pGRL1018856241
2575

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

RECEIVED
JUN 25 2010
HOBBSOCD

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 Samson Resources Company	Contact: Autumn Long
Address: Two West Second Street	Telephone No. (918) 591-1364
Facility Name: State BD #3	Facility Type: Injection Well (W)

Surface Owner:	Mineral Owner	Lease No.:

LOCATION OF RELEASE

API #30-025-01033-00-00

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	2	12 ~~T21S~~	R33E	1980	South	660	East	Lea

Latitude: 33.30574 **Longitude:** -103.57766

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: **785 Barrels**	Volume Recovered: 730 Barrels
Source of Release: **Flange Gasket Failed**	Date and Hour of Occurrence: 6-19-2010; 05:52 a.m.	Date and Hour of Discovery: 6/19/2010 05:52 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? E. L. Gonzalez - District 1 (505) 393-6161 (Initially reported on 6/19/2010) Geoff Leking – District 1 (505) 393-6161 (Follow-up Contact on 6/21/2010)	
By Whom? Autumn Long	Date and Hour: **6-19-2010 at 10:50 a.m. and 6-21-2010** at 3:30 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
N/A

GW @ 87'

Describe Cause of Problem and Remedial Action Taken.*

Flange gasket failed; 785 barrels of produced water was released, all contained in firewall. Pumper went to location and turned off disposal pump and closed valves; therefore, stopping discharge. Gasket was replaced with high temperature gasket and pump turned back to disposal at 0900.

Describe Area Affected and Cleanup Action Taken.*
The estimated release of 785 barrels of produced water, was all contained in the firewall: Length: 138' Width: 160' Depth: 2.4' Approximately 730 barrels of produced water was recovered from the containment area.

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.

Signature: Autumn M. Long	OIL CONSERVATION DIVISION	
Printed Name: Autumn Long	Approved by ~~District Supervisor~~: ENV ENGR Geoffrey Leking	
Title: Environmental Specialist	Approval Date: 07/07/10	Expiration Date: 09/07/10
E-mail Address: autumnl@samson.com	Conditions of Approval: SUBMIT INVESTIGATION WORKPLAN. DELINEATE TO CLEAN +1. SUBMIT FINAL C-141 BY 09/07/10	Attached ☐ IRP-10-07-2575
Date: June 21, 2010 Phone: (918) 591-1364		

* Attach Additional Sheets If Necessary

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JUL 22 2010
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PRELIMINARY INVESTIGATION REPORT

BD State Well #3
1RP-10-07-2575
API #30-025-01033
Lea County, New Mexico

LAI Project No. 10-0115

July 16, 2010

Prepared for:
Samson Resources Company
Two West Second Street
Tulsa, Oklahoma 74103

Prepared by:
Mark J. Larson
Certified Professional Geologist No. 10490

Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701

1.0 Executive Summary

Larson & Associates, inc. (LAI), as consultant to Samson Resources Company (Samson), has prepared this preliminary investigation report for submittal to the New Mexico Oil Conservation Division (OCD) to present the results of an electromagnetic (EM-31) terrain conductivity survey performed at the BD State Well #3 (Site) located in Unit I (NE/4, SE/4), Section 2, Township 12 South, Range 33 East NMPM in Lea County, New Mexico. The Site is located about 15 miles northwest Tatum, New Mexico, with a geodetic position north 32° 18' 21.34" and west 103° 34' 41.69".

On July 1, 2010, LAI used an EM-31 meter manufactured by Geonics, Ltd., to qualitatively assess the vertical and lateral extent of a spill involving approximately 785 barrels (bbl) of produced water that was released from the injection pump on June 21, 2010. The spill occurred after a gasket failed but was contained within the firewall measuring approximately 138 x 160 feet. Samson recovered approximately 730 bbl of produced water for a net loss of approximately 55 bbl. Form C-141 was submitted to the OCD on June 21, 2010. OCD District 1 assigned the spill remediation project number 1RP-10-07-2575.

The EM-31 survey encompassed an area measuring approximately 400 x 500 feet or 4.59 acres. LAI performed the survey in the horizontal dipole (HD) and vertical dipole (VD) modes to measure conductivity between ground surface and about 19.7 feet below ground surface (bgs).

An area of EM-31HD and EM-31VD readings greater than 25 times background or greater than 175 millimhos per meter (mmhos/m) was recorded between the well and tank battery. The area of elevated readings decreased during the EM-31VD survey suggesting that the chloride concentration decreases with depth. The EM-31HD and EM-31VD readings decreased to near background levels north, south, east and west of the Site.

Samson proposes to collect soil samples from six (6) locations (BH-1 through BH-6) using an air rotary rig and jam tube sampler. The borings will be drilled in the area in which EM-31HD and EM-31VD readings were greater than 25 times background, as well as west, north, east and southeast to delineate the vertical and lateral extent of impact to soil. A background boring will be installed northeast of the Site.

