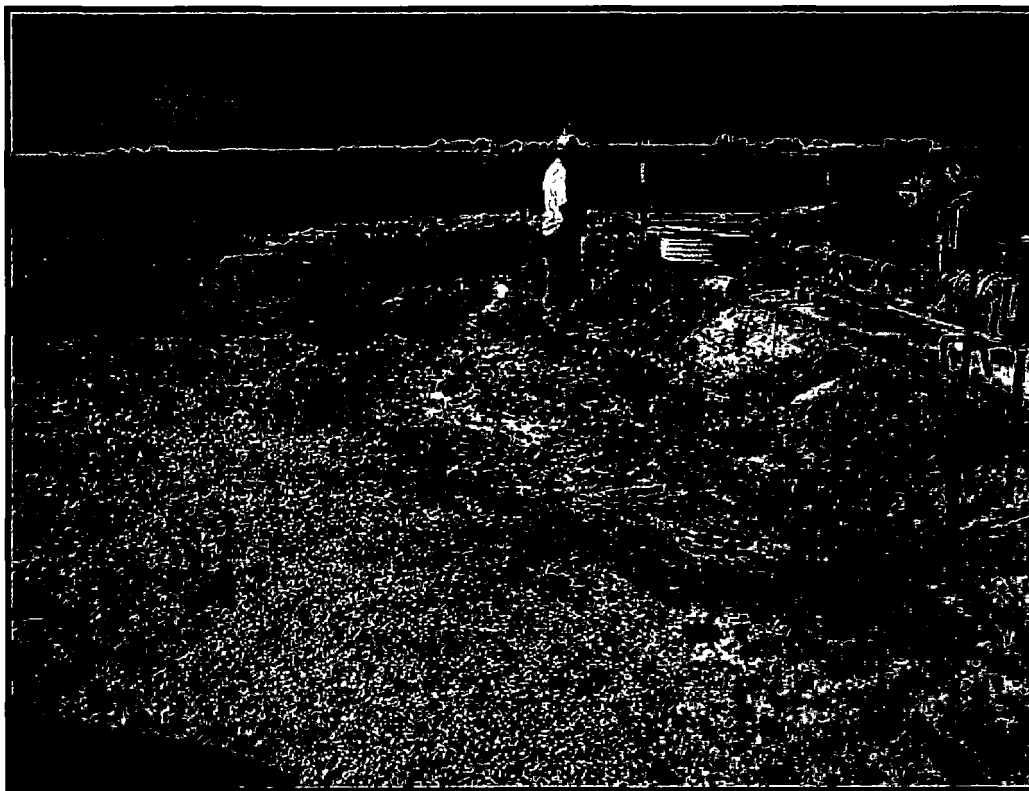
Inside Firewalls Facing South



Inside Firewalls Facing SW



Inside Firewalls Facing South



Release Facing South



Failed 2" Nipple



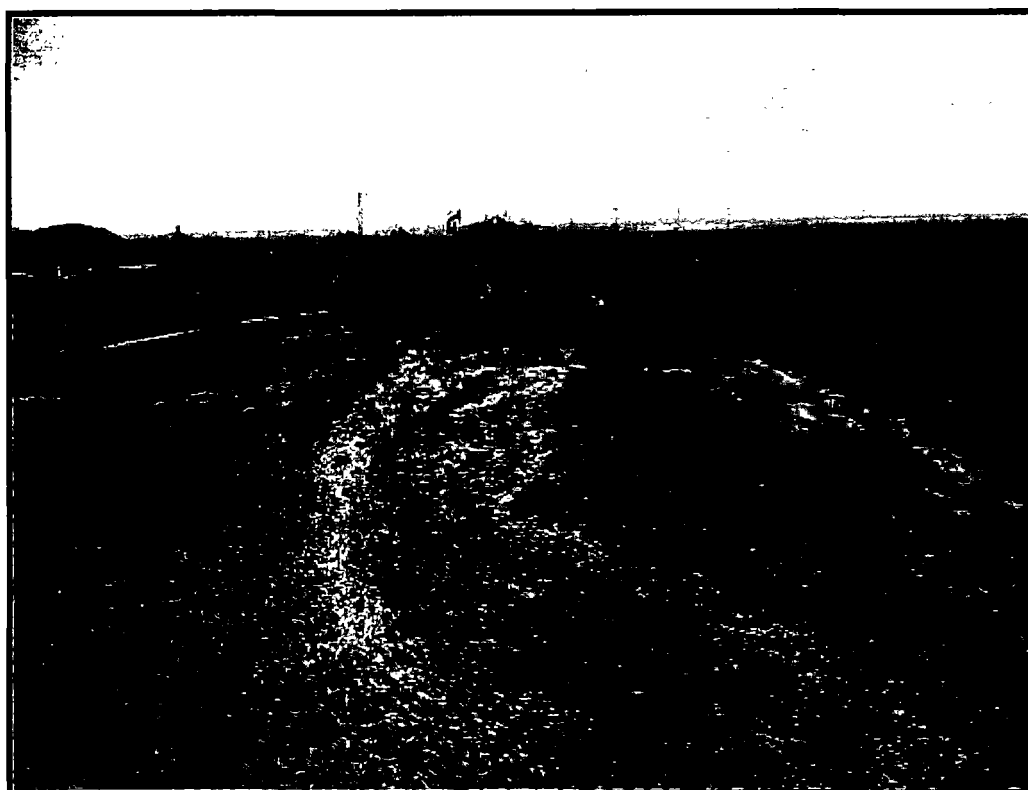
Release Facing SW



Release Facing SE



Release Facing West

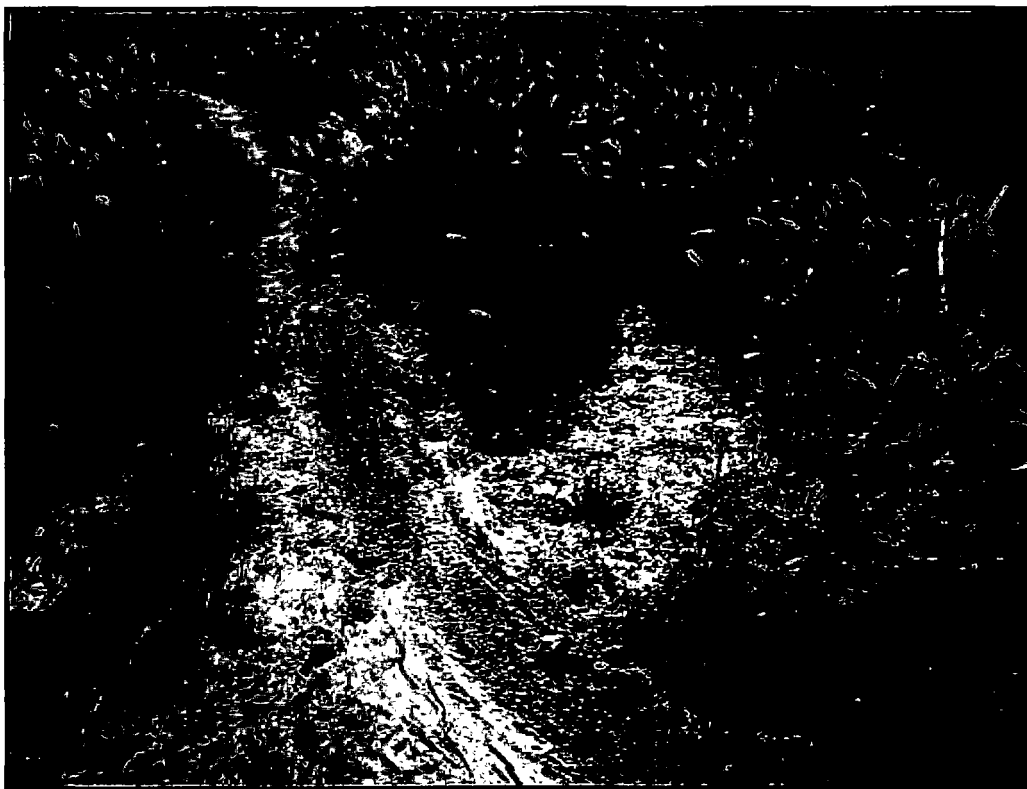


Release Facing East





Release Facing East



Release Facing East



Release Facing East

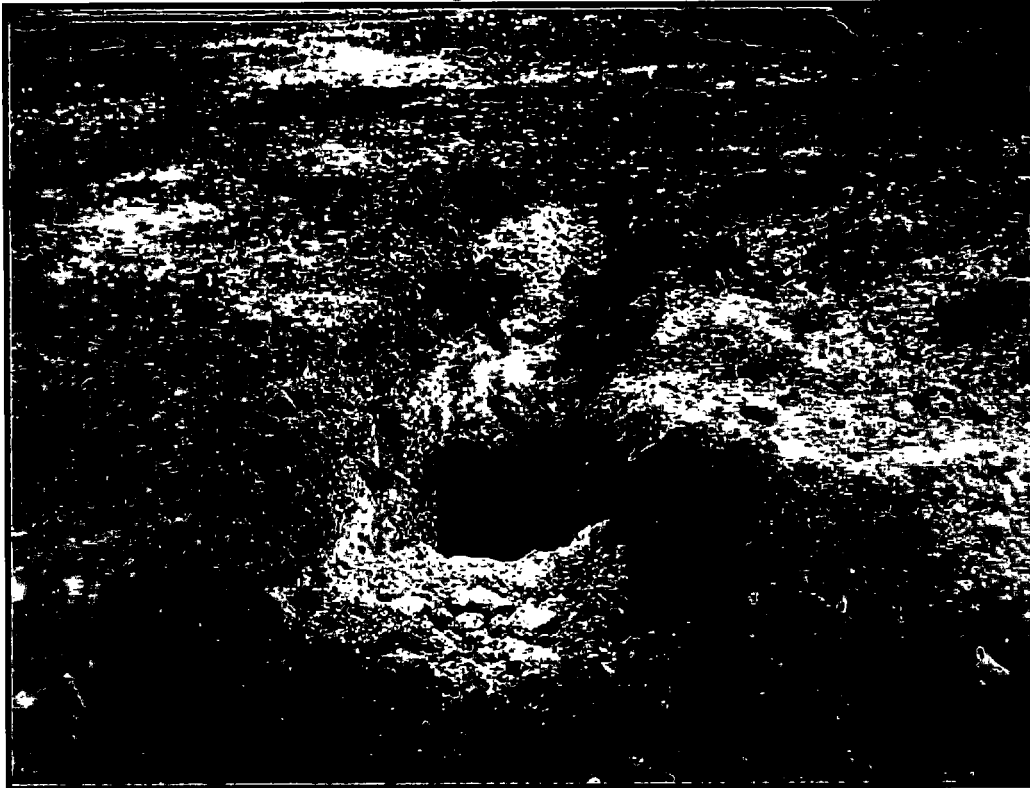


Release Facing West

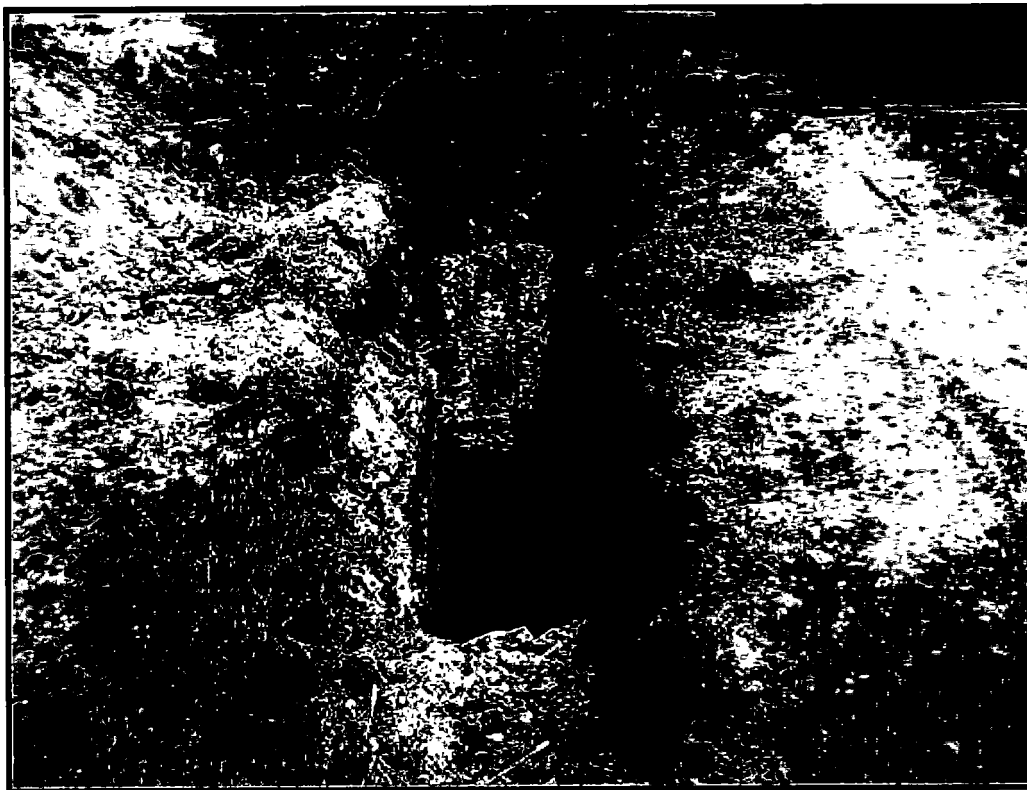


Release Facing West

