

**1R - 1057**

**GENERAL  
CORRESPONDENCE**

**YEARS (S):  
2007 - 2005**

**VonGonten, Glenn, EMNRD**

---

**From:** James McGinty [James.Mcginty@Halliburton.com]  
**Sent:** Tuesday, September 04, 2007 9:02 AM  
**To:** VonGonten, Glenn, EMNRD  
**Cc:** Johnson, Larry, EMNRD; John Barry  
**Subject:** RE: Lovington, NM - Halliburton Site  
**Follow Up Flag:** Follow up  
**Flag Status:** Red

Any update?

Jim McGinty  
Environmental Project Manager  
Halliburton  
HSE - Environmental Management  
10200 Bellaire Blvd., 91-!NE-25H  
Houston, TX 77072-5206  
281/575-4428  
Fax 281/575-5710  
Cell 281/221-4809

-----Original Message-----

**From:** James McGinty  
**Sent:** Monday, August 06, 2007 4:31 PM  
**To:** VonGonten, Glenn, EMNRD  
**Cc:** 'Johnson, Larry, EMNRD'; 'John Barry'  
**Subject:** Lovington, NM - Halliburton Site

Glenn,

Can you give me an update on your review of our report and request submitted on May 11, 2007?

Jim McGinty  
Environmental Project Manager  
Halliburton  
HSE - Environmental Management  
10200 Bellaire Blvd., 91-!NE-25H  
Houston, TX 77072-5206  
281/575-4428  
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1/23/2008

**VonGonten, Glenn, EMNRD**

---

**From:** James McGinty [James.Mcginty@Halliburton.com]  
**Sent:** Wednesday, May 02, 2007 3:13 PM  
**To:** Johnson, Larry, EMNRD; VonGonten, Glenn, EMNRD  
**Cc:** John Barry  
**Subject:** RE: Former Halliburton/Baroid Facility - Lovington NM  
**Follow Up Flag:** Follow up  
**Flag Status:** Red

Halliburton has completed the new monitoring well and sampled all of the wells onsite. We expect to submit the letter report by May 11, 2007.

Glenn,

What is the status of your review of our risk assessment?

Also, James Hodges has left Delta. John Barry has replaced James as project manager.

Jim McGinty  
 Environmental Project Manager  
 Halliburton  
 HSE - Environmental Management  
 10200 Bellaire Blvd., 91-!NE-25H  
 Houston, TX 77072-5206  
 281/575-4428  
 Fax 281/575-5710  
 Cell 281/221-4809

-----Original Message-----

**From:** Johnson, Larry, EMNRD [mailto:larry.johnson@state.nm.us]  
**Sent:** Wednesday, May 02, 2007 4:05 PM  
**To:** James Hodges; VonGonten, Glenn, EMNRD  
**Cc:** James McGinty  
**Subject:** RE: Former Halliburton/Baroid Facility - Lovington NM

James,  
 Please advise the status of this project.  
 Thanks,  
 Larry

---

**From:** James Hodges [mailto:JHodges@deltaenv.com]  
**Sent:** Thursday, March 15, 2007 10:07 AM  
**To:** Johnson, Larry, EMNRD; VonGonten, Glenn, EMNRD  
**Cc:** James McGinty  
**Subject:** Former Halliburton/Baroid Facility - Lovington NM

Gentlemen,

On March 20, 2007, Delta Consultants, on behalf of Halliburton Energy Services, plans on installing the monitor well that was requested by the NMOCD at the Halliburton/Baroid site located at 401 East Avenue R, Lovington NM.

Thank you for you attention in this matter. If you have any questions or comments, please call me on my cellular phone at 713-542-8913.

Regards,

James Hodges  
DELTA CONSULTANTS  
Direct Dial No. (713) 353-2394  
Toll Free: 800-477-7411  
Email Address: [jhodges@deltaenv.com](mailto:jhodges@deltaenv.com)  
[www.deltaenv.com](http://www.deltaenv.com)

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**VonGonten, Glenn, EMNRD**

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**Cc:** James McGinty  
**Subject:** RE: Former Halliburton/Baroid Facility - Lovington NM  
**Follow Up Flag:** Follow up  
**Flag Status:** Red

James,  
Please advise the status of this project.  
Thanks,  
Larry

---

**From:** James Hodges [mailto:JHodges@deltaenv.com]  
**Sent:** Thursday, March 15, 2007 10:07 AM  
**To:** Johnson, Larry, EMNRD; VonGonten, Glenn, EMNRD  
**Cc:** James McGinty  
**Subject:** Former Halliburton/Baroid Facility - Lovington NM

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Regards,

James Hodges  
DELTA CONSULTANTS  
Direct Dial No. (713) 353-2394  
Toll Free: 800-477-7411  
Email Address: [jhodges@deltaenv.com](mailto:jhodges@deltaenv.com)  
[www.deltaenv.com](http://www.deltaenv.com)

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**VonGonten, Glenn, EMNRD**

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**To:** Johnson, Larry, EMNRD; VonGonten, Glenn, EMNRD  
**Cc:** James McGinty  
**Subject:** Former Halliburton/Baroid Facility - Lovington NM  
**Follow Up Flag:** Follow up  
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Regards,

James Hodges  
DELTA CONSULTANTS  
Direct Dial No. (713) 353-2394  
Toll Free: 800-477-7411  
Email Address: [jhodges@deltaenv.com](mailto:jhodges@deltaenv.com)  
[www.deltaenv.com](http://www.deltaenv.com)

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**VonGonten, Glenn, EMNRD**

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**From:** James Hodges [JHodges@deltaenv.com]  
**Sent:** Friday, March 09, 2007 2:21 PM  
**To:** Johnson, Larry, EMNRD; VonGonten, Glenn, EMNRD  
**Subject:** Change in Drilling Date - Former Halliburton/Baroid facility - Lovington NM  
**Follow Up Flag:** Follow up  
**Flag Status:** Red

Gentlemen,

In regards, to the proposed monitor well installation, we will not be able to install the well on March 12, 2007, as originally planned. Site access issues with the adjacent landowner have not been finalized at this time. We anticipate finalizing these issues in the next few days, depending on the availability of the adjacent landowner.