2.0 Introduction

This document has been prepared by Larson & Associates, Inc. (LAI) for submittal to the New Mexico Oil Conservation Division (OCD) on behalf of Samson Resources Company (Samson) to report the results of an electromagnetic (EM-31) terrain conductivity survey that was performed at the State BD Well #3 (Site) to qualitatively assess the lateral and vertical extent of a produced water spill. The Site is situated in Unit I (SE/4, NE/4), Section 2, Township 12 South, Range 33 East NMPM, in Lea County, New Mexico. The Site is located about 15 miles northwest of Tatum, New Mexico, at geodetic position north 32° 18' 21.34" and west 103° 34' 41.69". A location and topographic map is presented in Figure 1. An aerial map is presented in Figure 2.

The Site includes two (2) above ground storage tanks, injection pump, disposal well and associated piping. The Site is gated and secured with a barbed wire fence. A Site Drawing is presented in Figure 3.

2.1 Background

On June 19, 2010, Samson reported to the OCD that a spill involving approximately 785 barrels (bbl) of produced water occurred due to gasket failure at the injection pump. The spill was contained within the firewall measuring approximately 138 x 160 feet and about 730 bbl was recovered. The net loss was reported at 55 bbl. Form C-141 was submitted to the OCD District 1 on June 21, 2010 and the OCD assigned remediation project number 1RP-10-07-2575 to the release.

2.2 Setting

The setting is as follows:

- Groundwater occurs between 50 and 100 feet below ground surface (bgs) based on records from the New Mexico State Engineer (NMSE);
- The nearest fresh water well is located approximately 1,200 feet south (cross gradient) of the Site based on NMSE records;
- No continuously flowing watercourse is within 1,000 horizontal feet of the release; and
- No surface water features, including lakes, rivers, ponds, arroyos, lakebed, sinkhole, or playa lake, are located within 1,000 horizontal feet of the release.

3.0 Preliminary Investigation

On July 1, 2010, LAI personnel performed an EM terrain conductivity survey to identify areas of elevated conductivity, relative to background, that would correlate with elevated chloride in the soil. An EM-31 meter, manufactured by Geonics, Ltd., Toronto, Canada, was used to collect measurements over an area measuring approximately 400 x 500 feet (4.59 acres). The EM-31 meter has exploration capabilities ranging from 0 to 9.8 feet in the horizontal dipole (HD) mode and 0 to 19.7 feet in the vertical dipole (VD) mode. The conductivity response in the HD mode is greatest near the surface and decreases with depth, whereas, the conductivity response is null near the surface and increases rapidly to a depth equal to about 0.4 times the coil spacing in the VD mode. The maximum EM-31VD response occurs at a depth equal to about 75% of the exploration depth or at about 14.75 feet and decreases with depth.

Measurement stations were established using a Nikon DTM-310 total station system and documented for latitude and longitude with a Trimble global positioning system (GPS) hand held instrument. Measurement stations were established every 100 feet outside the fenced area and every 50 feet inside the fenced area near the east side of the Site. The EM-31HD and VD measurements were compared to background readings collected from an undisturbed area located near station north 400 and east 500.

The background EM-31HD and EM-31VD measurements were 7.0 and 4.7 millimhos per meter (mmhos/m), respectively. The EM-31 measurement stations are presented in Figure 3. Figures 4 and 5 present the EM-31HD and VD drawings, respectively. The EM-31 field sheets are presented in Appendix A. Photo documentation is presented in Appendix B.

Referring to Figure 4, an area of elevated EM-31HD readings exceeding about 25 times background was recorded in an area between the well and tank battery at stations north 100 and north 200 on profile east 300. The EM-31HD readings decrease to near background north, south, east and west of the Site.

Referring Figure 5, an area of elevated EM-31VD readings exceeding about 25 times background was observed between the well and tank battery. The area of elevated EM-31VD readings is similar to the EM-31HD reading and suggests that the impact diminishes with depth. The EM-31VD readings decrease to near background north, south, east and west of the Site.

4.0 Proposed Investigation

4.1 Soil Samples

Samson proposes to collect soil samples from six (6) borings (BH-1 through BH-6) that will be drilled using an air rotary rig and jam tube sampler. Soil samples will be collected to about 10 feet bgs at a background location (BH-1) near station north 400 and east 500. Soil samples will be collected to about 40 feet bgs in the area of EM-31HD and EM-31VD readings greater than 25 times background (BH-2). Soil samples will be collected to about 20 feet bgs at locations BH-3, BH-4, BH-5 and BH-6 that will be drilled west, northeast, east and south of BH-2, respectively.

