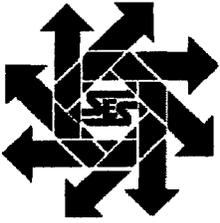


BW - 9

**MONITORING
REPORTS**

DATE:

2001 - GW



P.O. Box 1613
703 E. Clinton Suite 102
Hobbs, New Mexico 88240
505/397-0510
Fax 505/393-4388
www.sesi-nm.com

Safety & Environmental Solutions, Inc.

August 27, 2001

New Mexico Energy, Minerals and
Natural Resources Department
Attn: Wayne Price-Pet. Engr. Spec.

RE: Sims-McCasland Water Sales
Lea County, New Mexico

Dear Mr. Price:

Enclosed please find the report prepared for Sims McCasland Brine Sales by Safety & Environmental Solutions, Inc.

We hope this document meets with your approval and requirements. Should you have any questions or comments please do not hesitate to contact this office immediately.

Thank you,

Bob Allen, CHMM, REM, CET, CES
President
BA/mp

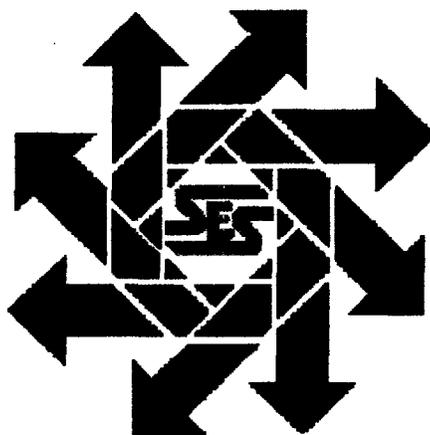
WAITING ON
SURVEY MAP!

RECEIVED
SEP 06 2001
Environmental Bureau
Oil Conservation Division

RECEIVED
SEP 06 2001
Environmental Bureau
Oil Conservation Division

**Sims McCasland Brine Station
Site Investigation
Lea County, New Mexico**

July 18, 2001



RECEIVED
SEP 06 2001
Environmental Bureau
Oil Conservation Division

Prepared for:

**Sims McCasland Brine Sales
P.O. Box 99
Eunice, New Mexico 88231**

By:

***Safety & Environmental Solutions, Inc.
703 E. Clinton, Suite 102
Hobbs, New Mexico 88240
(505) 397-0510***

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Price, Wayne

From: ballen [ballen@mail.SESI-NM.COM]
Sent: Friday, September 07, 2001 10:14 AM
To: wprice@state.nm.us
Cc: wprice@state.nm.us
Subject: Sims McCasland

Per our conversation yestereay, I have order a new plat from John West showing the well numbering system used by SESI during sampling and top of water measurements...this map should be available shortly, however, certainly within 2 weeks...bob

--

Bob Allen
Safety & Environmental Solutions, Inc.
703 E. Clinton Suite 103
Hobbs, New Mexico 88240
(505)397-0510

Visit our web site: www.sesi-nm.com

--

I. Background

In January 2001 Safety & Environmental Solutions, Inc. (SESI) was engaged by Sims McCasland Water Sales to perform a site investigation at a location where brine water sales had occurred in the past. The investigation was conducted at the request of the New Mexico Oil Conservation Division (NMOCD). The subject area is identified as the Sims McCasland Brine Station and is located in Unit A of Section 32, Township 21S, Range 37 E in Lea County, New Mexico. The area is south and west of the intersection of NM Highway 176 and the American Legion Road or truck bypass west of Eunice, New Mexico. (Figure 1). The property is currently being used as a brine water sales facility.

Previously the subject area contained several redwood brine water and fresh water and the associated piping. These tanks were located at the northern most end of the subject property just south of NM Highway 176. The redwood tanks were removed in the early 1990's and replaced with steel tanks, which were placed toward the southern most end of the property. A lined pit was installed south of the new tanks.

The purpose of the investigation was to delineate the horizontal and vertical extent of any remaining hydrocarbon and/or salt materials at the site of the redwood tanks.

II. Work Performed

Soil Boring and Sampling

Six (6) borehole locations were staked at 60 ft. northwest-southeast intervals and 20 ft. northeast-southwest intervals at the subject site.

Drilling began in February 4, 2001, using SESI personnel from Hobbs. Drilling was completed in March 2001. A Giddings trailer-mounted drill, Model 25-SCT was used to bore test holes with a 4-in. hollow-stem auger. Samples from the test holes generally were collected in thin-walled sampling tubes using SOPs found in Environmental Protection Agency, 1984, Characterization of Hazardous Waste Site - A Methods Manual: Vol. II. Initially, soil samples were collected at 0-2 ft. and 2-5 ft. intervals. Due to the presence of cemented caliche at approximately 20 ft., the boreholes did not penetrate below that depth. At the completion of drilling, the boreholes were backfilled with drill cuttings.

The samples were preserved on ice and delivered along with Chain of Custody to Cardinal Laboratories for testing. Laboratory samples were analyzed for Chlorides (EPA Method 600/4-79-020 325.3). Copies of the analytical results are found in Appendix A.

Groundwater Evaluation and Sampling

Three (3) fresh water wells currently exist on the subject property. SESI personnel measured the top of water in each well and sampled the wells on January 30, 2001. The wells were sampled using SOPs found in Environmental Protection Agency, 1984, Characterization of Hazardous Waste Site - A Methods Manual: Vol. II. In addition to

the wells onsite, the water well north of the subject site (Whitaker Well) was sampled using the sample SOPs.

The samples were preserved on ice and delivered along with Chain of Custody to Cardinal Laboratories for testing. Laboratory samples were analyzed for Total Petroleum Hydrocarbons (EPA Method SW 846 418.1), BTEX (EPA Method SW-846-8260) and Major Cations and Anions.

A complete copy of the water analysis is included in Appendix B. No BTEX was found in the groundwater at the low detection limit of 0.002 mg/L. However, chlorides were elevated above the New Mexico Water Quality Control Commission Ground Water Standard of 250 mg/L. The source of the elevated chloride level is unknown at this time. Historically, brine production in the Eunice area ranged between 10 and 50 acre-feet per square mile (Nicholson and Clebsch, 1961). Much, if not most, of the brine was disposed of in unlined surface pits in the area until the requirements of Order R-3221 were established. As far back as 1951, some water wells in the area had chloride concentrations as high as 1,750 mg/L and more recent measurements show chlorides as high as 1,500 mg/L in some wells within a mile of the current site.

II. Results of Soil and Groundwater Testing

Soil Sampling Results

Soil sampling results for chlorides from the 6 boreholes are tabulated in Table 1.

Laboratory chloride concentrations ranged from 180 mg/Kg to 5920 mg/Kg at the 20 ft. depth in the six boreholes. The average chloride concentration calculated for all samples, was 1,099 mg/Kg. The highest chloride concentrations are in boreholes BH 3, and 4, which are on the northwest end of the investigation grid (Figure 2). This area is actually considered to be adjacent to, but not under, the old redwood tanks, but may have been a pooling area for past spills and/or leaks. The chloride level in BH 5 is also high and not considered to be directly under the redwood tank location. BH 1, BH 2, and BH 6 are located in the area under the old redwood tanks and exhibit very low concentrations of chlorides. BH 3 and BH 4 are in very close proximity to the water well identified as Well #1.

Lithologically, all the samples above 15 ft. were a reddish-brown cohesive clay. This clay was encountered until the 18 to 20 ft. depth.