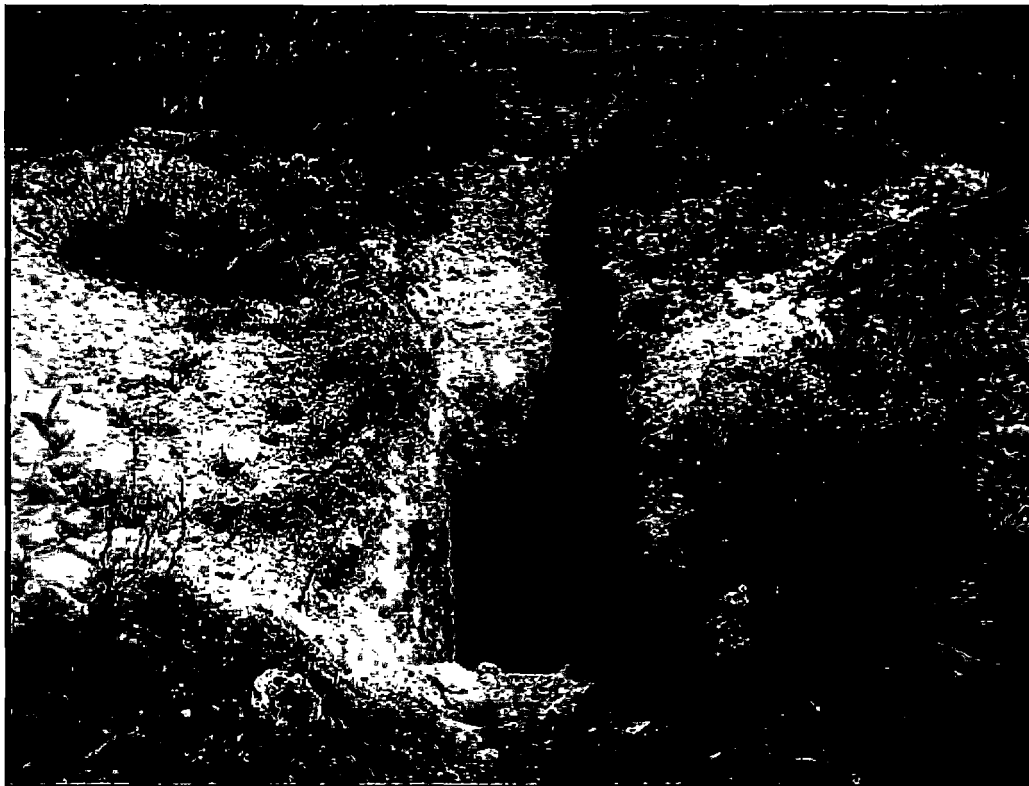
August 24, 2009



Test Trench #1



Test Trench #2



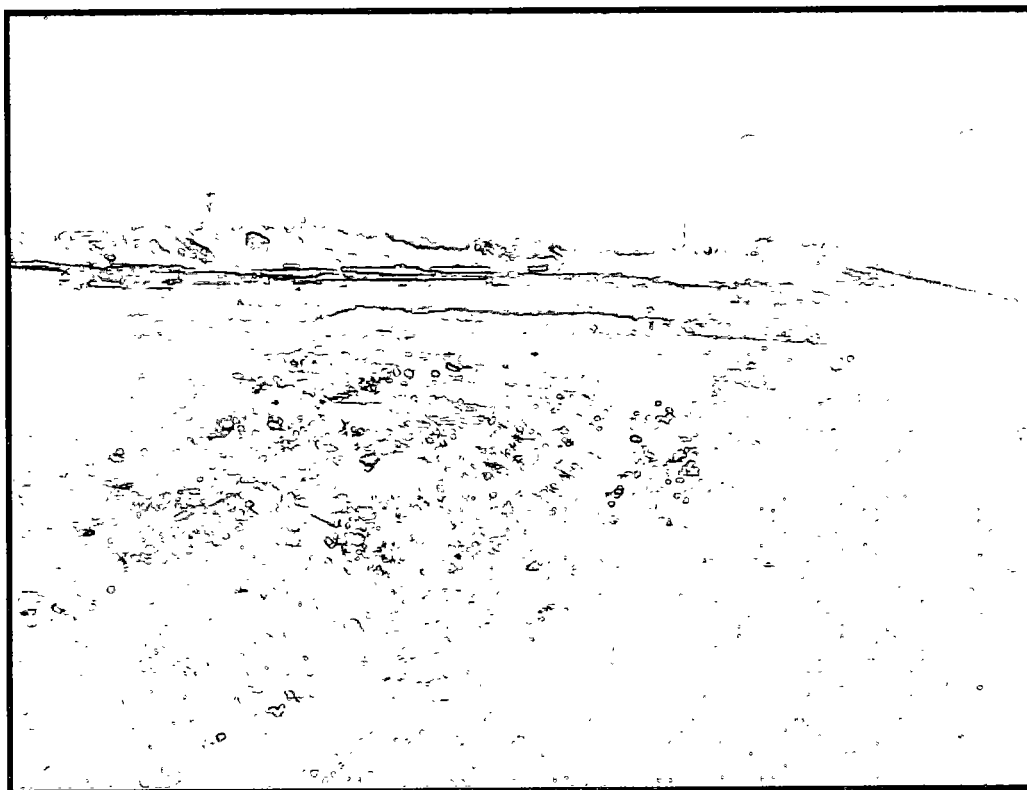
Test Trench #3



Partially Excavated Area Facing East



Partially Excavated Area Facing East



Partially Excavated Area Facing East



Partially Excavated Area Facing North



Partially Excavated Area Facing NE



Partially Excavated Area Facing East



Partially Excavated Area Facing East





Partially Excavated Area Facing West



Partially excavated area facing west

Range SCB 23-19 Site Photos 9-21-10



Excavated area facing north