The soil samples will be collected in laboratory provided pre- cleaned glass containers that will be filled, labeled, chilled in an ice chest and delivered under chain of custody to an environmental laboratory. The samples will be analyzed for chloride by method 300. Samples may be analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) by method SW-8021B if headspace readings, using a calibrated photoionization detector (PID), exceed 100 parts per million (ppm). Select samples will be analyzed for total petroleum hydrocarbons (TPH), including gasoline range organics (GRO) and diesel range organics (DRO), by method SW-8015M.

All sampling equipment, including jam tube sampler, sample scoop, etc., will be thoroughly washed between uses with a solution of potable water and laboratory grade detergent and rinsed with distilled water. The drill cuttings will be placed on plastic adjacent to the borings until disposal is arranged. The borings will be plugged according to NMSE rules.

4.2 Report

A report will be submitted to the OCD within 30-days after receiving the final laboratory report which will include a discussion of the EM-31 terrain conductivity survey results, soil sample collection, laboratory results and conclusions. An initial C-141 is presented in Appendix C.

4.3 Notification

Notification will be given to the OCD District 1 office at least 48 hours prior to commencing the field investigation.

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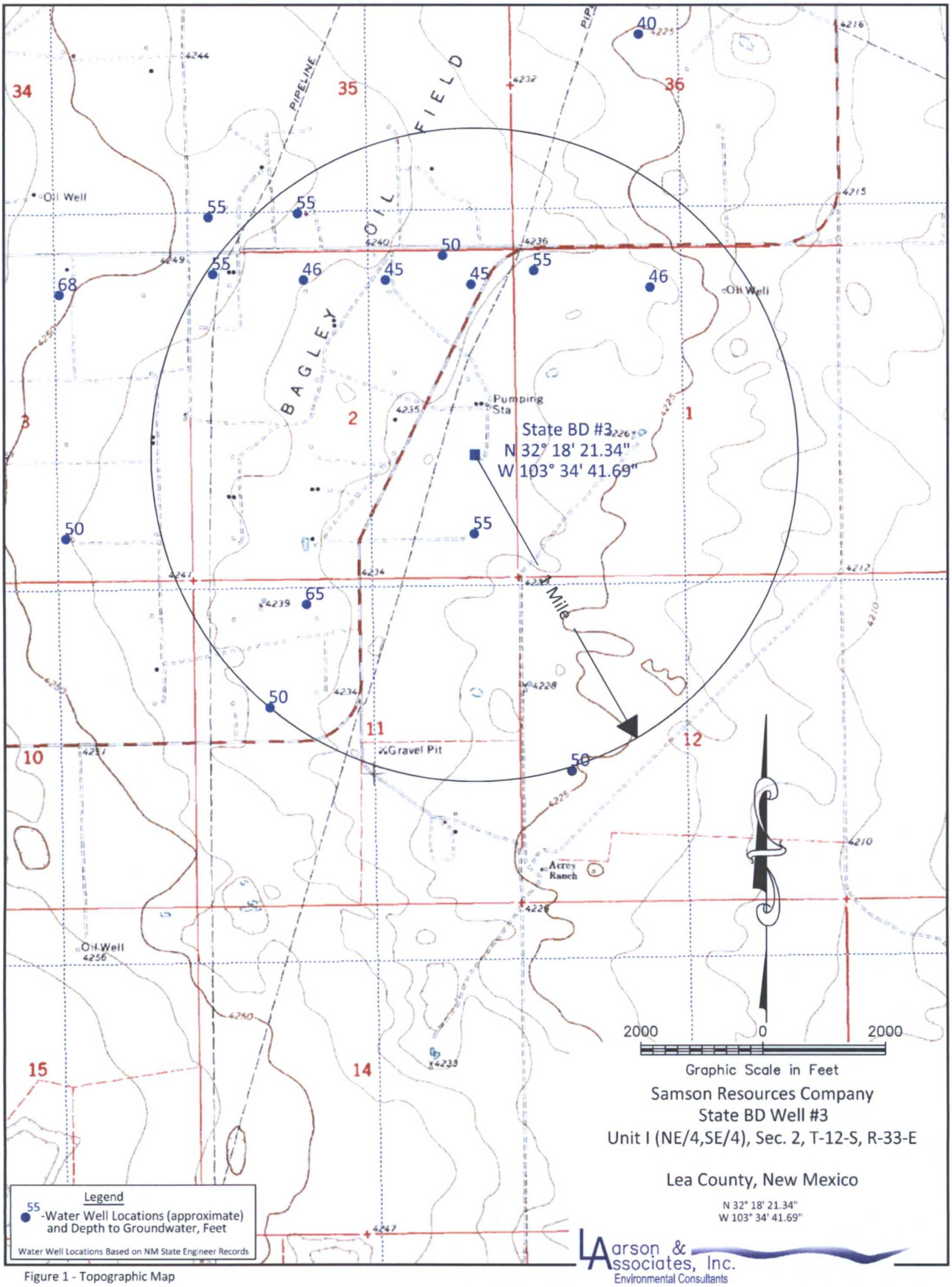
JWW