Thank you for your attention in this matter. We will again comply with the 48 hour notice to the NMOCD once a new schedule is arranged.

Regards,

James Hodges  
DELTA CONSULTANTS  
Direct Dial No. (713) 353-2394  
Toll Free: 800-477-7411  
Email Address: [jhodges@deltaenv.com](mailto:jhodges@deltaenv.com)  
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**VonGonten, Glenn, EMNRD**

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**From:** Price, Wayne, EMNRD  
**Sent:** Thursday, August 10, 2006 12:48 PM  
**To:** VonGonten, Glenn, EMNRD  
**Subject:** FW: Howco-Baroid Site Lovington, NM  
**Attachments:** @

---

**From:** Johnson, Larry, EMNRD  
**Sent:** Friday, August 04, 2006 4:33 PM  
**To:** James.McGinty@Halliburton.com  
**Cc:** Williams, Chris, EMNRD; Price, Wayne, EMNRD; Caperton, Patricia, EMNRD  
**Subject:** Howco-Baroid Site Lovington, NM

<<  
Howco-Baroid Denial 8-2-06.doc (63.6KB)  
(63.6KB)  
>>



**VonGonten, Glenn, EMNRD**

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**From:** James McGinty [James.Mcginty@Halliburton.com]  
**Sent:** Monday, August 06, 2007 3:31 PM  
**To:** VonGonten, Glenn, EMNRD  
**Cc:** Johnson, Larry, EMNRD; John Barry  
**Subject:** Lovington, NM - Halliburton Site  
**Follow Up Flag:** Follow up  
**Flag Status:** Red

Glenn,

Can you give me an update on your review of our report and request submitted on May 11, 2007?

Jim McGinty  
Environmental Project Manager  
Halliburton  
HSE - Environmental Management  
10200 Bellaire Blvd., 91-!NE-25H  
Houston, TX 77072-5206  
281/575-4428  
Fax 281/575-5710  
Cell 281/221-4809

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**VonGonten, Glenn, EMNRD**

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**From:** Price, Wayne, EMNRD  
**Sent:** Monday, July 31, 2006 1:22 PM  
**To:** Johnson, Larry, EMNRD  
**Cc:** VonGonten, Glenn, EMNRD  
**Subject:** Lovington Halliburton-Bariod site

Dear Larry:

Would you take the lead on this site. I understand they have installed monitors well all in line with each other. We will need a well that is off gradient to determine the actual groundwater gradient.



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**

Cabinet Secretary

**Mark E. Fesmire, P.E.**

Director

**Oil Conservation Division**

August 2, 2006

Mr. James McGinty      [James.McGinty@Halliburton.com](mailto:James.McGinty@Halliburton.com)  
Halliburton Energy Services

RE:      Halliburton-Baroid Site Closure  
         **Revised Closure Proposal Dated June 5, 2006**

Dear Mr. McGinty,

The New Mexico Oil Conservation Division (OCD) has reviewed the revised proposal submitted for the above referenced site by Delta Environmental Consultants, Inc. (DECI).

OCD rejects the DECI submittal. The following is required:

1. The ground water gradient must be defined with a monitor well that is at least 250' to the east or west of the existing monitor wells to establish a triangulation to determine true gradient.
2. Once the gradient is established and meets approval of OCD, additional monitor wells will be required.
3. All wells will be tested and reported quarterly until regulatory compliance is achieved.

Halliburton is to submit to OCD a revised plan for approval by October 2, 2006.

If you have any questions, please contact me at 505-393-6161 x 111 or e-mail [lwjohnson@state.nm.us](mailto:lwjohnson@state.nm.us)

Sincerely,

Larry Johnson - Environmental Engineer

Cc:      Chris Williams - District I Supervisor  
         Wayne Price – Environmental Bureau Chief  
         Glenn Von Gonten - Environmental Hydrologist  
         Patricia Caperton – Environmental Tech

**VonGonten, Glenn, EMNRD**

---

**From:** VonGonten, Glenn, EMNRD  
**Sent:** Friday, May 12, 2006 8:50 AM  
**To:** Price, Wayne, EMNRD  
**Subject:** FW: Lovinton, NM Halliburton/ Baroid Facility

Wayne,

FYI. I remember talking with Larry about this site. It looks like the original plan had a contingency in it and Halliburton is now balking. Should we call in RP/AP?

Glenn

---

**From:** James McGinty [mailto:James.Mcginty@Halliburton.com]  
**Sent:** Thursday, May 11, 2006 10:11 AM  
**To:** Johnson, Larry, EMNRD  
**Cc:** Williams, Chris, EMNRD; VonGonten, Glenn, EMNRD; Martin, Ed, EMNRD; Sheeley, Paul, EMNRD  
**Subject:** RE: Lovinton, NM Halliburton/ Baroid Facility

Larry,

We are working on a new work plan but I will need a formal request.