Table 1. Borehole Soil Sampling Results, Sims McCasland Brine Station Site Investigation, Lea County, New Mexico

BORE HOLE #	DEPTH	CHLORIDE LEVEL
1	5'	179 ppm
1	10'	1067 ppm
1	21'	180 ppm
2	5'	319 ppm
2	10'	223 ppm
2	15'	239 ppm
2	20'	224 ppm
3	10'	1775 ppm
3	20'	2080 ppm
4	10'	8160 ppm
4	20'	5920 ppm
5	10'	592 ppm
5	20'	1810 ppm
6	10'	144 ppm
6	20'	352 ppm

Groundwater Sampling Results

The groundwater sampling results for all analysis are tabulated in Table 2.

The tops of groundwater measurement results are tabulated in Table 3.

The existing water wells on the subject property were numbered Water Wells 1, 2, and 3. The numbering system starts with the western most well and continues eastward. (Figure 2) SESI personnel measured the top of water of the wells to determine the direction of flow of the groundwater on January 30, 2001, June 15, 2001, July 3, 2001 and July 16, 2001. Each measurement indicates the groundwater flow under the subject property to be from northeast to southwest. (Figures 3, 4, 5, 6) Water Well # 3, on the east side of the American Legion Road, had an inoperative pump in the casing while the top of water measurements were taken on January 30, 2001. SESI feels that the pump or associated plumbing or wires down hole may have impaired the measurement taken on January 30, 2001. This is the reason that additional measurements were taken at later dates. These measurements produced very consistent results, which show the flow of the groundwater under the site to be from northeast to southwest.

Water Well 1 and 2 were sampled on January 30, 2001 and Water Well 3 was sampled on February 1, 2001. The Whitaker Well was sampled on March 15, 2001.

Table 2. Groundwater Sampling Results, Sims McCasland Brine Station Site Investigation, Lea County, New Mexico

Well	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)
1	<0.002	<0.002	<0.002	<0.006
2	<0.002	<0.002	<0.002	<0.006
3	<0.002	<0.002	<0.002	<0.006
Whitaker	<0.002	<0.002	<0.002	<0.006

Well	Cl ⁻ (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	pH (s.u.)	TDS (mg/L)
1	1596	72.6	0	415	9.92	3626
2	707	428	28	199	7.70	2308
3	1293	<1	0	28	6.67	3194
Whitaker	460	24.93	559	142	8.56	2044

Well	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (umhos/cm)	T-Alkalinity (mgCaCO ₃ /L)
1	1526	0	3	12.75	6555	965
2	579	218	30	12.65	3697	70
3	309	360	55	12.86	4162	23
Whitaker	394	86	10	309	5103	1049

Table 3. Groundwater Depths, Sims McCasland Brine Station Site Investigation, Lea County, New Mexico

WELL #	DEPTH TO WATER1/30/01	CASING ELEVATION	GROUNDWATER ELEVATION
1	91.28	3467.21	3375.93
2	91.26	3467.14	3375.88
3	90.99	3466.77	3375.78

WELL#	DEPTH TO WATER 6/15/01	CASING ELEVATION	GROUNDWATER ELEVATION
1	91.25	3467.21	3375.96
2	91.25	3467.14	3375.89
3	90.56	3466.77	3376.21

WELL #	DEPTH TO WATER7/3/01	CASING ELEVATION	GROUNDWATER ELEVATION
1	91.30	3467.21	3375.91
2	91.28	3467.14	3375.86
3	90.60	3466.77	3376.17

WELL #	DEPTH TO WATER7/16/01	CASING ELEVATION	GROUNDWATER ELEVATION
1	91.27	3467.21	3375.94
2	91.26	3467.14	3375.88
3	90.60	3466.77	3376.17

V. Conclusions and Recommendations

Results of the soil-sampling program show some chloride contamination at the ends of the sampling grid. The levels of contamination at the 20 ft. depth on the northwest end of the grid next to Water Well # 1 may have had some effect upon the groundwater if the

well was not cemented to the surface. During the drilling of the boreholes, cemented caliche was encountered at the 20 – 21 ft. depth, which causes auger refusal at that point. It may be likely that the higher levels of chloride in BH 3 and BH 4 are a result of the “pooling” of the chlorides on top of the less permeable caliche. However, the direction of flow of the groundwater under the site, from northeast to southwest, does not indicate that contamination from the area around Water Well #1 would flow to Water Well # 2 or Water Well #3 to produce chloride levels above the WQCC limit of 250 mg./Kg. Water Well #3 is on the east side of the American Legion Road, over 250-ft. east of where the redwood tanks were positioned.

There is currently an open pit to the northeast of the subject site that has been in existence since the early 1950’s. This pit must be considered to be a more likely candidate as a source of contamination in the groundwater, given the direction of water flow, than the areas identified on the subject property. The Whitaker Well, which has a chloride concentration of 460 mg/Kg, is west and south of this pit. It is unlikely that the subject site is the cause of contamination in the Whitaker Well.

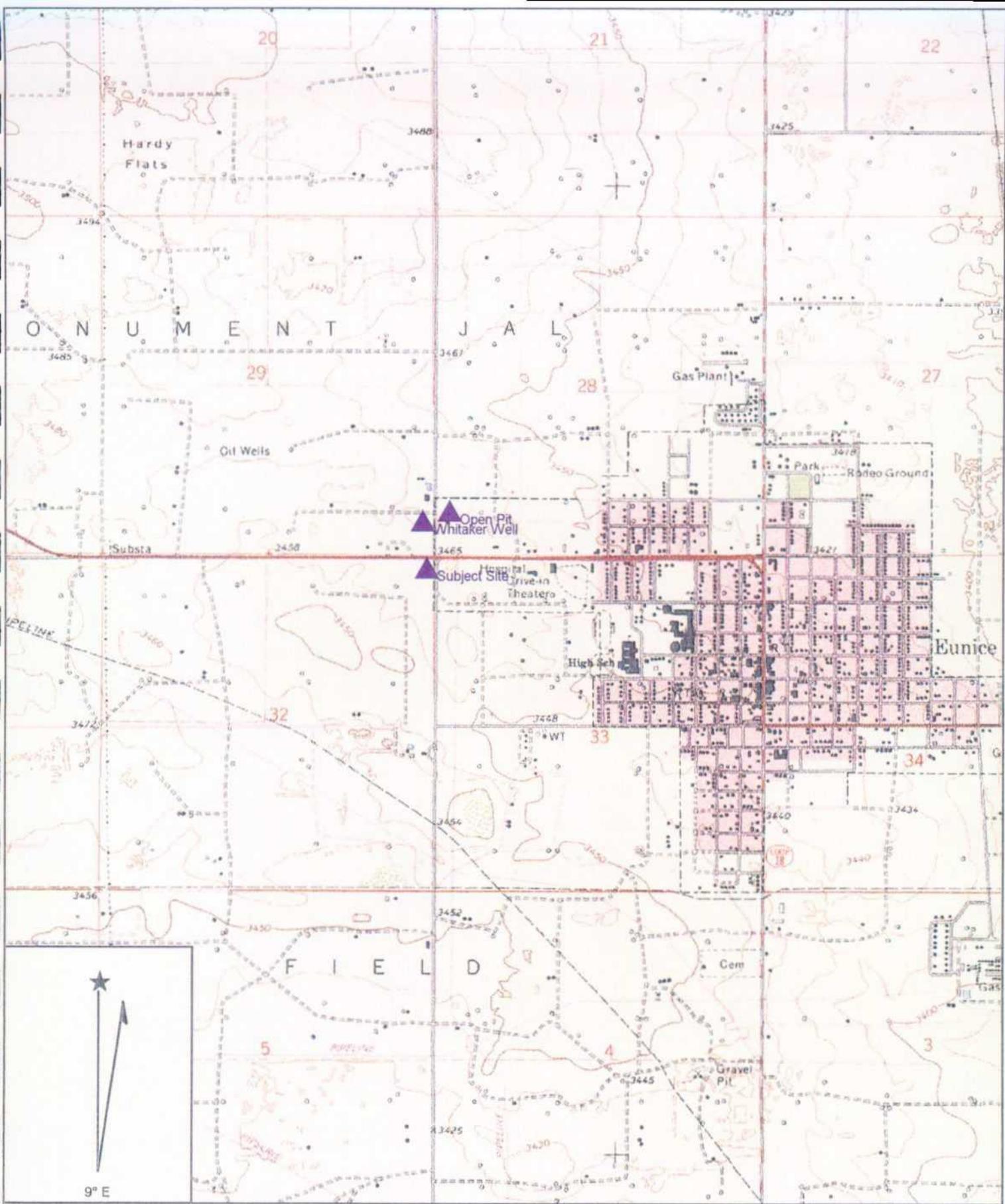
Based on evaluation of the soil and groundwater sampling results and the direction of flow of the groundwater under the subject site, SESI believes that no further investigation or remedial action is necessary other than continued monitoring of the quality of the groundwater under the site. The open pit to the northeast of the subject site may warrant investigation by the proper regulatory agencies as a possible source of groundwater contamination in the area as well as a public health risk.