Samson Resources Company
State BD Well #3
Unit I (NE/4,SE/4), Sec. 2, T-12-S, R-33-E

Lea County, New Mexico

N 32° 18' 21.34"
W 103° 34' 41.69"

Larson & Associates, Inc.
Environmental Consultants

Figure 1 - Topographic Map

Y:\PROJECTS\Samson Investment Co\10-0115 State BD #3\10-0115 State BD #3.dwg, 7/9/2010 9:13:53 AM

JWW

Samson Resources Company
State BD Well #3
Unit I (NE/4,SE/4), Sec. 2, T-12-S, R-33-E

Lea County, New Mexico

N 32° 18' 21.34"
W 103° 34' 41.69"

Larson & Associates, Inc.
Environmental Consultants

Figure 2 - Aerial Map

JWW

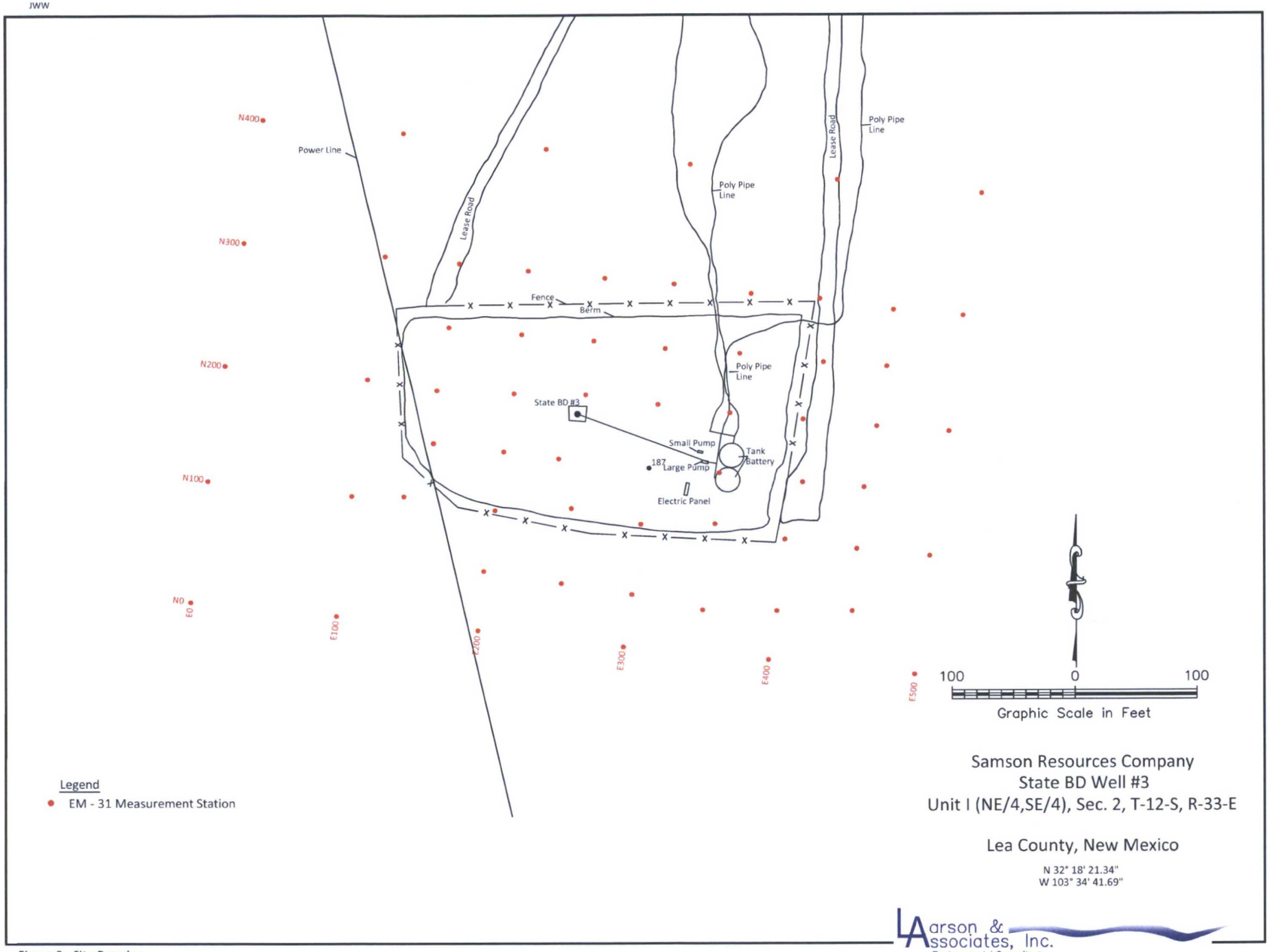


