

FEI | Faith Engineering, Inc.

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April 30, 2003

Mr. Ray Montes  
New Mexico Environment Department  
Ground Water Quality Bureau  
P.O. Box 26110  
Santa Fe, NM 87502-6110

RE: Site Investigation Report  
Midway Grocery, 414A Jarales Rd., Jarales, NM  
FEI Project No. 03-03-1232

Dear Mr. Montes:

Faith Engineering, Inc. (FEI) is pleased to provide this Site Investigation Report for the above-referenced site. This report was prepared in accordance with the Conditional Work Plan Approval letter from the New Mexico Environment Department, Ground Water Quality Bureau (NMED/GWQB) dated March 11, 2003. It documents the performance of a soil and ground water investigation at the above-referenced property and at the nearby Crawford Rd. soil disposal site. This investigation was conducted pursuant to the requirements of the NMED/GWQB to investigate the potential for residual soil and/or ground water contamination resulting from an accidental discharge of approximately 50 gallons of gasoline after a vehicle struck the fuel dispenser at the site in 1996 and the subsequent excavation of the impacted soil and its disposal and treatment on a dirt farm road off of nearby Crawford Rd.

During this investigation, six soil borings were advanced to ground water (5' below ground surface) in the vicinity of the spill and excavation (store location) and four soil borings were advanced to ground water (4' below ground surface) at the Crawford Rd. disposal site. Soil and ground water sampling results from the store location showed extremely high levels of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total naphthalenes in all ground water samples, as well as elevated levels of 1,2-dichloroethane (EDC) in one sample, and very high levels of TPH in the soil's vadose zone. Soil and ground water samples from the Crawford Rd. site showed all petroleum hydrocarbon constituents to be non-detectable. A water sample from the domestic well at the store location site showed all petroleum hydrocarbon constituents to be non-detectable. Please refer to the attached tables and figures for complete sampling results.

Total BTEX concentrations in ground water at the store location ranged from 19,500 µg/l to 51,200 µg/l. Total naphthalene concentrations in ground water ranged from 307 µg/l to 1,930 µg/l. The EDC concentration in one sample was 200 µg/l. TPH concentration in the vadose zone soil at the store location ranged from 18,000 mg/kg to 27,000 mg/kg.

Given the extremely high levels of hydrocarbon contamination in soil and ground water at this site, FEI does not believe that they are the result of a surface release of 50 gallons of gasoline 6+ years ago. This site operated an above ground storage tank (AST) gasoline dispensing system from approximately 1975 until the accidental release in 1996. The dispenser island and subsurface product lines were removed from the site just after the accident. There is no evidence that the product lines were ever tested for integrity during that entire 21 year span of operation. Therefore, FEI believes that there is the possibility

Mr. Ray Montes

April 30, 2003

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that the product lines and/or dispensers leaked gasoline during the period of operation. In addition, a 300 gallon underground storage tank (UST) was used at the site through the 1940's to provide gasoline to an old dispenser that still exists at the site. The current owner was informed that this UST was abandoned in place by filling with sand prior to his purchasing the property in the early 1950's. FEI field technicians believe that they encountered this UST while attempting to advance one of the soil borings. However, FEI does not believe that the present contamination is a result of a leak from this tank given that it was abandoned over 50 years ago. The present contamination does not appear to be weathered gasoline.

Given the above, FEI recommends that this matter be referred to the NMED, Petroleum Storage Tank Bureau (NMED/PSTB) for further investigation and remediation under their regulations, potentially using the NMED/PSTB Corrective Action Fund for owner/operator reimbursement.

Please do not hesitate to contact us if you have questions or comments concerning this report.

Respectfully submitted,  
FAITH ENGINEERING, INC.