V. References

Nicholson, A. N., Jr., and Clebsch, A., Jr., 1961. *Geology and Ground-water Conditions in Southern Lea County, New Mexico*. Ground-Water Report 6, New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico, 120 p.

VII. Report Figures

Figure 1.
Vicinity Map

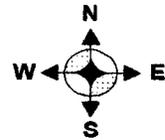


Name: EUNICE
 Date: 8/20/2001
 Scale: 1 inch equals 2000 feet

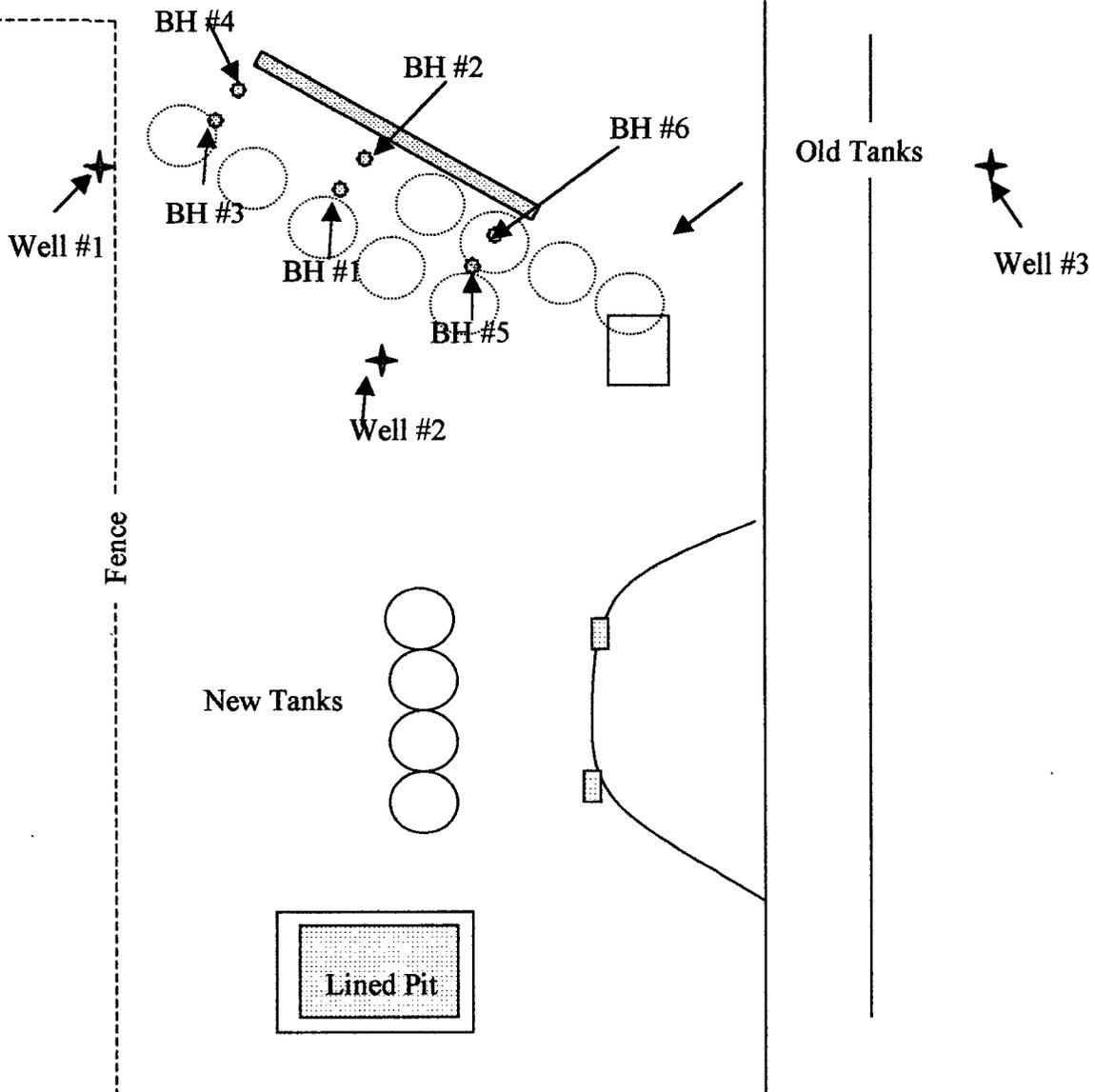
Location: 032° 26' 25.0" N 103° 10' 20.9" W
 Caption: Sims McCasland Brine Station