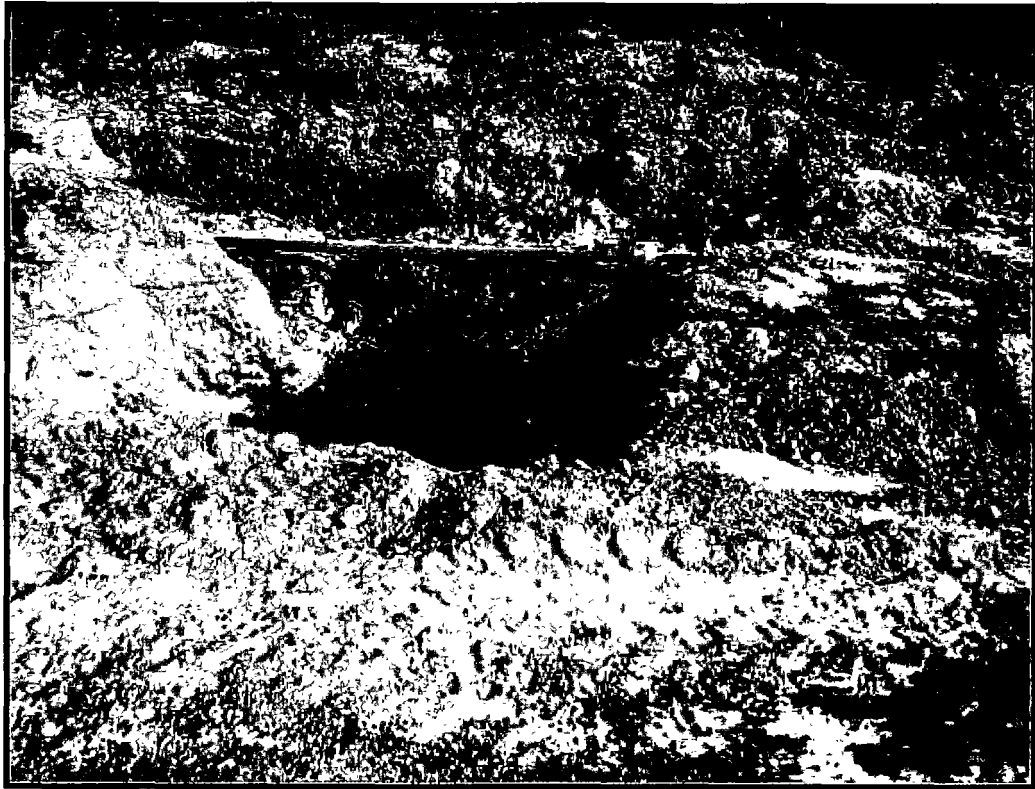
Excavated area facing east



Excavated area facing east



Excavated area facing north



Repaired fiberglass line facing north



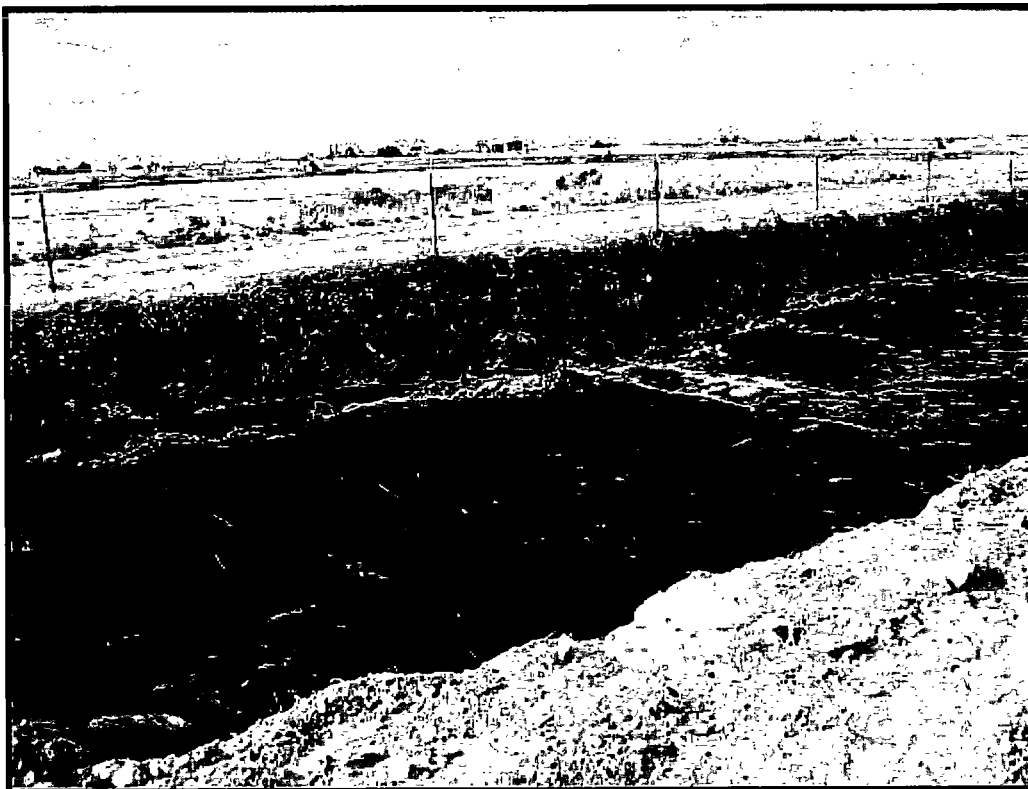
Excavated area facing east



Excavated area facing west



Excavated area lined facing south



Excavated area lined facing south



Excavated area lined facing southwest



Excavated area lined facing west



Excavated area lined facing northwest



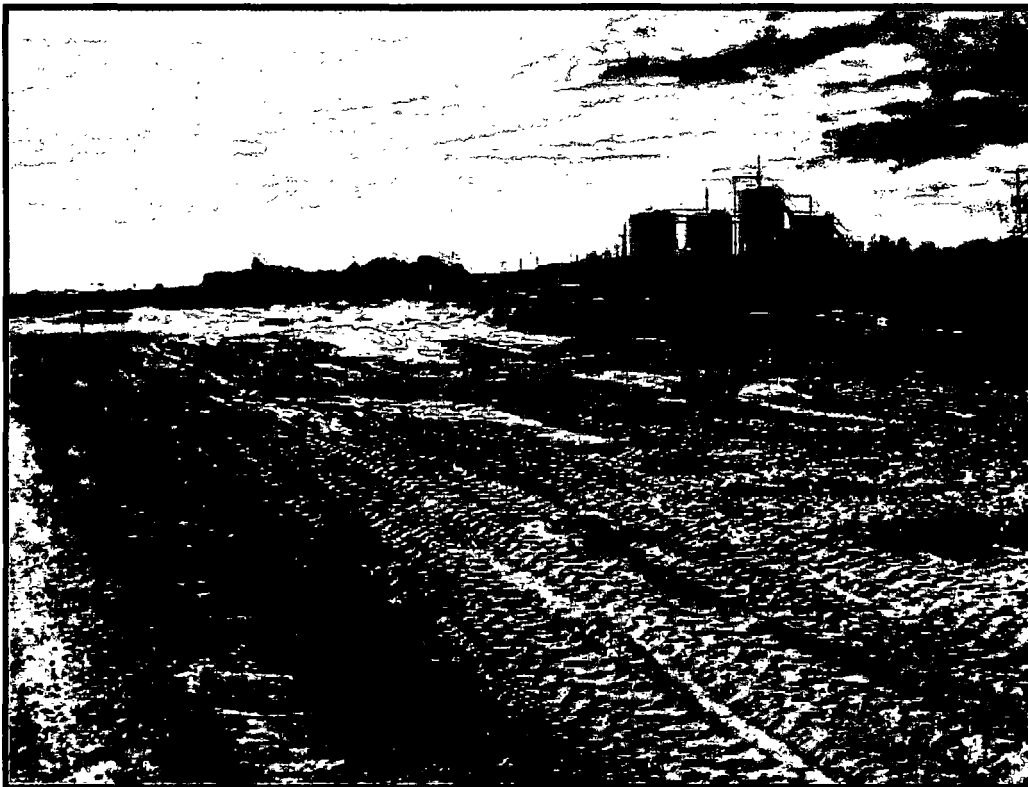
Excavated area lined facing northeast



Range SCB 23-19 Site photos 9-27-10