Stuart E. Faith - President  
NM Professional Engineer No. 6396  
CS No. 80

cc w/attachments: Mr. Arthur Cordova  
Mr. Pat de Gruyter, NMED/PSTB

FEI FILE NUMBER 03-03-1232

**SITE INVESTIGATION REPORT  
THE MIDWAY GROCERY SITE  
414A JARALES RD.  
JARALES, VALENCIA COUNTY, NEW MEXICO**

PREPARED BY:

**STUART FAITH, P.E. AND DAVID STRASSER  
FAITH ENGINEERING, INC.**

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APRIL 30, 2003

PREPARED FOR:

**MR. ARTHUR CORDOVA, MIDWAY GROCERY  
AND  
THE NEW MEXICO ENVIRONMENT DEPARTMENT,  
GROUND WATER QUALITY BUREAU**

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## **I. INTRODUCTION**

Faith Engineering, Inc. (FEI) has been retained by Mr. Arthur Cordova to provide professional environmental services at the Midway Grocery Site located at 414A Jarales Rd., Jarales, Valencia County, New Mexico (the Store Site) and at the nearby Crawford Rd. soil disposal site (Crawford Site). FEI's work plan entitled "Corrective Action Plan", dated February 11, 2003, was approved by the New Mexico Environment Department, Ground Water Quality Bureau (NMED/GWQB) on March 11, 2003. This Site Investigation Report documents the performance of a soil and ground water investigation at the Store Site and at the Crawford Site. The investigation was conducted pursuant to the requirements of the NMED/GWQB to investigate the potential for residual soil and/or ground water contamination resulting from an accidental discharge of approximately 50 gallons of gasoline.

On December 28, 1996 a vehicle accidentally struck a fuel dispenser at the Store Site causing the spillage of approximately 50 gallons of gasoline onto the ground. Soon after, the property owner, Mr. Arthur Cordova, arranged to have approximately 40 cubic yards (cy) of contaminated soil excavated from the site and deposited on a dirt farm road leading off of nearby Crawford Rd. According to Mr. Cordova, the contaminated soil was placed on the dirt farm road and spread using a Cordova Farms leveler. This soil was then disked and planed with a tractor weekly to aerate it until there was no remaining gasoline odor. The County Fire Marshal (Mr. John Cherry) was reported to have overseen this process. The excavation at the spill site was backfilled with clean sand and gravel from a local gravel pit.

Two empty 1,000-gallon above ground storage tanks (ASTs) remain in an enclosure at the site (see photo #1 in Appendix 3 and Figure 2). The gasoline dispenser island and subsurface product lines were removed from the site in 1996. The ASTs have remained empty since that time. In addition, a 300-gallon underground storage tank (UST) was used at the site through the 1940's to provide gasoline to an old dispenser that still exists at the site (see photo #4). The current owner was informed that this UST was abandoned in place by filling with sand prior to his purchasing the property in the early 1950's. FEI field technicians believe that they encountered this UST while attempting to advance one of the soil borings (SB-4). Please refer to Figure 1 for the location of both sites on a street map. Figure 2 provides the approximate location of the Store Site excavations and spill area and Figure 4 provides the location of the Crawford Rd. soil disposal site.

## **II. ACTIVITIES PERFORMED**

During this investigation, which was conducted on April 2, 2003, six soil borings were advanced to ground water in the vicinity of the spill and excavation (Store Site). These borings include SB-1, SB-2, SB-3, SB-4, SB-5 and SB-6. Please see Figure 3 for the boring locations in relation to the excavations. The 6 borings were advanced using a hand auger, which was decontaminated with an Alconox wash between each boring. The borings were advanced to the depth of ground water, which

was at approximately 5' below ground surface (bgs) in all borings. The soil cuttings rendered during the boring operations appeared very dark and discolored by petroleum product and exhibited a strong gasoline odor beginning at approximately 3' bgs (see photos #6, 7 and 8 and the borehole log in Appendix 2). Given the obvious soil contamination, soil vapor gas readings utilizing the soil probe were not obtained. However, soil samples were collected for heated-headspace analysis using a properly calibrated photoionization detector (PID) from three of the borings. Soil samples were collected from the vadose zone at approximately 4' bgs and resulted in the following PID readings: SB-1 (2,110 ppm), SB-2 (2,673 ppm) and SB-5 (3,130 ppm).