Jim McGinty  
 Environmental Project Manager  
 Halliburton  
 HSE - Environmental Management  
 P. O. Box 42810  
 Houston, TX 77242-3021 (Mail)  
 10200 Bellaire  
 Houston, TX 77072  
 281/575-4428  
 Fax 281/575-5710  
 Cell 281/221-4809

-----Original Message-----

**From:** Johnson, Larry, EMNRD [mailto:larry.johnson@state.nm.us]  
**Sent:** Friday, April 07, 2006 5:25 PM  
**To:** James McGinty  
**Cc:** Williams, Chris, EMNRD; VonGonten, Glenn, EMNRD; Martin, Ed, EMNRD; Sheeley, Paul, EMNRD  
**Subject:** RE: Lovinton, NM Halliburton/ Baroid Facility

Jim,  
 If needed. The initial approved plan was to add additional wells if any potential contamination was found. The south well indicated contamination. Reviewing the information submitted and discussion with OCD (Santa Fe) hydrologist Glenn Von Gonten and environmental engineer Ed Martin, the consensus was to install at least one triangular out step well to determine true water gradient and then add more down gradient wells. The initial intent for the three wells was to establish a true gradient by triangulation. This concept was apparently not understood or perhaps lost somewhere as the wells were drilled in a practically straight line. OCD was not notified prior to the drilling nor the subsequent testing.  
 Larry

---

**From:** James McGinty [mailto:James.Mcginty@Halliburton.com]

1/23/2008

**Sent:** Fri 4/7/2006 3:09 PM  
**To:** Johnson, Larry, EMNRD  
**Cc:** Kristin Ruff  
**Subject:** Lovinton, NM Halliburton/ Baroid Facility

Larry,

We were cut off from our telephone call several weeks ago. I have called and left a message for you. Can Halliburton expect a formal request from you on any additional wells needed?

Jim McGinty  
Environmental Project Manager  
Halliburton  
HSE - Environmental Management  
P. O. Box 42810  
Houston, TX 77242-3021 (Mail)  
10200 Bellaire  
Houston, TX 77072  
281/575-4428  
Fax 281/575-5710  
Cell 281/221-4809

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1R1057



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[www.deltaenv.com](http://www.deltaenv.com)

2833 Trinity Square  
Suite 149  
Carrollton, Texas 75006 USA  
972.416.7171 800.477.7411  
Fax 972.416.7175

April 8, 2005

Mr. Larry Johnson  
New Mexico Oil Conservation Division  
1625 N. French  
Hobbs, New Mexico 88240

Subject: **Additional C-144 Form and Revised Pit and Below-Grade Tank Closure Workplan Addendum**  
Halliburton/Baroid Mud Plant  
401 East Avenue R  
Lovington, Lea County, New Mexico

Dear Mr. Johnson:

Delta Environmental Consultants, Inc. (Delta) has prepared the attached documents for continued assessment work at the site referenced above. Based on our conversation on Friday, April 1, 2005, you requested that an additional C-144 form be submitted for the pit closure, to separate it from the below-grade tank closure. The ranking score on the C-144 form has been modified to 20 points based on new average depth to groundwater information obtained from the State's Engineer's office. Halliburton is aware that the ranking score may be changed at a later time when additional site data is available; however, site cleanup levels established by the ranking score will no longer be applicable at this site when the risk evaluation is conducted. The risk evaluation will either 1) prove that contaminant concentrations remaining on-site after excavation activities are protective of human health and the environment, or 2) establish site-specific cleanup levels for further remediation.

Also, as requested, the attached *Pit and Below-Grade Tank Closure Workplan Addendum* has been modified. The locations of the proposed monitor wells in both the pit and former mud plant have been moved to the center of the source areas. It is Halliburton's intent to use all historical data and the data collected from the monitor wells to conduct a risk evaluation at the site.

We appreciate your prompt review of the additional C-144 form and revised workplan addendum. Please contact me directly at (972) 548-7760, if you have any questions concerning the site.

Sincerely,

**DELTA ENVIRONMENTAL CONSULTANTS, INC.**

A handwritten signature in black ink, appearing to read "Kristin L. Ruff". The signature is fluid and cursive, with the first name "Kristin" being more prominent than the last name "Ruff".

Kristin L. Ruff  
Project Manager

KLR/

cc/att: James McGinty – Halliburton Energy Services, Inc.  
Pat Wise – City of Lovington

*A Member of:*



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-144  
March 12, 2004

For drilling and production facilities, submit to appropriate NMOCD District Office.  
For downstream facilities, submit to Santa Fe office

**Pit or Below-Grade Tank Registration or Closure**

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☒

Type of action: Registration of a pit or below-grade tank ☐ Closure of a pit AND below-grade tank ☒

Operator: Halliburton Energy Services Contact Name: James McGinty Telephone: 281-575-4428 e-mail address: james.mcginity@halliburton.com  
Address: 401 East Avenue R, Lovington, New Mexico  
Facility or well name: Halliburton/Baroid Mud Plant API #: Unknown U/L or Qtr/Qtr SE1/4, SW1/4 Sec 10 T16S R36E  
County: Lea Latitude N 32 degree, 55.836' Longitude W 103 degree, 20.679' NAD: 1927 ☐ 1983 ☒ Surface Owner Federal ☐ State ☐ Private ☒ Indian ☐

**Pit**

Type: Drilling ☐ Production ☐ Disposal ☒

Workover ☐ Emergency ☐

Lined ☐ Unlined ☒

Liner type: Synthetic ☐ Thickness \_\_\_\_\_ mil Clay ☐ N/A

Volume: Unknown bbl

**Below-grade tank**

Volume: \_\_\_\_\_ bbl Type of fluid: \_\_\_\_\_

Construction material: \_\_\_\_\_

Double-walled, with leak detection? Yes ☐ If not, explain why not.

Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.) Estimated at 40 feet

Less than 50 feet	(20 points)
50 feet or more, but less than 100 feet	(10 points)
100 feet or more	(0 points)

Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)

Yes	(20 points)
No	(0 points)

Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)  
Drainage ditch is present approximately 400 feet north of the pit, however there was no surface contamination in the pit area where impacted surface soil would come in contact with surface water runoff and impact the ditch

Less than 200 feet	(20 points)
200 feet or more, but less than 1000 feet	(10 points)
1000 feet or more	(0 points)

**Ranking Score (Total Points)** 20 points

**If this is a pit closure:** (1) attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location:

onsite ☐ offsite ☒ If offsite, name of facility: Sundance Services, Eunice, NM. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☒ Yes ☐ If yes, show depth below ground surface N/A ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.

Date: 4/8/05

Printed Name/Title James McGinty, Senior Environmental Specialist

Signature James McGinty

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations

Approval:

Date \_\_\_\_\_

Printed Name/Title \_\_\_\_\_ Signature \_\_\_\_\_

*New Mexico Office of the State Engineer*  
**Well Reports and Downloads**

---

Township:  Range:  Sections:

NAD27 X:  Y:  Zone:  Search Radius:

County:  Basin:  Number:  Suffix:

Owner Name: (First)  (Last)  ☒ Non-Domestic  
☐ Domestic ☒ All

---

**AVERAGE DEPTH OF WATER REPORT 04/05/2005**

Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	(Depth Water in Feet)		
								Min	Max	Avg
L	16S	36E	10				28	47	90	64

Record Count: 28



**Pit and Below-Grade Tank Closure Workplan Addendum**  
**Halliburton/Baroid Mud Plant**  
**401 East Avenue R**  
**Lovington, Lea County, New Mexico**

This workplan is intended to outline the procedures to be followed in order to close a pit and one below-grade mud tank at the site referenced above. The workplan addendum follows pit and below-grade tank closure guidelines outlined in the New Mexico Oil Conservation Division's (OCD's) *Pit and Below-Grade Tank Guidelines* dated November 2004. This workplan includes a variance request from the original *Pit and Below-Grade Tank Closure Workplan* dated June 1, 2004. This workplan is intended to collect the remaining data requested by Mr. Larry Johnson of the NMOCD that will be necessary to conduct a risk evaluation of the site.

**SITE HISTORY**

The site is a former mud plant operated by Baroid, now owned by Halliburton Company. The mud plant has been inactive for approximately 20 years; however, the warehouse area of the site is currently in use. Recent site demolition activities indicated several potential areas of concern (AOCs) on the mud plant portion of the property to the north of the warehouse. These include, but are not limited to: an unlined pit on the north side of the property, the former mud tank containment area with one former below grade tank, several areas where impacted surface soil was observed, and the former debris pile area on the north end of the property.

In April 2004, the contents of the mud tanks were removed, the mud tank containment area was razed, the tanks and debris from the site were removed, and some soil excavation (surface soil and the soil in the mud tank containment area) occurred. One sludge sample from the mud plant and one soil sample from the pit area were collected during the field activities. The sludge sample contained 6,820 milligrams per kilogram (mg/kg) total petroleum hydrocarbons (TPH) by EPA Method 418.1, and the sample from the pit area contained 24,200 mg/kg TPH. TCLP semi-volatile organic compounds (SVOCs) and TCLP RCRA Metals were below laboratory detection limits. TCLP volatile organic compounds (VOCs) were either below laboratory detection limits or below the Environmental Protection Agency's (EPA's) limit for each compound. Copies of the laboratory analytical reports are attached. The sludge and soil were removed and transported for off-site disposal at Sundance Services in Eunice, New Mexico. Excavation was not completed in the pit area at that time.

In July 2004, eight soil borings were advanced in the areas of concern. Soil sample results indicated impact near the former mud tank containment area and near the pit. Approximately 2,800 cubic yards of soil were removed from the pit area. Soil confirmation results indicated total petroleum hydrocarbons – diesel range organics (TPH-D) concentrations ranged from <5 milligrams per kilogram (mg/kg) to 13,000 mg/kg. Six of the eight soil confirmation samples exceeded the NMOCD action level of 1,000 mg/kg.

In September 2004, an estimated 3,000 cubic yards of soil were removed from the pit and former mud plant areas. Soil confirmation results indicate only one sample collected from the north wall of the mud plant excavation exceeded 1,000 mg/kg TPH-D. The samples with the two highest TPH-D results were also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), polynuclear aromatic hydrocarbons (PAH), and TCLP metals. All results were below laboratory detection limits or State standards.

### **SCOPE OF WORK**

The following tasks are proposed to close out the pit and below-grade tank areas. The scope of work is intended to aid in conducting a risk evaluation of the site.

#### **Backfill the Excavations**

Impacted soil above 1000 mg/kg TPH still remains at the site; however, analytical data from the most highly impacted soil remaining in place, indicated that BTEX and PAH were below laboratory detection limits. In addition, TCLP RCRA metals data indicates that these metals do not pose a risk for leaching to groundwater. Since there is no apparent risk from residual contaminant concentrations, Halliburton formally requests permission to backfill the excavations. Verbal approval to backfill the excavations was granted by Mr. Larry Johnson on November 5, 2004. Backfilling the excavations will allow access to these areas for monitor well installations (see below).