Figure 3 - Site Drawing

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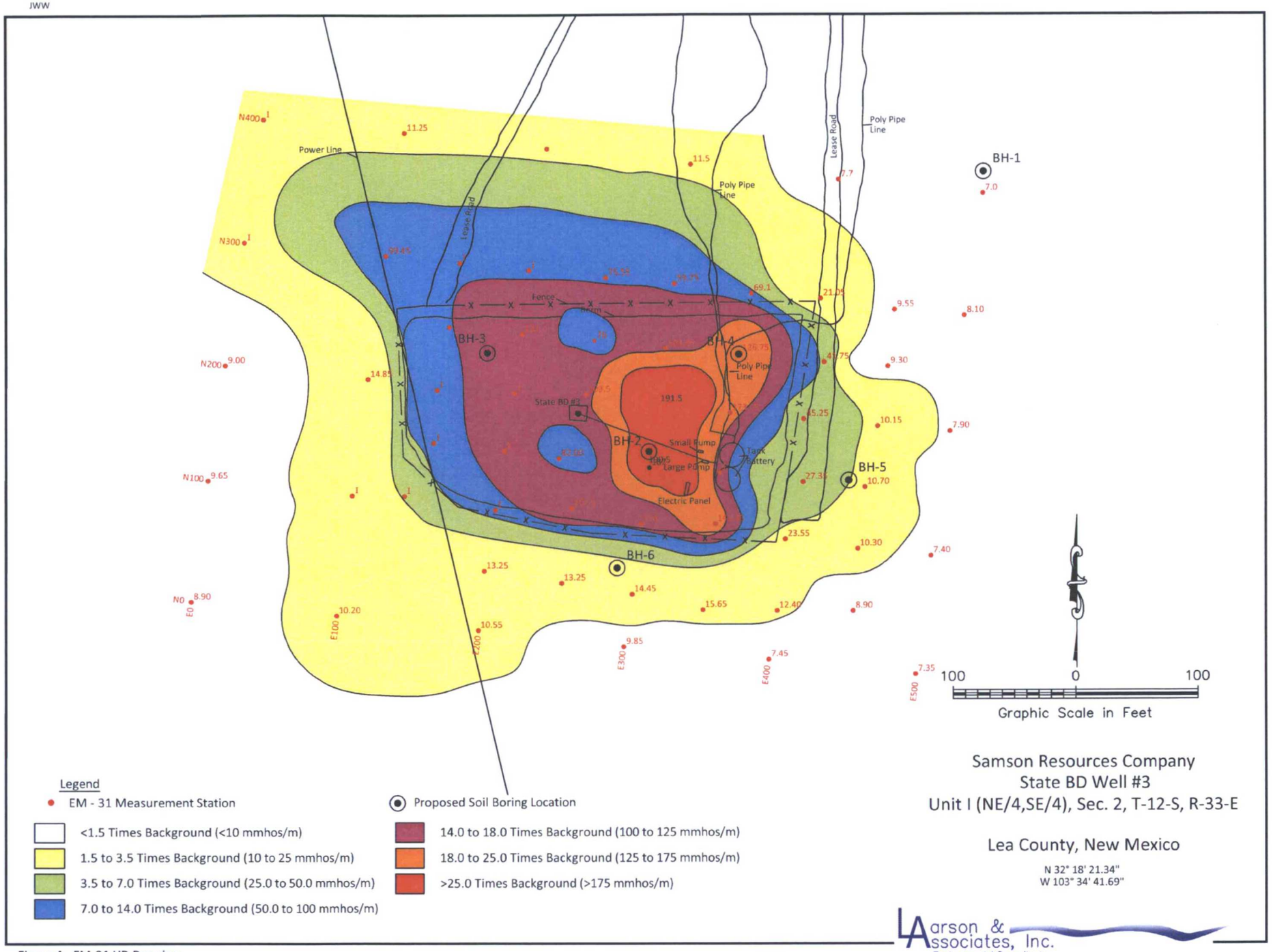
JWW



Legend

- EM - 31 Measurement Station
- Proposed Soil Boring Location
- <1.5 Times Background (<10 mmhos/m)
- 1.5 to 3.5 Times Background (10 to 25 mmhos/m)
- 3.5 to 7.0 Times Background (25.0 to 50.0 mmhos/m)
- 7.0 to 14.0 Times Background (50.0 to 100 mmhos/m)
- 14.0 to 18.0 Times Background (100 to 125 mmhos/m)
- 18.0 to 25.0 Times Background (125 to 175 mmhos/m)
- >25.0 Times Background (>175 mmhos/m)

Samson Resources Company
State BD Well #3
Unit I (NE/4,SE/4), Sec. 2, T-12-S, R-33-E