Two soil samples were collected from the vadose zone at approximately 4' bgs from SB-1 and SB-5 for laboratory analysis by EPA Method 8015 GRO. The C6 - C14 range reading from SB-1 was 18,000 mg/kg and 27,000 mg/kg from SB-5. Please refer to Table 2 and Figure 3 for soil readings.

Ground water samples were collected from all six borings utilizing dedicated hand-bailers and submitted for laboratory analysis by EPA Method 8260 PBMS for Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX), Methyl-t-Butyl Ether (MTBE), TMB, 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), and expanded Naphthalenes. Results showed extremely high levels of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total naphthalenes in all ground water samples, as well as elevated levels of 1,2-dichloroethane (EDC) in one sample. The following provides the range of detected contaminant levels and the corresponding N.M. Water Quality Control Commission standards. Please refer to Table 1 and Figure 3 for specific levels.

Benzene:	2,100 - 8,900 µg/l	10 µg/l
Toluene:	5,600 - 23,000 µg/l	750 µg/l
Ethylbenzene:	1,900 - 3,800 µg/l	750 µg/l
Total Xylenes:	8,000 - 18,400 µg/l	620 µg/l
EDC:	200 µg/l from SB-2	10 µg/l
Naphthalenes:	307 - 1,930 µg/l	30 µg/l

Prior to obtaining ground water samples, a minimum of three (3) bailer volumes of water was purged from each bore hole. Samples were collected in HCl preserved VOAs and placed on ice in a container for delivery to Pinnacle Laboratories, in Albuquerque, New Mexico, for analyses. All EPA-approved sampling protocols were observed and a chain of custody was maintained on all samples

During this investigation, a domestic well water sample also collected at the store site. This well is reported to be 127' deep. See Figure 3 for the sample collection location. This sample was submitted for laboratory analysis by EPA Method 8260 PBMS. Results showed all contaminant levels below detection limits. Please refer to Table 1 for specific levels.

During this investigation, four soil borings were also advanced to ground water at the Crawford Rd. disposal site (Crawford Site). These borings include Crawford-1, Crawford-2, Crawford-3 and Crawford-4. Please see Figure 4 for the boring locations in relation to the disposal area. The 4 borings were advanced using a hand auger, which was decontaminated with an Alconox wash between each boring. The borings were advanced to the depth of ground water, which was at approximately 4' bgs in all borings. The soil cuttings rendered during the boring operations appeared to be clean sand and exhibited no petroleum odor (see photos #9, 10 and 11 and the borehole log). Given the obvious lack of soil contamination, soil vapor gas readings utilizing the soil probe were not obtained. However, soil samples were collected from the vadose zone at approximately 3' bgs for laboratory analysis by EPA Method 8015 GRO. The C6 - C14 range reading from all 4 borings was <5.0 mg/kg (non-detectable). Please refer to Table 2 and Figure 4 for soil readings.

Ground water samples were collected from all four borings utilizing dedicated hand-bailers and submitted for laboratory analysis by EPA Method 8260 PBMS. Results showed all contaminant levels below detection limits. Please refer to Table 1 for specific levels.

Prior to obtaining ground water samples, a minimum of three (3) bailer volumes of water was purged from each bore hole. Samples were collected in HCl preserved VOAs and placed on ice in a container for delivery to Pinnacle Laboratories, in Albuquerque, New Mexico, for analyses. All EPA-approved sampling protocols were observed and a chain of custody was maintained on all samples

Appendix 1 contains this event's original Field Activity Logs. Both laboratory and field sampling procedures were reviewed for these samples to ensure that errors were not introduced. Laboratory reports and the Chain of Custody Form are provided in Appendix 4.