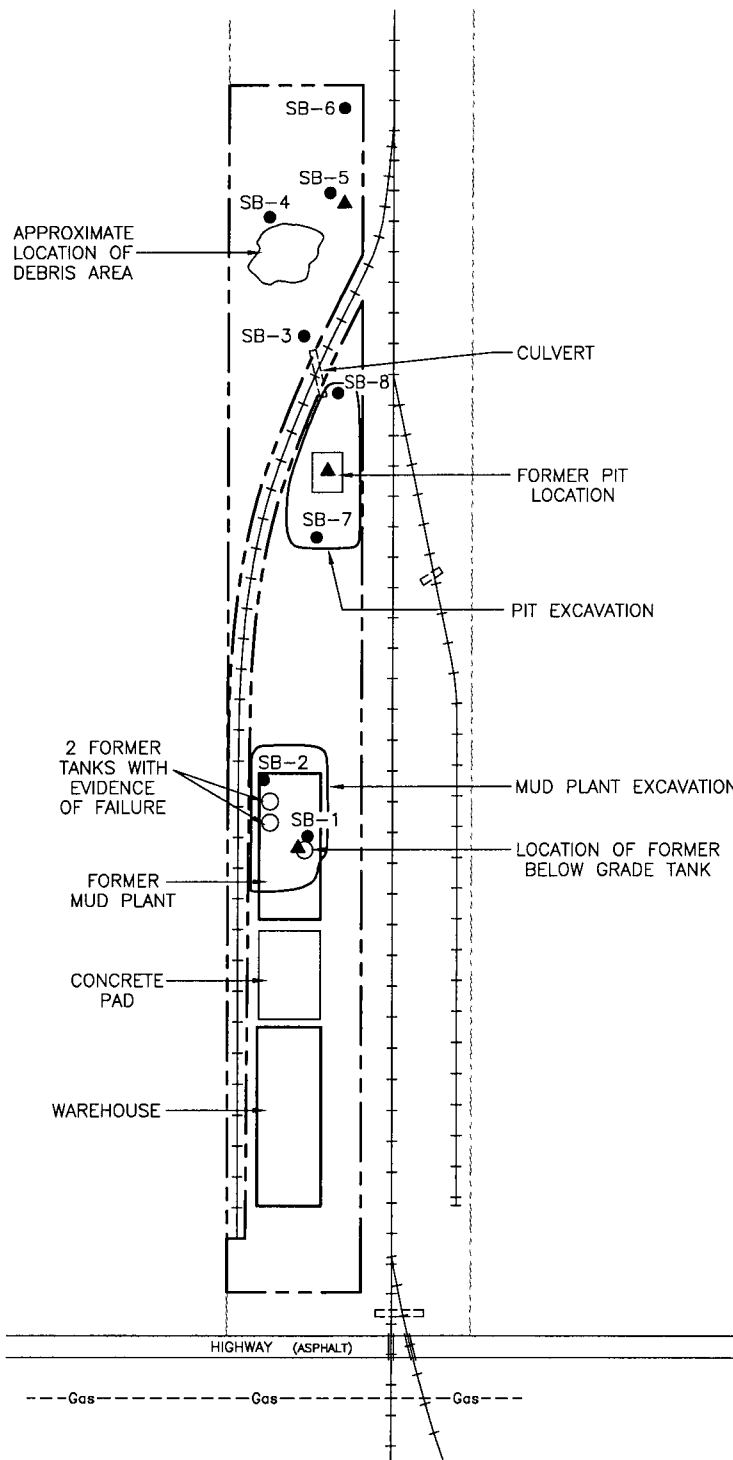
#### **Monitor Well Installations**

After backfilling the excavations, three monitor wells will be advanced adjacent to the areas of concern (AOCs). Proposed monitor well locations are shown on Figure 1. One monitor well will be advanced in the location of the former below-grade tank in the former mud plant area. One monitor well will be advanced directly in the center of the former pit area. One monitor well will be advanced in the assumed down-gradient direction on the north side of the property. Soil samples will not be collected since previous assessment data indicates the extent of soil impact has been defined.

According to the New Mexico's Engineers office, the average depth to groundwater in Lea County is 64 feet. This depth is >50 feet below the bottom of the excavations. Each monitor well will be 2-inch in diameter, will be constructed in compliance with OCD guidelines, and will be screened across the water table and completed flush with the existing ground surface.

The north-side top-of-casing elevations will be surveyed relative to an arbitrary benchmark. Depth to ground water measurements will be collected using a product/water interface probe. Each well will be developed by surging and bailing with a dedicated disposable bailer until all fines are removed and pH and specific conductance have stabilized. Purged water will be stored in 55-gallon drums pending disposal characterization. Ground water samples will be collected from each monitor well according to OCD protocol and submitted for analysis of TPH – gasoline range organics (TPH-G), TPH-D and TPH-oil range organics (TPH-O) by EPA Method 8015M and BTEX by EPA Method 8021B. The sample with the highest TPH results will also be analyzed for PAH by EPA Method 8270 and RCRA Metals.

A report summarizing the results of the ground water sampling will be prepared. The report will focus on evaluating the risk to remaining chemicals of concern (COCs) at the site compared to the OCD's cleanup levels, the New Mexico Water Quality Control Commission (WQCC) standards, and EPA's and/or New Mexico Environmental Department's (NMED's) risk guidelines to determine the next appropriate course of action. The report will include: a summary of past work conducted during demolition activities; maps showing the location of the site including existing and former structures, the excavation areas, and sampling points; soil boring/monitor well installation diagrams; soil and ground water tables; site photographs; and a risk evaluation of the data. A report will be submitted to the OCD approximately eight weeks after completion of the monitor well installations.