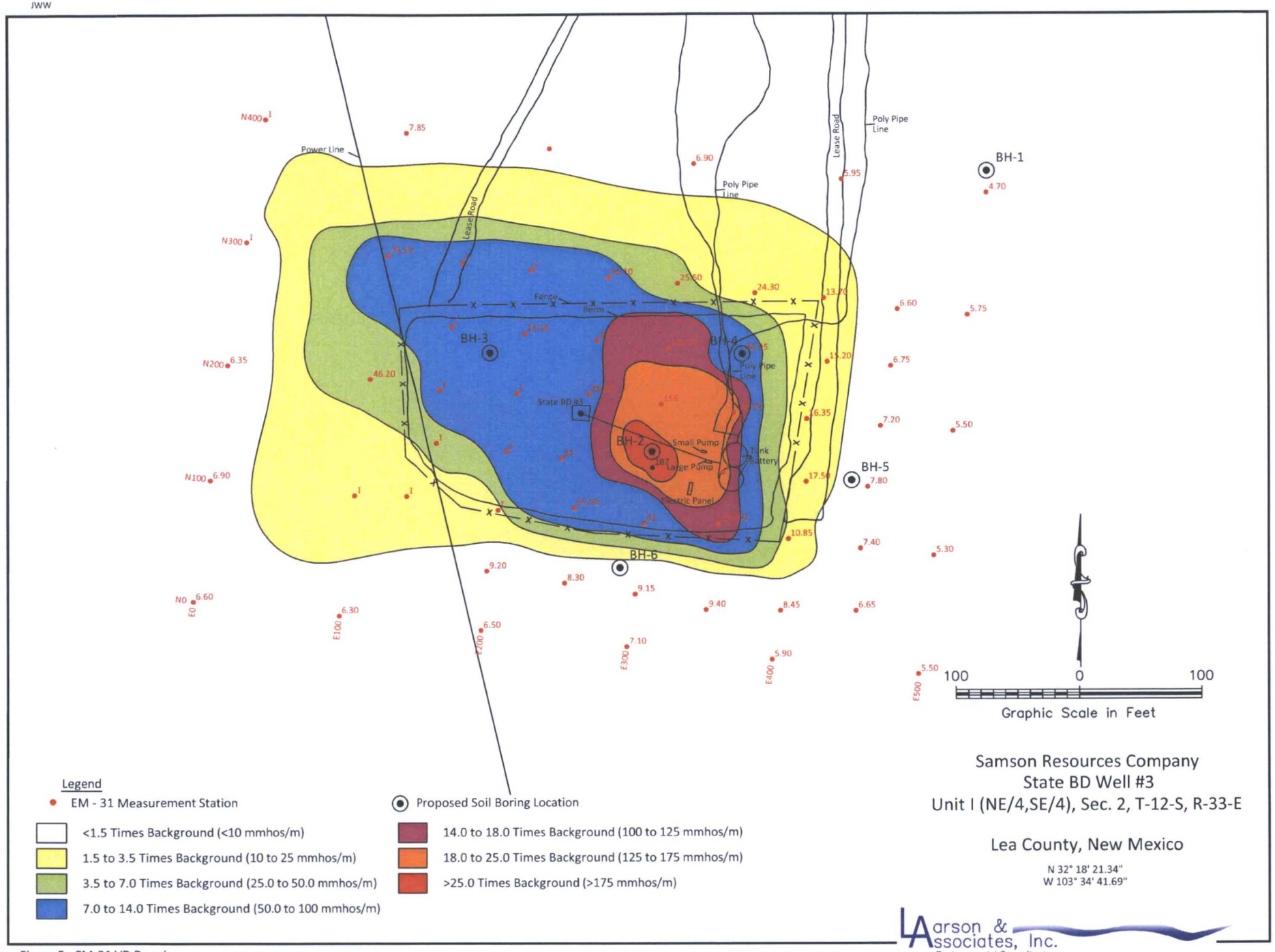
Lea County, New Mexico

N 32° 18' 21.34"
W 103° 34' 41.69"

Larson & Associates, Inc.
Environmental Consultants

Figure 4 - EM-31 HD Drawing

JWW



Samson Resources Company
State BD Well #3
Unit I (NE/4,SE/4), Sec. 2, T-12-S, R-33-E

Lea County, New Mexico

N 32° 18' 21.34"
W 103° 34' 41.69"