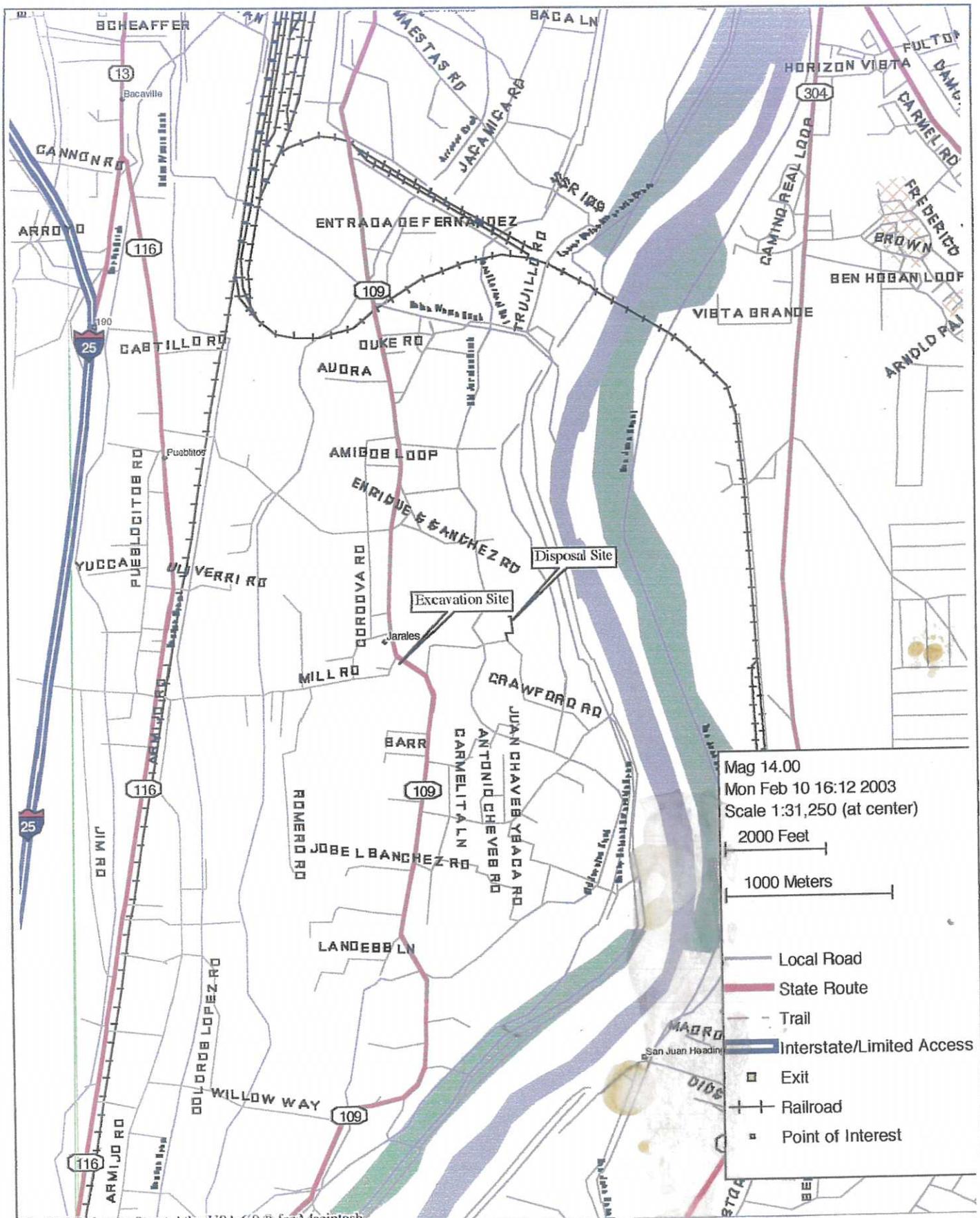
### **III. CONCLUSIONS and RECOMMENDATIONS**

Sample analysis results indicate that the soil and ground water at the Crawford Rd. Site and the water from the domestic well at the store site are not impacted by petroleum hydrocarbon contamination.