# LEGEND

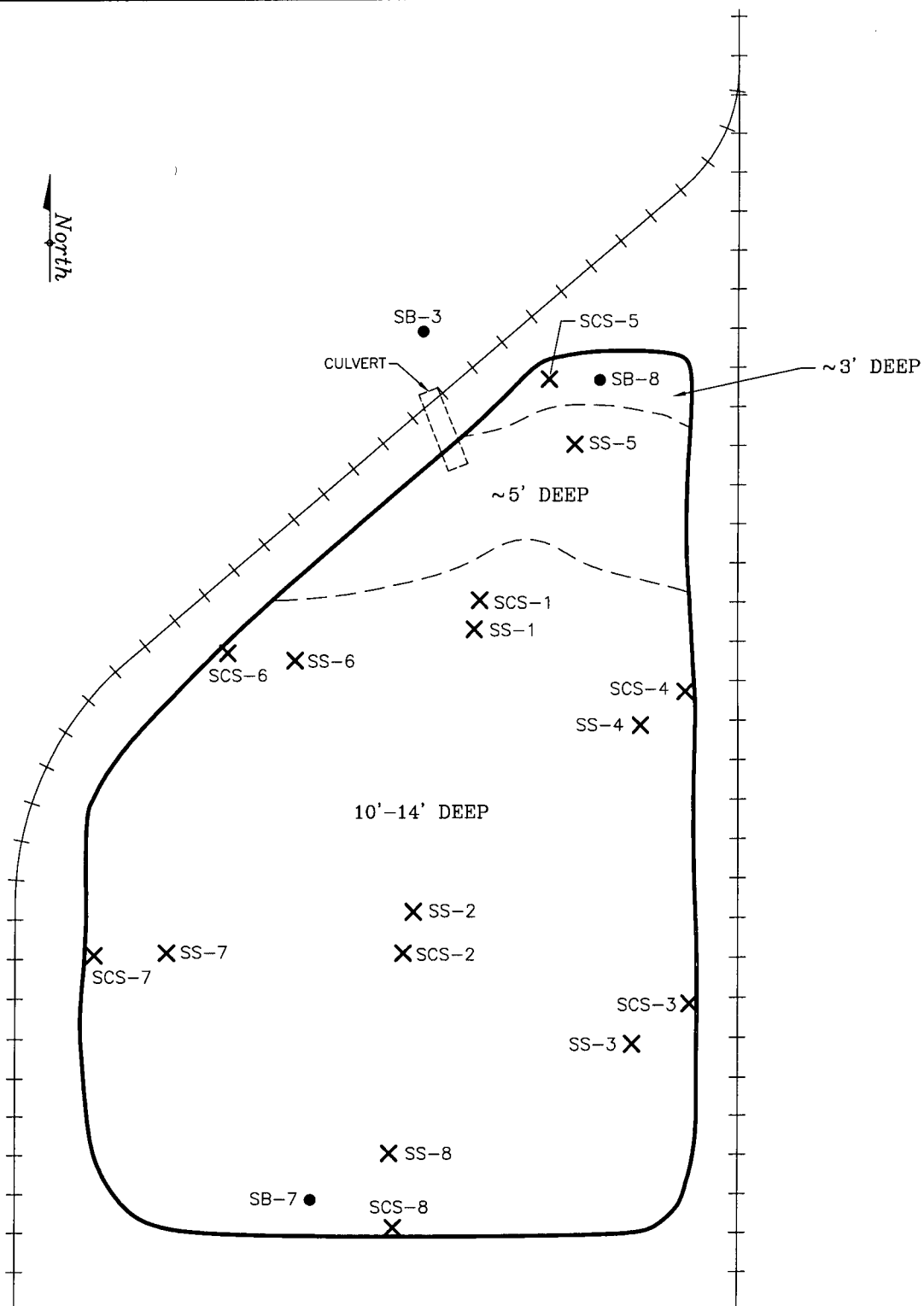
- ▲ PROPOSED MONITOR WELL LOCATION
- SOIL BORING LOCATION
- PROPERTY BOUNDARY
- RAILROAD SPUR
- Gas--- GAS LINE