Larson & Associates, Inc.
Environmental Consultants

Figure 5 - EM-31 VD Drawing

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	0 East	**Date:**	07-01-2010
Spacing:	100 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	13:19	13:29
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
0 North	8.7	9.1	6.6	6.6	
100 North	9.7	9.6	7.2	6.6	
200 North	9.2	8.8	6.1	6.6	Overhead power approximately 20 east
300 North	I	I	I	I	Overhead power approximately 20 east
400 North	I	I	I	I	Overhead power approximately 20 east
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	100 East	**Date:**	07-01-2010
Spacing:	100 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	14:10	14:19
Direction:	North to South	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
0 North	10.3	10.1	6.2	6.4	
100 North	I	I	33.0	I	
200 North	13.5	16.2	50.3	42.1	
300 North	93.3	105.6	65.5	86.7	
400 North	11.3	11.2	7.8	7.9	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	150 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	15:25	15:46
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
100 North	I	I	I	I	
150 North	I	I	I	I	
200 North	I	I	I	I	
250 North	I	I	I	I	
300 North	I	I	I	I	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	200 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	15:19	15:25
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
0 North	10.5	10.6	6.6	6.7	
50 North	13.1	13.4	9.0	9.4	
100 North	I	I	I	I	
150 North	I	I	I	I	
200 North	I	I	I	I	
250 North	118	126	70	79	
300 North	I	I	I	I	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	250 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	15:14	15:19
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
50 North	13.3	13.2	8.2	8.4	
100 North	106	109	47	64	
150 North	80	84	80	82	Well tubing approximatley 10 feet east
200 North	99	108	79	90	SWD well approximately 12 southwest
250 North	71	81	58	76	Closed drilling pit 20 feet west
300 North	78.2	72.9	69.4	60.8	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	300 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	16:00	16:10
Direction:	North to South	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
0 North	9.8	9.9	7.0	7.2	
50 North	14.6	14.3	9.8	8.5	
100 North	123	109	72	90	
150 North	191	190	191	183	
200 North	198	185	158	154	
250 North	106.9	100.8	110.6	102.8	
300 North	61	58.5	25.2	25.8	
400 North	11.6	11.4	7.2	6.6	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	350 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	15:05	15:10
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
50 North	15.6	15.7	9.3	9.5	
100 North	142.9	139.4	101.5	109.7	
150 North	I	I	I	I	
200 North	169.2	177.3	142.5	154.6	
250 North	127.6	125.9	87.3	82.6	
300 North	77.8	60.4	21.4	27.2	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	400 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	13:38	14:00
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
0 North	7.6	7.3	6.0	5.8	
50 North	12.3	12.5	8.1	8.8	
100 North	23.2	23.9	10.8	10.9	
150 North	26.4	28.3	15.5	19.5	
200 North	44.3	46.2	16.4	16.3	
250 North	37.4	46.1	14.6	15.8	
300 North	21.2	20.9	13.2	14.2	
400 North	7.6	7.8	5.8	6.1	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

EM-31 SURVEY

Profile:	450 East	**Date:**	07-01-2010
Spacing:	50 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	14:55	15:00
Direction:	South to North	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
50 North	8.9	8.9	6.7	6.6	
100 North	10.4	10.2	7.5	7.3	
150 North	10.8	10.6	7.8	7.8	
200 North	10.2	10.1	7.3	7.1	
250 North	9.3	9.3	6.6	6.9	
300 North	9.2	9.9	6.4	6.8	
Background	7.0	7.0	4.7	4.7	

Notes:

SAMSON RESOURCES COMPAY

State BD Well No. 3

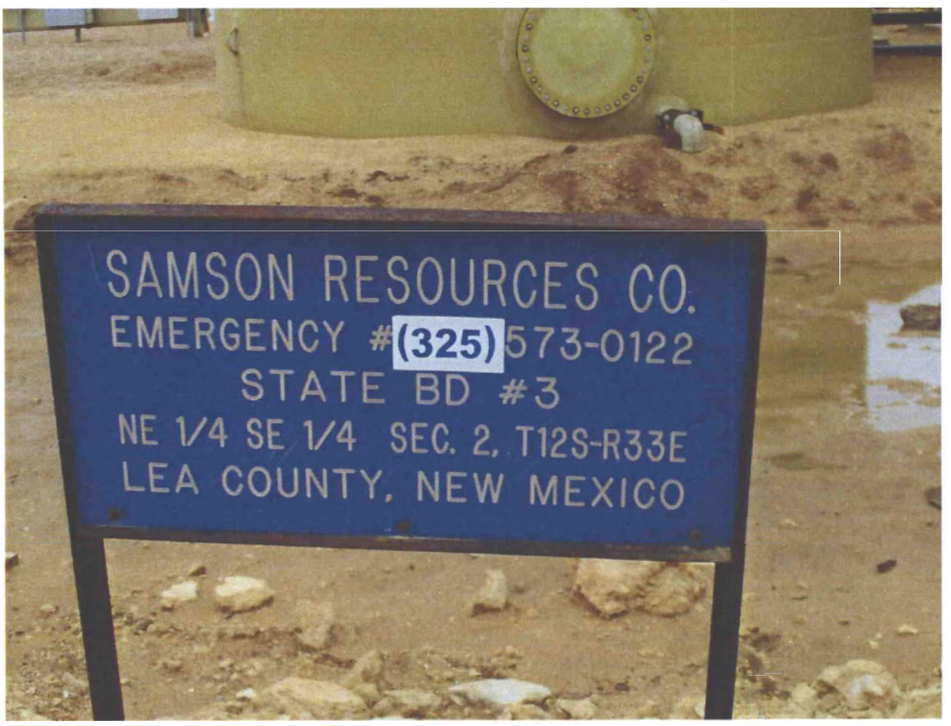
EM-31 SURVEY

Profile:	500 East	**Date:**	07-01-2010
Spacing:	100 Feet	**Start:**	**Stop:**
Scale	1000 mmhos/m	13:32	13:37
Direction:	North to South	**Operator:**	MJL/JWW