Section 32 T21S R37E

Figure 2.
Site Survey



Highway 176



Not to Scale

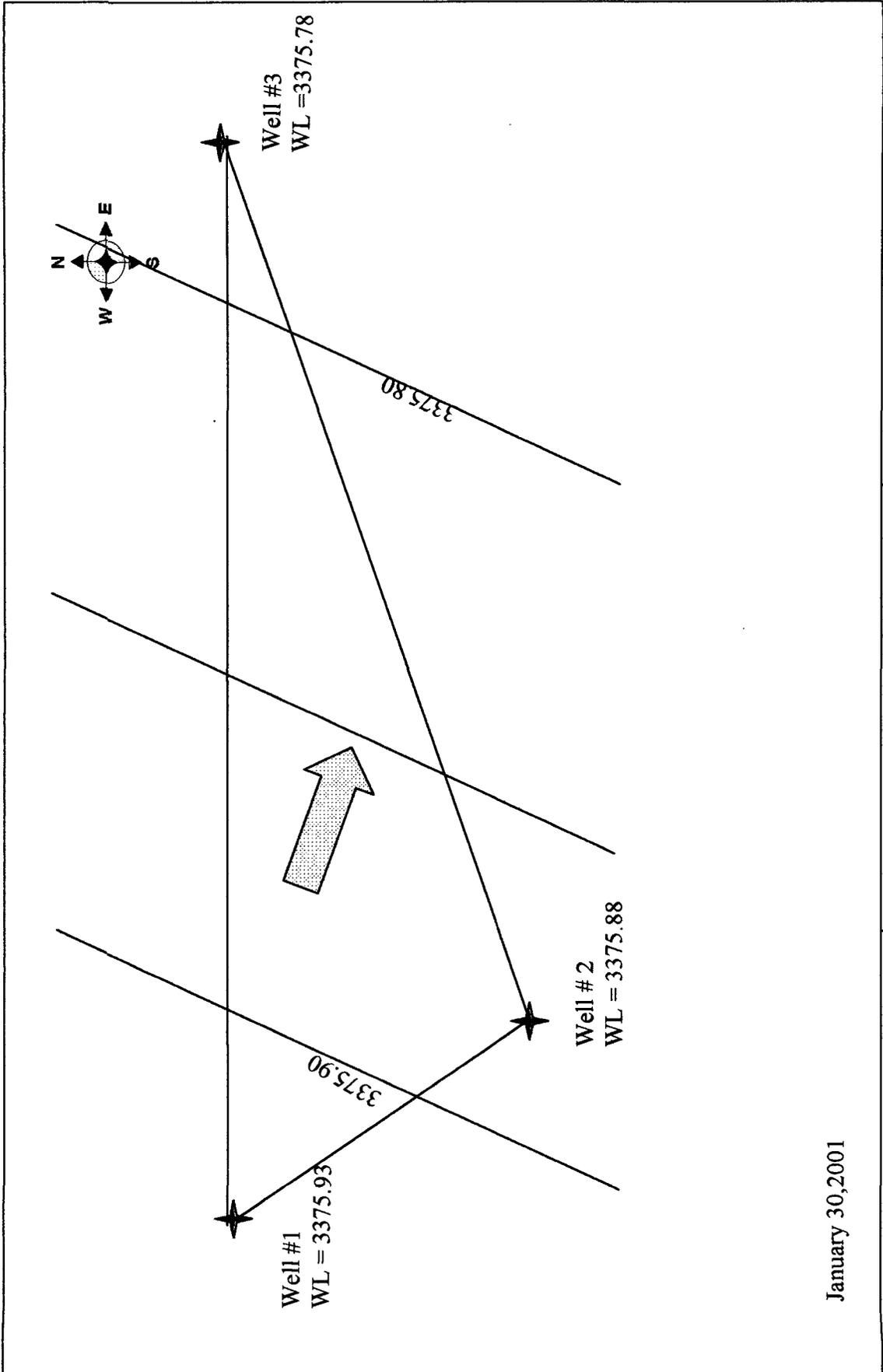
May 15, 2001

Sims - McCasland
Brine Sales

Sims - McCasland Brine Station
Site Plan

Safety & Environmental
Solutions, Inc.

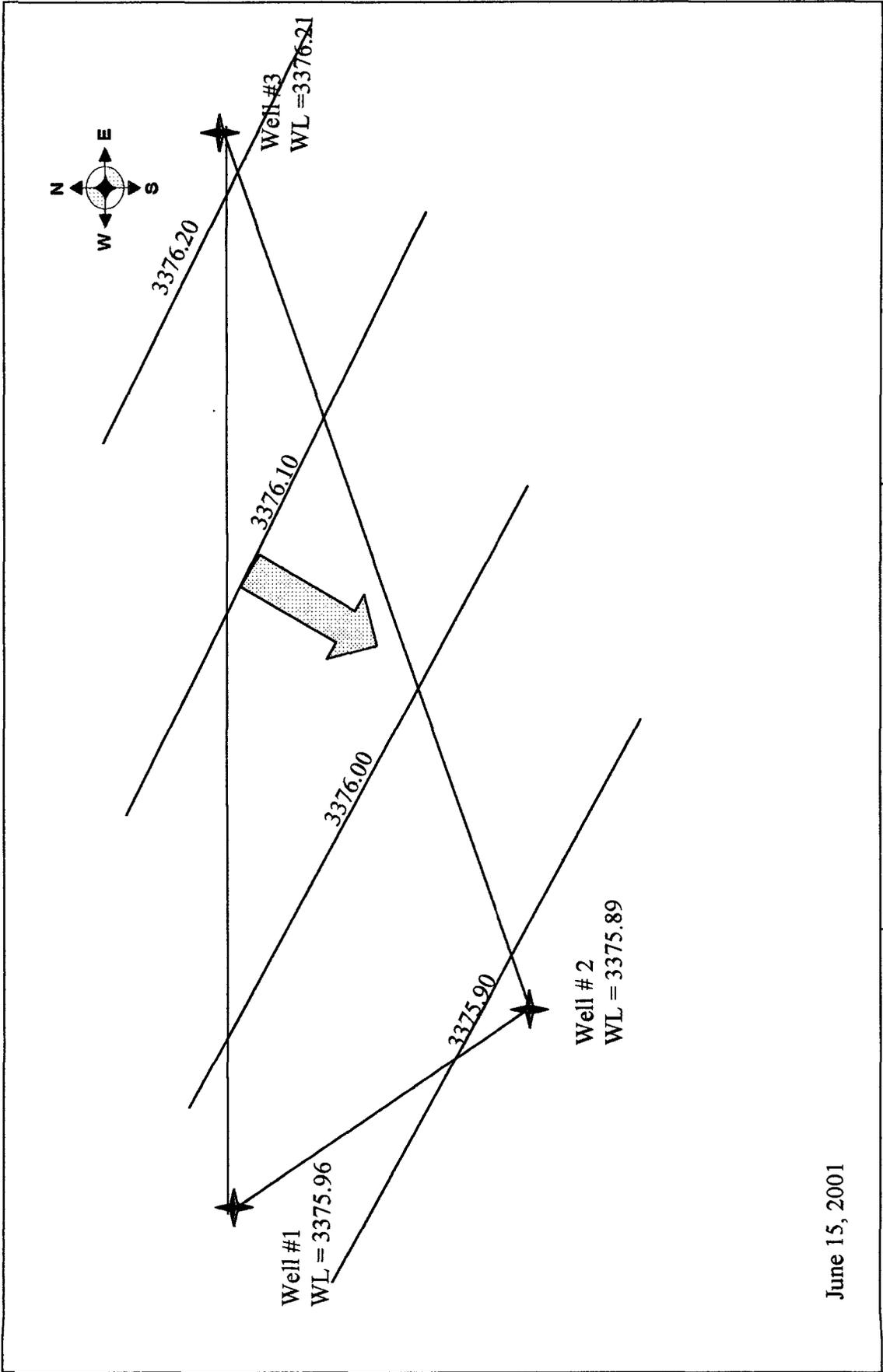
Figure 3.
Direction of Groundwater Flow
1-30-01