Given the extremely high levels of hydrocarbon contamination in soil and ground water at the store site, FEI does not believe that they are the result of a surface release of 50 gallons of gasoline 6+ years ago. This site operated an above ground storage tank (AST) gasoline dispensing system from approximately 1975 until the accidental release in 1996. The dispenser island and subsurface product lines were removed from the site just after the accident. There is no evidence that the product lines were ever tested for integrity during that entire 21 year span of operation. Therefore, FEI believes that there is the possibility that the product lines and/or dispensers leaked gasoline during the period of operation. In addition, a 300 gallon underground storage tank (UST) was used at

the site through the 1940's to provide gasoline to an old dispenser that still exists at the site. The current owner was informed that this UST was abandoned in place by filling with sand prior to his purchasing the property in the early 1950's. FEI field technicians believe that they encountered this UST while attempting to advance one of the soil borings. However, FEI does not believe that the present contamination is a result of a leak from this tank given that it was abandoned over 50 years ago. The present contamination does not appear to be weathered gasoline.

Given the above, FEI recommends that this matter be referred to the NMED, Petroleum Storage Tank Bureau (NMED/PSTB) for further investigation and remediation under their regulations, potentially using the NMED/PSTB Corrective Action Fund for owner/operator reimbursement.



Mag 14.00  
 Mon Feb 10 16:12 2003  
 Scale 1:31,250 (at center)  
 2000 Feet  
 1000 Meters

- Local Road
- State Route
- - - Trail
- Interstate/Limited Access
- Exit
- + + Railroad
- Point of Interest

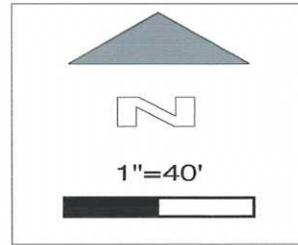
© 1999 DeLorme Street Atlas USA 6.0® for Macintosh

Subject: Midway Grocery, 414A Jarales Rd., Jarales, NM • Street Map

File: 03-03-1232      Date: February 2003      Figure: 1      By: DCS

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*new ph.e*



Old Mill Rd.

NM Hwy. 109 - Jarales Rd.

Road R.O.W.  
Dirt & Gravel

Asphalt & Gravel

Domestic Well  
Water Spigot

Midway  
Grocery  
Store  
and  
Residence

Concrete

Area of Excavation;  
Former Dispenser Area  
(approx. 10'x25')

Approx. Spill  
Area

Product Line  
Excavation

Asphalt  
&  
Gravel

AST Shed

Subject: Midway Grocery, 414A Jarales Rd., Jarales, NM • Site Map Showing Excavation and Spill Areas