STATION	HD (N - S)	HD (E - W)	VD (N - S)	VD (E - W)	Comments
0 North	7.3	7.4	5.6	5.4	
100 North	7.4	7.4	5.2	5.4	
200 North	7.9	7.9	5.6	5.7	
300 North	8.2	8.0	5.8	5.7	
400 North	7.0	7.0	4.7	4.7	
Background	7.0	7.0	4.7	4.7	

Notes:

Photo Documentation

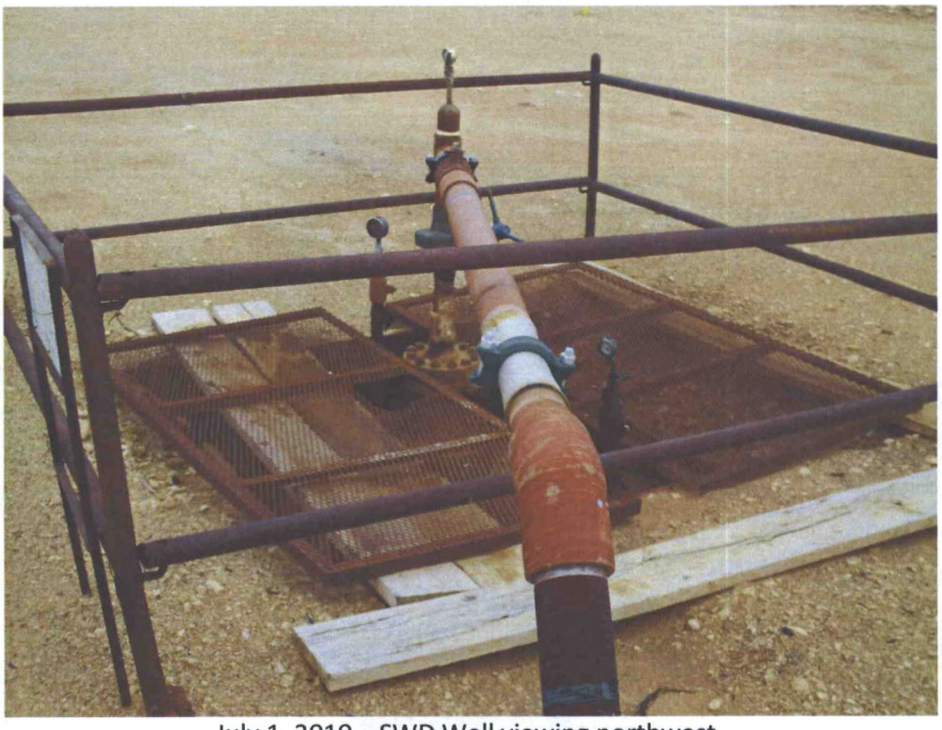


July 1, 2010 – Location sign.

July 1, 2010 – East side of tank battery viewing north.

Photo Documentation

July 1, 2010 – West side of tank battery viewing north.



July 1, 2010 – SWD Well viewing northwest.

Photo Documentation

July 1, 2010 – Northeast of tank battery viewing north.

July 1, 2010 – Tank battery viewing south.

Samson

Samson Plaza
Two West Second Street
Tulsa, Oklahoma 74103-3103
USA
918/591-1791

SENT VIA CERTIFIED MAIL

June 21, 2010

State of New Mexico Energy Minerals and Natural Resources
District 1
Attn: Geoff Leking
1625 N. French Drive
Hobbs, NM 88240

Reference: Release Notification and Corrective Action
Operator: Samson Resources Company
Location: State BD #3
Section 2, T12S-R33E
Lea County, NM

Dear Mr. Leking:

Per the initial telephone notification to E. L. Gonzalez on 6/19/2010 at 10:50 a.m. and to you today at 3:30 p.m., please find attached a completed Form C-141 regarding the above referenced release.

Please recognize it is Samson's intent to operate in an environmentally responsible manner and to maintain compliance with applicable laws and regulations. I trust this information will satisfy any concerns the State of New Mexico Energy Minerals and Natural Resources may have regarding this incident. If you need additional information, please feel free to contact me at (918) 591-1364.

Thank you.

Sincerely,

Samson Resources Company

Autumn M. Long

Autumn Long
Environmental Specialist

AL:db

Attachments

Cc: Gerry Petree – Superintendent
Production Department