0 150  
SCALE IN FEET

**FIGURE 1**  
**SITE MAP**  
**HALLIBURTON/BAROID MUD PLANT**  
**LOVINGTON, NEW MEXICO**

PROJECT NO. F004-004	PREPARED BY KR	DRAWN BY DD
DATE 4/4/05	REVIEWED BY	FILE NAME F004-004





#### LEGEND

- SOIL BORING LOCATION
- X SOIL SAMPLE LOCATION
- + + + + RAILROAD SPUR

0 20  
SCALE IN FEET

**FIGURE 2**  
**PIT EXCAVATION MAP**  
**HALLIBURTON/BAROID MUD PLANT**  
**LOVINGTON, NEW MEXICO**

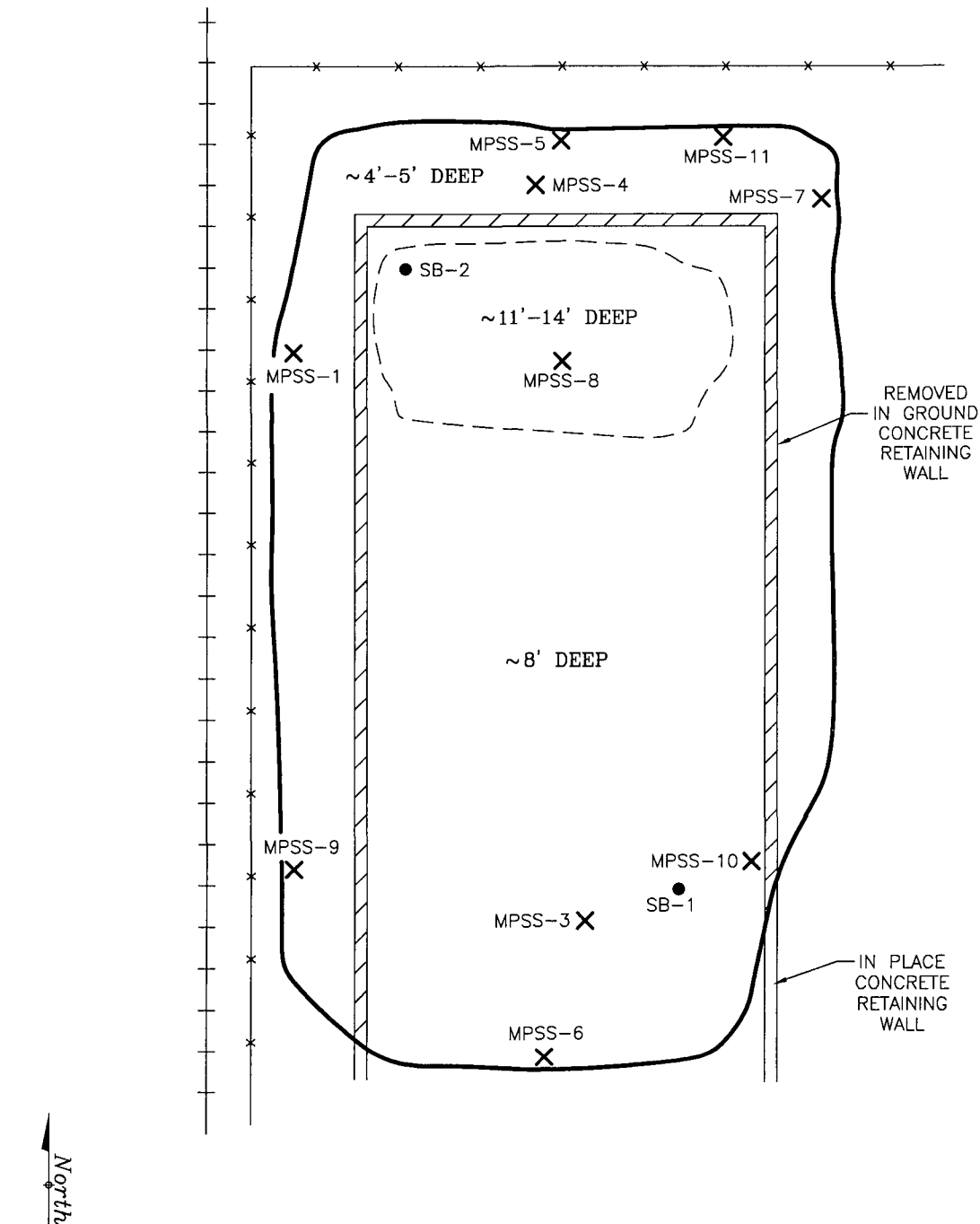
PROJECT NO.  
F004-004  
DATE  
11/16/04

PREPARED BY  
KR  
REVIEWED BY

DRAWN BY  
DD  
FILE NAME  
004-Fig2



**Delta**  
Environmental  
Consultants, Inc.



#### LEGEND

- SOIL BORING LOCATION
- X SOIL SAMPLE LOCATION
- + + + RAILROAD SPUR
- x - x - FENCE

**FIGURE 3**  
**MUD PLANT EXCAVATION MAP**  
**HALLIBURTON/BAROID MUD PLANT**  
**LOVINGTON, NEW MEXICO**

PROJECT NO.  
F004-004

PREPARED BY  
KR

DRAWN BY  
DD

DATE  
11/16/04

REVIEWED BY

FILE NAME  
004-Fig3



**Delta**  
 Environmental  
 Consultants, Inc.

TABLE 1  
SOIL LABORATORY ANALYTICAL RESULTS  
HALLIBURTON/BAROID MUD PLANT  
LOVINGTON, NEW MEXICO  
DELTA PROJECT NO. F004-004

SOIL BORINGS

Sample ID and Depth	Date Collected	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
SB-1 (9-10")	07/28/04	9.6	760	96	<20	520	<0.75	1.19	3.28	<0.2	2.2	<0.2
SB-1 (19-20')	07/28/04	10.7	53	110	NA	NA	NA	NA	NA	NA	NA	NA
SB-2 (3-4')	07/28/04	103	1500	1000	<20	1230	<0.75	5.14	22.6	<0.2	1.1	<0.2
SB-2 (19-20')	07/28/04	11	36	34	NA	NA	NA	NA	NA	NA	NA	NA
SB-3 (19-20')	07/28/04	10.6	9.8	18	<20	108	<0.75	3.74	1.24	<0.2	1.6	<0.2
SB-4 (19-20')	07/28/04	8.51	<5	27	<20	725	<0.75	7.29	3.1	<0.2	1.17	<0.2
SB-5 (19-20')	07/28/04	10.3	<5	15	<20	286	<0.75	1.82	1.35	<0.2	<1.0	<0.2
SB-6 (19-20')	07/28/04	9.01	<5	7.8	<20	184	<0.75	2.38	2.44	<0.2	1.16	<0.2
SB-7 (1-2')	07/28/04	236	1400	210	<20	1420	<0.75	42.5	32.2	<0.2	<1.0	<0.2
SB-7 (29-30')	07/28/04	8.84	<5	15	NA	NA	NA	NA	NA	NA	NA	NA
SB-8 (29-30')	07/29/04	9.99	<5	12	<20	24.4	<0.75	1.77	1.08	<0.2	<1.0	<0.2
<b>Excavation Target Level:</b>		<b>1000</b>	<b>1000</b>	<b>1000</b>								