Excavated area backfilled facing west



Excavated area backfilled facing northwest



Excavated area backfilled facing north



Excavated area backfilled facing northeast



Excavated area backfilled facing east



Excavated area backfilled facing west



Excavated area backfilled facing west



Excavated area facing south



Excavated area backfilled facing southwest

**Appendix C**  
**C-141**

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised October 10, 2003

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Range Resources Corporation	Contact: Steve Almager
Address: 100 Throckmorton Ste 1200	Telephone No. (575)394-1485
Facility Name: SCB Injection Facility	Facility Type: Battery

Surface Owner	Mineral Owner	Lease No.
---------------	---------------	-----------

LOCATION OF RELEASE

Unit Letter	Section 23	Township 23 S	Range 28 E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
-------------	---------------	------------------	---------------	---------------	------------------	---------------	----------------	----------------

Latitude: 32.173350N Longitude: 104.033302W

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 300 bbls	Volume Recovered 290 bbls
Source of Release 2" Nipple Eroded Off Check Valve on the H-Pump	Date and Hour of Occurrence 8-15-09 10:45 Am	Date and Hour of Discovery 8-15-09 10:45 Am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher, NMOCD	
By Whom? Sergio Contreras, SESI	Date and Hour, 8/17/09 9:30 am	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

A 2" nipple eroded off the end of the check valve on the H-Pump. The pump failed to shut off and resulted in water pumping into the lined tank battery and overflowing the firewalls.

Describe Area Affected and Cleanup Action Taken.\*

SESI was contacted for assessment. Area will be delineated and an appropriate work plan submitted upon results.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

OIL CONSERVATION DIVISION

Signature: 

Printed Name: Steve Almager

Title: Production Supervisor II

E-mail Address: salmager@rangeresources.com

Date: 8/18/09

Phone: (575) 394-1485

Approved by District Supervisor:

Approval Date:

Expiration Date:

Conditions of Approval:

Attached ☐

Attach Additional Sheets If Necessary