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File: 03-03-1232

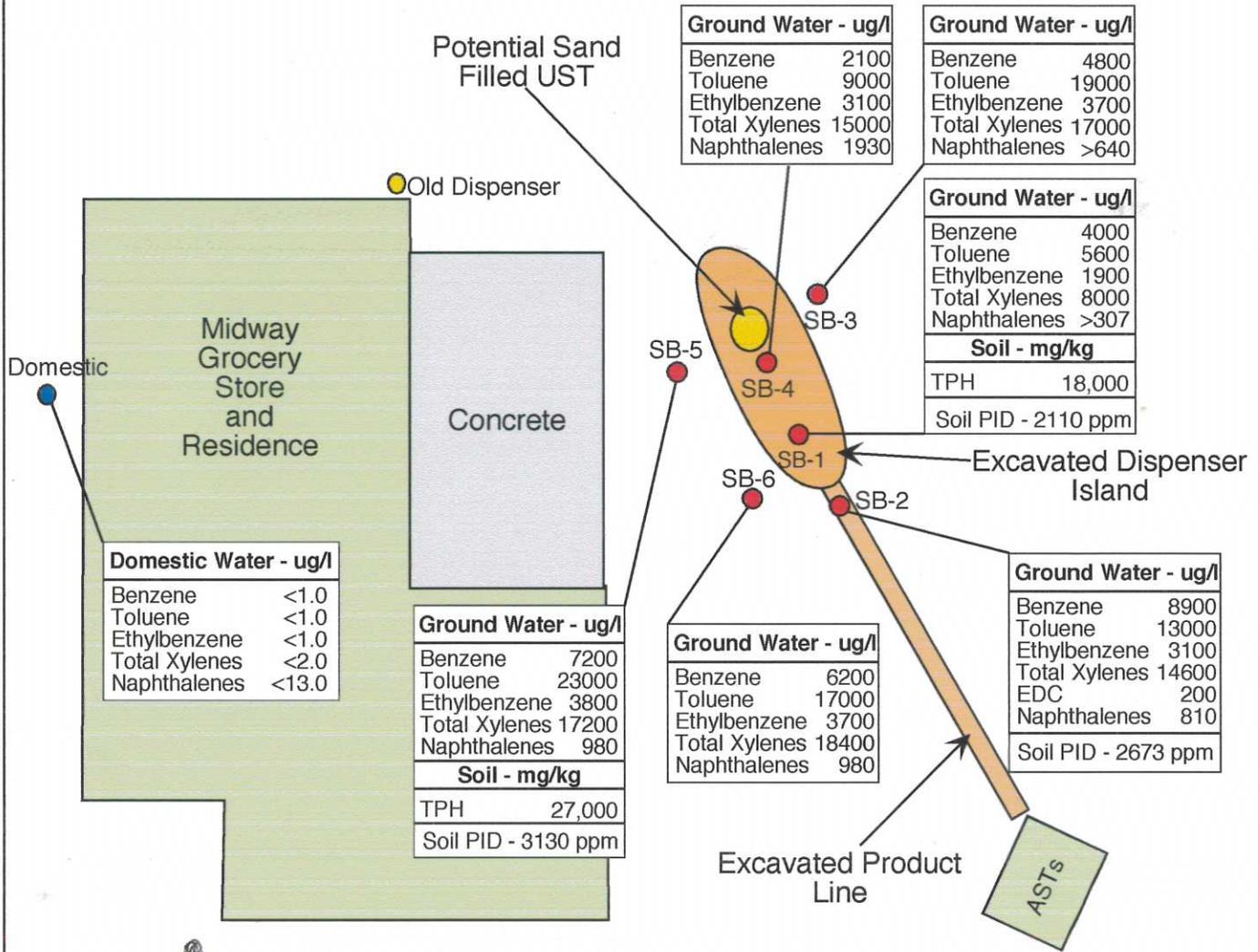
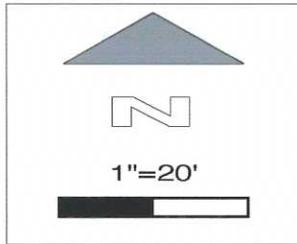
Date: April 2003

Figure: 2

By: DCS

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**SAMPLES COLLECTED ON 04/02/2003**



**Ground Water Samples by EPA Method 8260 PBMS**

**Soil Samples by EPA Method 8015 GRO**

GROUND WATER AT 5' BELOW GROUND SURFACE

SOIL SAMPLES COLLECTED AT 4' BELOW GROUND SURFACE

Subject: Midway Grocery, 414A Jarales Rd., Jarales, NM • Site Map Showing Boring Locations & Sample Results

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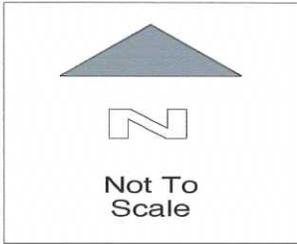
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Date: April 2003