Explanation:

All values are expressed in milligrams per kilogram (mg/kg)  
Non-defect results are expressed as less than the reporting limit  
TPH - total petroleum hydrocarbons  
GRO - gasoline range organics  
DRO - diesel range organics  
ORO - oil range organics

TABLE 1  
SOIL LABORATORY ANALYTICAL RESULTS  
HALLIBURTON/BAROID MUD PLANT  
LOVINGTON, NEW MEXICO  
DELTA PROJECT NO. F004-004

FORMER PIT AREA

Sample ID and Depth	Date Collected	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
SS-1	07/27/04	115	6800	500	NA	NA	NA	NA	NA	NA	NA	NA
SCS-1	09/16/04	<5	220	23	NA	NA	NA	NA	NA	NA	NA	NA
SS-2	07/27/04	246	13000	1000	2.42	814	<0.75	1.83	4.28	<0.2	1.2	<0.2
SCS-2	09/16/04	<5	67	10	1.13	54	<0.75	1.47	1.27	<0.2	<1.0	<0.2
SS-3	07/27/04	21.8	1200	400	NA	NA	NA	NA	NA	NA	NA	NA
SCS-3	09/16/04	<5	120	98	NA	NA	NA	NA	NA	NA	NA	NA
SS-4	07/27/04	70.2	3500	600	NA	NA	NA	NA	NA	NA	NA	NA
SCS-4	09/16/04	<5	110	21	NA	NA	NA	NA	NA	NA	NA	NA
SS-5	07/27/04	10.3	310	350	NA	NA	NA	NA	NA	NA	NA	NA
SCS-5	09/16/04	<5	5.4	<5	NA	NA	NA	NA	NA	NA	NA	NA
SS-6	07/27/04	9.42	<5	12	NA	NA	NA	NA	NA	NA	NA	NA
SCS-6	09/16/04	<5	8	5.9	NA	NA	NA	NA	NA	NA	NA	NA
SS-7	07/27/04	323	13000	1000	1.19	80.4	<0.75	3.53	3.65	<0.2	<1.0	<0.2
SCS-7	09/16/04	<5	340	50	NA	NA	NA	NA	NA	NA	NA	NA
SS-8	07/27/04	202	8500	1000	NA	NA	NA	NA	NA	NA	NA	NA
SCS-8	09/16/04	6.56	970	130	3.08	245	<0.75	1.26	1.17	<0.2	1.64	<0.2
Excavation/Target Level:		1000	1000	1000								

Sample ID and Depth	Date Collected	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	PAHs (mg/kg)	TCLP Metals (mg/L)
SCS-1	09/16/04	<0.025	<0.025	<0.025	<0.025	<0.1	<0.067	0.946 barium
Excavation/Target Level:		10				50		

Explanation:

All values are expressed in milligrams per kilogram (mg/kg) except for the TCLP metals analyses

Non-detect results are expressed as less than the reporting limit

TPH - total petroleum hydrocarbons by EPA Method 8015M

GRO - gasoline range organics

DRO - diesel range organics

ORO - oil range organics

Benzene, toluene, ethylbenzene, and total xylenes analysis by EPA Method 8021B

PAH - polynuclear aromatic hydrocarbons by EPA Method 8270C

Shaded data represents final samples collected after over excavation activities

TABLE 1  
SOIL LABORATORY ANALYTICAL RESULTS  
HALLIBURTON/BAROID MUD PLANT  
LOVINGTON, NEW MEXICO  
DELTA PROJECT NO. F004-004

FORMER MUD PLANT AREA

Sample ID and Depth	Date Collected	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
MPSS-1	09/16/04	<5	21	18	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-3	09/16/04	<5	530	60	4.08	143	<0.75	<1.0	<1.0	<0.2	2.54	<0.2
MPSS-4	09/17/04	<5	130	23	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-5	09/17/04	10.6	1200	220	<10	6.78	1.25	7.54	48.4	<0.2	<10	<0.2
MPSS-6	09/17/04	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-7	09/20/04	<5	11	8.7	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-8	09/20/04	<5	180	34	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-9	09/21/04	<5	520	<50	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-10	09/21/04	<5	61	29	NA	NA	NA	NA	NA	NA	NA	NA
MPSS-11	09/21/04	<5	23	5.6	NA	NA	NA	NA	NA	NA	NA	NA
Excavation Target Level:		1000	1000	1000								

Sample ID and Depth	Date Collected	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	PAHs (mg/kg)	TCLP Metals (mg/L)
MPSS-5	09/17/04	<0.025	<0.025	<0.025	<0.025	<0.1	<0.67	4.5 barium
Excavation Target Level:		10				50		

Explanation:

All values are expressed in milligrams per kilogram (mg/kg) except for the TCLP metals analyses  
Non-detect results are expressed as less than the reporting limit  
TPH - total petroleum hydrocarbons by EPA Method 8015M  
GRO - gasoline range organics  
DRO - diesel range organics  
ORO - oil range organics  
Benzene, toluene, ethylbenzene, and total xylenes analysis by EPA Method 8021B  
PAH - polynuclear aromatic hydrocarbons by EPA Method 8270C