January 30, 2001

Sims - McCasland Brine Sales	Sims - McCasland Brine Station Direction of Groundwater Flow	Safety & Environmental Solutions, Inc.
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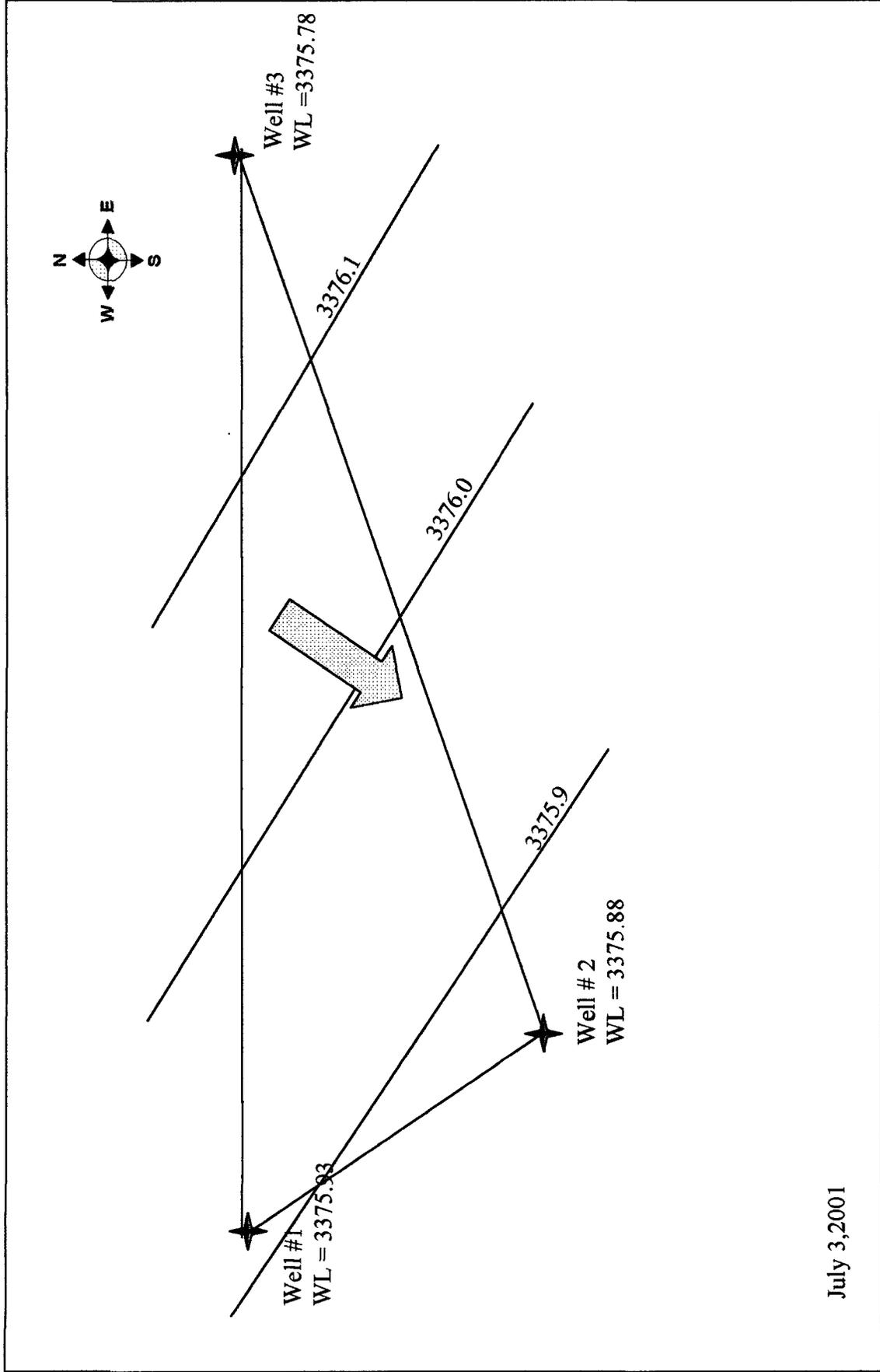
Figure 4.
Direction of Groundwater Flow
6-15-01



June 15, 2001

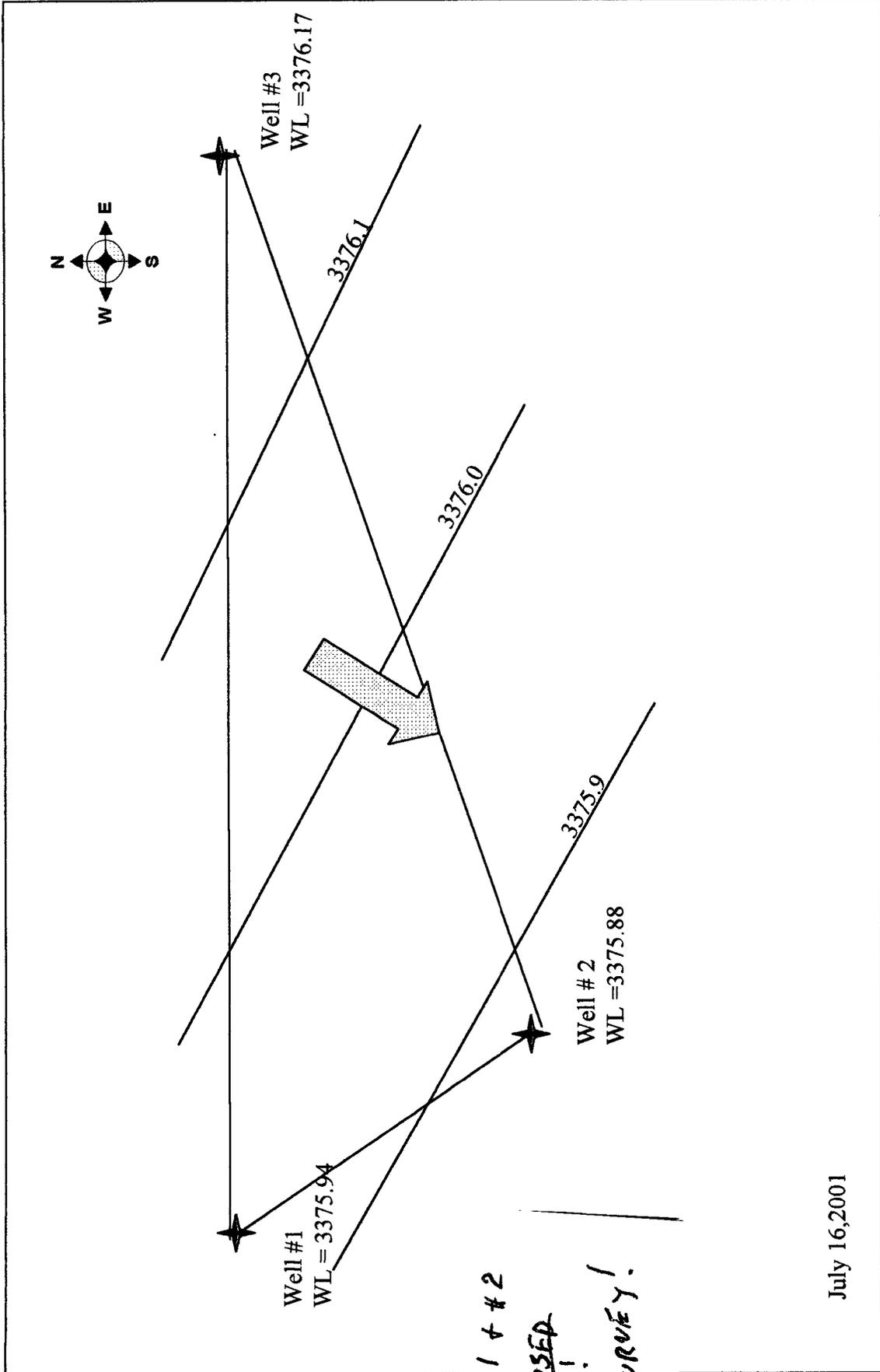
<p>Sims - McCasland Brine Sales</p>	<p>Sims - McCasland Brine Station Direction of Groundwater Flow</p>	<p>Safety & Environmental Solutions, Inc.</p>
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Figure 5.
Direction of Groundwater Flow
7-03-01



Safety & Environmental Solutions, Inc.	Sims - McCasland Brine Station Direction of Groundwater Flow	Sims - McCasland Brine Sales
--	---	------------------------------

Figure 6.
Direction of Groundwater Flow
7-16-01



WELLS #1 + #2
TRANSPOSED
WRONG!!
SEE SURVEY!