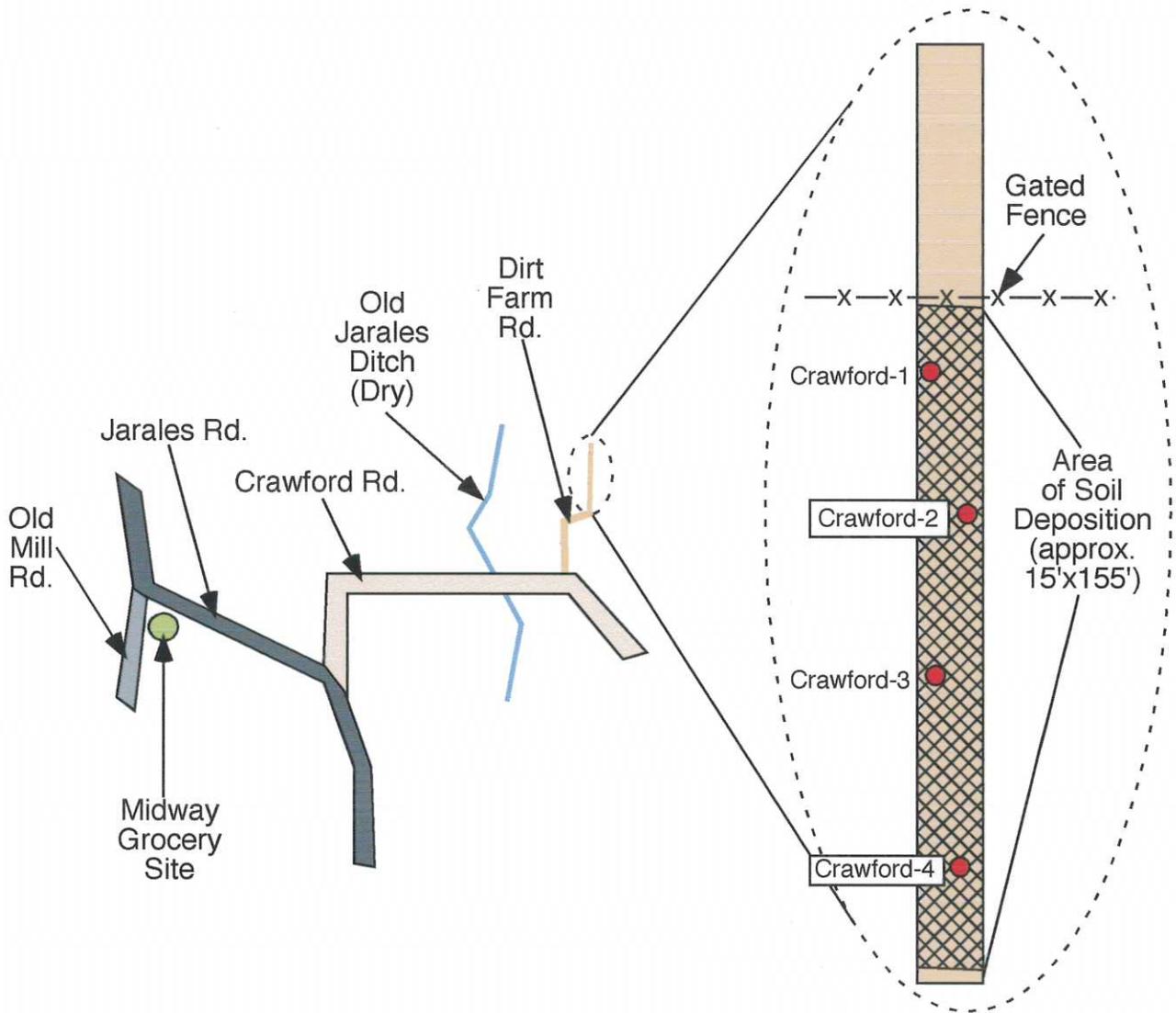
Figure: 3

By: DCS

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**SAMPLES COLLECTED ON 04/02/2003**