July 16, 2001

Sims - McCasland Brine Sales

Sims - McCasland Brine Station
Direction of Groundwater Flow

Safety & Environmental Solutions, Inc.

VIII. Report Appendices

Appendix A. Laboratory Analytical Reports - Soil

Appendix B. Laboratory Analytical Reports - Groundwater

Appendix A
Laboratory Analytical Reports
Soil



ARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, STE. 103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 02/13/01
Reporting Date: 02/16/01
Project Number: NOT GIVEN
Project Name: KEY-SIMMS-McCASLAND
Project Location: EUNICE, NM

Analysis Date: 02/14/01
Sampling Date: 02/13/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl ⁻ (mg/Kg)
H5605-1	B.H. #1 5'	179
H5605-2	B.H. #1 10'	1067
Quality Control		1051
True Value QC		1000
% Recovery		105
Relative Percent Difference		6.8

METHOD: Standard Methods	4500-Cl ⁻ B
--------------------------	------------------------

NOTE: Analyses performed on 1:4 w:v aqueous extracts.


Chemist

02/16/2001
Date

H5605.XLS
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



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LABORATORIES**

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, STE. 103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 03/07/01
Reporting Date: 03/09/01
Project Number: NOT GIVEN
Project Name: KEY SIMMS-McCASLAND
Project Location: EUNICE

Analysis Date: 03/08/01
Sampling Date: 03/06/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: GP

LAB NUMBER	SAMPLE ID	Cl ⁻ (mg/Kg)
H5681-1	B.H. #1 20'	799
H5681-2	B.H. #2 5'	319
H5681-3	B.H. #2 10'	223
H5681-4	B.H. #2 15'	239
H5681-5	B.H. #2 20'	224
H5681-6	B.H. #3 10'	1775
Quality Control		940
True Value QC		1000
% Recovery		94.0
Relative Percent Difference		5.5

METHOD: Standard Methods	4500-Cl ⁻ B
--------------------------	------------------------

NOTE: Analyses performed on 1:4 w:v aqueous extracts.


Chemist

03/09/2001
Date

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Company Name: <u>SESI</u>		BILL TO PO #:	
Project Manager:		Company: <u>SAME</u>	
Address: <u>703 E. CLINTON, #103</u>		Attn:	
City: <u>HOBBS</u>		Address:	
Phone #: <u>(505) 397-0510</u>		City:	
Fax #: <u>(505) 393-4388</u>		State:	
Project #: _____		Phone #: _____	
Project Name: <u>Key Smart-McCarbano</u>		Fax #: _____	
Project Location: <u>Enice</u>		Project Owner:	

LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX					PRES.	SAMPLING	DATE	TIME
				GROUNDWATER	WASTEWATER	SOIL	SLUDGE	OTHER:				
H5681-1	R.H. #1 20'	1	1	X		X		X		3-6-01		
-2	B.H. #2 5'	1	1	X		X		X				
-3	B.H. #2 10'	1	1	X		X		X				
-4	B.H. #2 15'	1	1	X		X		X				
-5	B.H. #2 20'	1	1	X		X		X				
-6	R.H. #3 10'	1	1	X		X		X				

Chlorides

PLEASE NOTE: Liability and Damages. Cardinal's facility and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

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.

Phone Result Yes No Additional Fax #:

Fax Result: Yes No

REMARKS:

Received By: _____ Date: _____ Time: _____

Relinquished By: _____ Date: 3/10/01 Time: 8:30AM

Delivered By: (Circle One) Bus _____

Sampler - UPS - Bus - Other: _____

Sample Condition: Intact Yes No

Checked By: (Initials) D. Smith

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.



**ARDINAL
LABORATORIES**

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 03/14/01
Reporting Date: 03/16/01
Project Number: NOT GIVEN
Project Name: KEY-SIMS-McCASLAND
Project Location: EUNICE, NM

Analysis Date: 03/15/01
Sampling Date: 03/12 & 03/13/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl ⁻ (mg/Kg)
H5701-1	BH #5 10'	592
H5701-2	BH #5 20'	1810
H5701-3	BH #3 20'	2080
Quality Control		1050
True Value QC		1000
% Recovery		105
Relative Percent Difference		10.5

METHOD: Standard Methods	4500-ClB
--------------------------	----------

NOTE: Analyses performed on 1:4 w:v aqueous extracts.


Chemist

03/16/2001
Date

H5701.XLS
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: SEST		BILL TO PO #:	
Project Manager:		Company: SAME	
Address: 703 E. CLINTON, #103		Attn:	
City: HOBBS		Address:	
Phone #: (505) 397-0510		City:	
Fax #: (505) 393-4388		State:	
Project #:		Phone #:	
Project Name: Key - Sims - McLain		Fax #:	
Project Location: Tanite			

LAB I.D.	Sample I.D.	FOR LAB USE ONLY			DATE	TIME
		(G) RAB OR (OMP)	# CONTAINERS	MATRIX		
H570-1	B.H. #5 20'		1	GROUNDWATER	3-12-01	
-2	B.H. #5 20'		1	WASTEWATER	3-15-01	
-3	B.H. #3 20'		1	SLUDGE	3-15-01	
				SOIL		
				ICE / COOL		
				ACID:		
				OTHER:		
				PRES.		

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. At claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 2 1/4% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Received By: _____ Date: _____
Time: _____

Regelved By: (Lab Staff) _____
Sample Condition: Cool Intact
Checked By: (Initials) _____
Yes No

Delivered By: (Circle One) _____
Sampler - UPS - Bus - Other: _____

Phone Result: Yes No Additional Fax #: _____
Fax Result: Yes No

REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.



**ARDINAL
LABORATORIES**

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

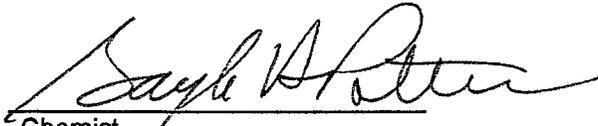
Receiving Date: 03/15/01
Reporting Date: 03/16/01
Project Number: NOT GIVEN
Project Name: KEY-SIMS-McCASLAND
Project Location: EUNICE, NM

Analysis Date: 03/16/01
Sampling Date: 03/15/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl ⁻ (mg/Kg)
H5708-1	BH #1 21'	180
H5708-2	BH #4 10'	8160
H5708-3	BH #4 20'	5920
H5708-4	BH #6 10'	144
H5708-5	BH #6 20'	352
Quality Control		1050
True Value QC		1000
% Recovery		105
Relative Percent Difference		10.5

METHOD: Standard Methods	4500-ClB
--------------------------	----------

NOTE: Analyses performed on 1:4 w:v aqueous extracts.