**Ground Water Samples by EPA Method 8260 PBMS**  
 ALL PARAMETERS NON-DETECTABLE IN ALL BORINGS

**Soil Samples by EPA Method 8015 GRO**  
 TPH NON-DETECTABLE IN ALL BORINGS

GROUND WATER AT 4' BELOW GROUND SURFACE

SOIL SAMPLES COLLECTED AT 3' BELOW GROUND SURFACE

Subject: Midway Grocery, 414A Jarales Rd., Jarales, NM • Site Map Showing Crawford Rd. Borings & Sample Results

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File: 03-03-1232

Date: April 2003

Figure: 4

By: DCS

**TABLE 1**  
**Midway Grocery Site Investigation**  
**FEI #03-03-1232**  
**CURRENT GROUND WATER ANALYSIS RESULTS**

		ORGANICS - EPA Method 8260 PBMS										
LOCATION	DATE SAMPLED	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	TMB	Naphthalene	1-Methyl Naphthalene	2-Methyl Naphthalene
UNITS		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	ug/l	µg/l	µg/l
NMWQCC STANDARDS		<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>	<b>100</b>	<b>0.1</b>	<b>10</b>		TOTAL: <b>30</b>		
<b>Crawford-1</b>	4/2/03	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<3.0	<5.0	<5.0
<b>Crawford-2</b>	4/2/03	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<3.0	<5.0	<5.0
<b>Crawford-3</b>	4/2/03	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<3.0	<5.0	<5.0
<b>Crawford-4</b>	4/2/03	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<3.0	<5.0	<5.0
<b>SB-1</b>	4/2/03	<b>4,000</b>	<b>5,600</b>	<b>1,900</b>	<b>8,000</b>	<10.0	<10.0	<10.0	2,050	<b>240</b>	<b>&lt;50.0</b>	<b>67</b>
<b>SB-2</b>	4/2/03	<b>8,900</b>	<b>13,000</b>	<b>3,100</b>	<b>14,600</b>	<20.0	<20.0	<b>200</b>	2,780	<b>460</b>	<b>110</b>	<b>240</b>
<b>SB-3</b>	4/2/03	<b>4,800</b>	<b>19,000</b>	<b>3,700</b>	<b>17,000</b>	<20.0	<20.0	<20.0	4,700	<b>450</b>	<100	<b>190</b>
<b>SB-4</b>	4/2/03	<b>2,100</b>	<b>9,000</b>	<b>3,100</b>	<b>15,000</b>	<10.0	<10.0	<10.0	6,000	<b>1,200</b>	<b>250</b>	<b>480</b>
<b>SB-5</b>	4/2/03	<b>7,200</b>	<b>23,000</b>	<b>3,800</b>	<b>17,200</b>	<20.0	<20.0	<20.0	4,360	<b>640</b>	<b>110</b>	<b>230</b>
<b>SB-6</b>	4/2/03	<b>6,200</b>	<b>17,000</b>	<b>3,700</b>	<b>18,400</b>	<20.0	<20.0	<20.0	4,330	<b>620</b>	<b>120</b>	<b>240</b>
<b>Domestic</b>	4/2/03	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<3.0	<5.0	<5.0

**BOLD-** Above NMWQCC Standards

Data checked DCS / KL

**TABLE 2**  
**Midway Grocery Site Investigation**  
**FEI #03-03-1232**  
**CURRENT SOIL ANALYSIS RESULTS**

			8015 GRO
LOCATION		DATE SAMPLED	FUEL HYDROCARBONS (C6-C14)
UNITS			mg/kg
NMED ACTION LEVEL			<b>100</b>
Crawford-1	3'	4/2/03	<5.0
Crawford-2	3'	4/2/03	<5.0
Crawford-3	3'	4/2/03	< 5.0
Crawford-4	3'	4/2/03	< 5.0
<b>SB-1</b>	4'	4/2/03	<b>18,000</b>
<b>SB-5</b>	4'	4/2/03	<b>27,000</b>

**BOLD** - Above Action Level

Data checked DCS / KL