Chemist

03/16/2001
Date

H5708.XLS
PLEASE NOTE - Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: SPEI		Company: SAME		PO #:	
Project Manager:		Attn:		Address:	
Address: 703 E. CLINTON, #103		City: HOBBS		State: NM Zip: 88240	
Phone #: (505) 397-0510		City:		State:	
Fax #: (505) 393-4388		Phone #:		Zip:	
Project #:		Project Owner:		Project Location:	
Project Name: Key-Sims McCasland		Project #:		Fax #:	
Project Location: Furnace NM		Project #:		Fax #:	

FOR LAB USE ONLY	LAB I.D.	Sample I.D.	# CONTAINERS	(G) RAB OR (COMP)	MATRIX				PRES.	SAMPLING	DATE	TIME
					GROUNDWATER	WASTEWATER	SOIL	OIL				
	H5708-1	B.H. #1 21'	1								3-15-01	
	-2	B.H. #4 10'	1									
	-3	B.H. #4 20'	1									
	-4	B.H. #6 10'	1									
	-5	B.H. #6 20'	1									

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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 collections, including attorney's fees.

Phone Result: Yes No Additional Fax #: Yes No

REMARKS:

Phlores

Received By: (Lab Staff)
JMux
 Sample Condition: Intact Damaged
 Checked By: (Initials)
Hell

Relinquished By: *[Signature]*
 Date: **3-15-01**
 Time: **3:15**
 Delivered By: (Circle One)
 Sampler UPS Bus Other:

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

Appendix B
Laboratory Analytical Reports
Groundwater



ARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY AND ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, SUITE 103
HOBBS, NM 88240
FAX TO: 505-393-4388

Receiving Date: 01/30/01
Reporting Date: 02/02/01
Project Number: NOT GIVEN
Project Name: SIMS-McCASLAND
Project Location: SIMS-McCASLAND WATER ST.

Sampling Date: 01/30/01
Sample Type: GROUNDWATER
Sample Condition: COOL, INTACT
Sample Received By: AH
Analyzed By: JA

LAB NUMBER	SAMPLE ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
ANALYSIS DATE		02/01/01	02/01/01	02/01/01	02/01/01
H5565-1	WATER WELL #1	<2.00	<2.00	<2.00	<6.00
H5565-2	WATER WELL #2	<2.00	<2.00	<2.00	<6.00

Quality Control	87	99	90	279
True Value QC	100	100	100	300
% Accuracy	87	99	90	93
Relative Percent Difference	3.1	0	0	2.2

METHOD: EPA SW 846-8020, 5030, Gas Chromatography



Chemist

2-2-01

Date

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H5565LSESIHOBBSBTEXONLY



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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, STE. 103
HOBBS, NM 88240
FAX TO: (397) 505-4388

Receiving Date: 01/30/01
Reporting Date: 02/09/01
Project Number: NOT GIVEN
Project Name: SIMS-McCASLAND
Project Location: SIMS-McCASLAND WATER STATION

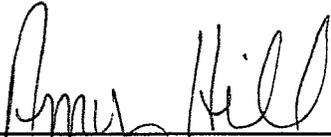
Sampling Date: 01/30/01
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity (mgCaCO ₃ /L)
ANALYSIS DATE:		02/09/01	02/01/01	02/01/01	02/01/01	02/01/01	02/01/01
H5565-1	WATER WELL #1	1526	0	3	12.75	6555	965
H5565-2	WATER WELL #2	579	218	30	12.65	3697	70
Quality Control		1.090	51	52	4.94	1489	NR
True Value QC		1.000	50	50	5.00	1413	NR
% Accuracy		109	102	104	98.8	105	NR
Relative Percent Difference		0.4	0	1.9	1.6	0.3	NR

METHODS:	273.1	3500-Ca-D	3500-Mg E	8049	120.1	310.1
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	Cl ⁻ (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	pH (s.u.)	TDS (mg/L)	
ANALYSIS DATE:		02/01/01	02/02/01	02/01/01	02/01/01	02/01/01	02/05/01
H5565-1	WATER WELL #1	1596	72.6	0	415	9.92	3626
H5565-2	WATER WELL #2	707	428	28	199	7.70	2308
Quality Control		1051	53.19	NR	995	7.04	NR
True Value QC		1000	50.00	NR	1000	7.00	NR
% Accuracy		105	106	NR	99.5	101	NR
Relative Percent Difference		3.9	0.3	NR	0	4.8	NR

METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1
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Chemist

2-9-01

Date

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H5565C.XLS



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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

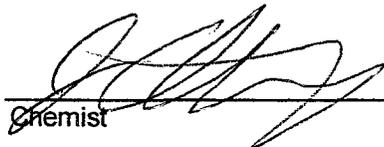
ANALYTICAL RESULTS FOR
SAFETY AND ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, SUITE 103
HOBBS, NM 88240
FAX TO: 505-393-4388

Receiving Date: 02/01/01
Reporting Date: 02/02/01
Project Number: NOT GIVEN
Project Name: SIMS-McCASLAND WATER ST.
Project Location: WATER STATION IN EUNICE

Sampling Date: 02/01/01
Sample Type: GROUNDWATER
Sample Condition: COOL, INTACT
Sample Received By: BC
Analyzed By: JA

LAB NUMBER	SAMPLE ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
ANALYSIS DATE		02/02/01	02/02/01	02/02/01	02/02/01
H5569-1	WATER WELL #3	<2.00	<2.00	<2.00	<6.00
Quality Control		101	106	95	298
True Value QC		100	100	100	300
% Accuracy		101	106	95	99
Relative Percent Difference		7.5	4.2	5.9	7.1

METHOD: EPA SW 846-8020, 5030, Gas Chromatography



Chemist

02-02-01

Date

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H5569LSESIHOBBSBTEXONLY



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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

**ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.**

ATTN: BOB ALLEN
703 E. CLINTON, STE. 103
HOBBS, NM 88240
FAX TO: (397) 505-4388

Receiving Date: 02/01/01
Reporting Date: 02/09/01
Project Number: NOT GIVEN
Project Name: SIMS-McCASLAND
Project Location: SIMS-McCASLAND WATER STATION

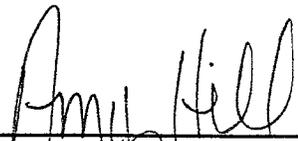
Sampling Date: 02/01/01
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity (mgCaCO ₃ /L)
ANALYSIS DATE:		02/09/01	02/01/01	02/01/01	02/01/01	02/01/01	02/01/01
H5569-1	WATER WELL #3	309	360	55	12.86	4162	23
Quality Control		1.090	51	52	4.94	1489	NR
True Value QC		1.000	50	50	5.00	1413	NR
% Accuracy		109	102	104	98.8	105	NR
Relative Percent Difference		0.4	0	1.9	1.6	0.3	NR

METHODS:	273.1	3500-Ca-D	3500-Mg E	8049	120.1	310.1
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	Cl ⁻ (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		02/01/01	02/02/01	02/01/01	02/01/01	02/05/01
H5569-1	WATER WELL #3	1293	<1	0	28	6.67
Quality Control		1051	53.19	NR	995	7.04
True Value QC		1000	50.00	NR	1000	7.00
% Accuracy		105	106	NR	99.5	101
Relative Percent Difference		3.9	0.3	NR	0	4.8

METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1
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Chemist

2-9-01

Date

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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 03/15/01
Reporting Date: 03/06/01
Project Number: NOT GIVEN
Project Name: WHITAKER WELL
Project Location: EUNICE, NM

Sampling Date: 03/15/01
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NO.	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		03/15/01	03/15/01	03/15/01	03/15/01
H5709-1	WATER WELL	<0.002	<0.002	<0.002	<0.006
Quality Control		0.097	0.104	0.111	0.328
True Value QC		0.100	0.100	0.100	0.300
% Recovery		96.9	104	111	109
Relative Percent Difference		0.3	7.1	9.8	8.6

METHOD: EPA SW-846 8260


Chemist

3/16/01
Date

H5709B.XLS

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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 03/15/01
Reporting Date: 03/21/01
Project Number: NOT GIVEN
Project Name: WHITAKER WELL
Project Location: EUNICE, NM

Sampling Date: 03/15/01
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (μ S/cm)	T-Alkalinity (mgCaCO ₃ /L)
ANALYSIS DATE:		03/16/01	03/20/01	03/20/01	03/20/01	03/19/01	03/20/01
H5709-1	WATER WELL	394	86	10	309	5103	1049
Quality Control		1.170	47	52	5.02	1489	NR
True Value QC		1.000	50	50	5.00	1413	NR
% Accuracy		117	94.3	104	100	105	NR
Relative Percent Difference		4.3	0	0	2.8	0.3	NR

METHODS:	SM3500-Ca-D	3500-Mg E	8049	120.1	310.1
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	Cl ⁻ (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	pH (s.u.)	TDS (mg/L)	
ANALYSIS DATE:		03/20/01	03/20/01	03/20/01	03/20/01	03/19/01	03/21/01
H5709-1	WATER WELL	460	24.93	559	142	8.56	2044
Quality Control		970	54.86	NR	995	7.04	NR
True Value QC		1000	50.00	NR	1000	7.00	NR
% Accuracy		97.0	110	NR	99.5	100	NR
Relative Percent Difference		7.6	7.4	NR	0	0	NR

METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1
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Gayle A. Potter, Chemist

03/22/2001
Date

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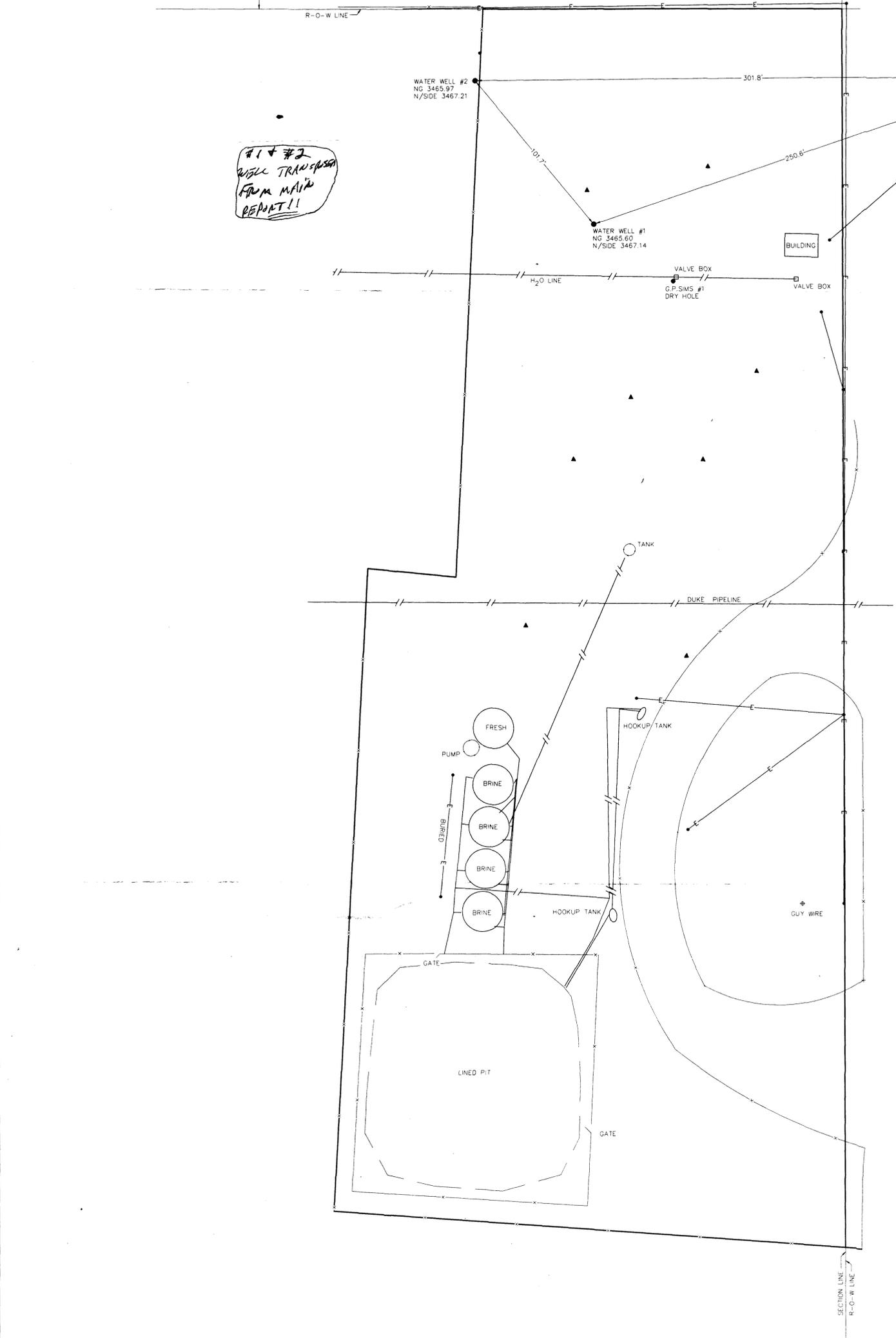
H5709-XLS

29 28
32 33
R.R. SPIKE

USGLO BC

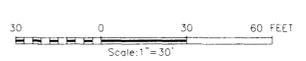
STATE HIGHWAY NO. 8

#1 + #2
WELL TRANSMISSION
FROM MAIN
REPORT!!



LEGION ROAD
COUNTY ROAD E-33

- ▲ DENOTES WELL ANCHOR
- E- DENOTES ELECTRIC LINE
- X- DENOTES FENCE
- /- DENOTES PIPELINE
- NG DENOTES NATURAL GROUND
- N/SIDE DENOTES ELEV. ON NORTH SIDE OF WELL



I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

Ronald J. Eidson
 RONALD J. EIDSON N.M. P.S. No. 3239
 TEXAS P.L.S. No. 1883
 GARY G. EIDSON N.M. P.S. No. 12541
 TEXAS P.L.S. No. 4735
JOHN WEST SURVEYING COMPANY
 412 N. DALPASO - HOBBS, NEW MEXICO - 505/393-3117

KEY ENERGY SERVICES INC.

TOPOGRAPHIC SURVEY OF FACILITIES IN
 SECTION 32,
 TOWNSHIP 21 SOUTH,
 RANGE 37 EAST, N.M.P.M.,
 LEA COUNTY, NEW MEXICO

Surveyed By: HARPER	Drawn By: DC	Last Rev: 5/26/01	Drawing Number
Date Begin: 5/16/01	Date: 5/23/01	Disk:	E- 3063
Date End:	Approved By:	Sheet of	
Project #: 01110613	Filename: KEY0613	Scale: 1"=30'	