



July 14, 2010
Project 993600-2-2001

Geotechnical
Environmental
Water Resources
Ecological

Mr. Leonardo Ceron
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 4
11th Floor/Superfund
61 Forsyth Street, SW
Atlanta, GA 30303

Re: Removal Action Work Plan Investigations
Summary Letter
Huntsville Gas Company Site
Huntsville, Madison County, Alabama
USEPA ID# ALN000407462
Docket Number 04-2010-3756

Dear Mr. Ceron:

On behalf of the Alabama Gas Corporation (ALAGASCO) and the Huntsville Housing Authority (HHA), GEI Consultants, Inc. (GEI) has prepared this letter to summarize investigations completed at the Huntsville former Manufactured Gas Plant (MGP), herein referenced as the "Site". The investigations were completed in accordance with the Removal Action Work Plan (RAWP) dated March 30, 2010, approved by the U.S. Environmental Protection Agency (EPA), Region 4 on April 22, 2010.

GEI summarized the completed tasks in the Monthly Status Report dated June 15, 2010. The completed tasks were:

- Electromagnetic (EM) and Ground Penetrating Radar (GPR) mapping for the old foundation elements and utilities at the Site;
- Collection of 5 sediment samples in the unnamed ditch;
- Collection of 3 sediment samples in Pinhook Creek;
- Installation and sampling of 4 temporary well points per the RAWP scope and an additional 3 piezometers to aid in groundwater flow characterization;
- Collection of 34 surface soil samples from 0-1.0 feet;
- Collection of 34 shallow subsurface soil samples from 1.0-4.0 feet;
- Collection and selected analysis of 8 subsurface soil samples from soils below 4 feet;
- Collection of 4 groundwater samples; and
- Partial excavation of 5 test pits identified through soil borings and geophysical survey.

This letter discusses the field observations made during the investigations and summarizes the preliminary laboratory analytical data for surface soil, shallow subsurface soil, subsurface soil, sediment, and groundwater. Based on the field observations and laboratory analytical results, GEI has developed a scope for additional investigations to complete the characterization of the Site for remediation. A revised project schedule is proposed for completion of the additional characterization and remediation.

1.0 Surface Soil and Shallow Subsurface Soil Investigation

Between May 11 and May 18, 2010, GEI completed a total of 40 soil borings across the Site. The approximate locations of the soil borings are presented in Figure 1 – Sample Locations Plan. GEI located the soil borings per Figure 5 of the RAWP with minor variations as necessary to avoid utilities and surface features. Two (2) additional soil boring locations HG-RES-28-2 and HG-RES-19-1 were added at the request of the On Scene Coordinator (OSC) to delineate impacts identified visually in the field in TWP-1 and HG-RES-15-1.

The soil borings were completed to delineate soil impacts identified during previous investigations of the surface soil (i.e., 0.0 to 1.0 feet) and shallow subsurface soil (i.e., 1.0 to 4.0 feet). GEI advanced the soil borings using either hand augers or by direct-push drilling methods. Direct-push drilling was completed by Technical Drilling Services, Inc., of Knoxville, Alabama, a licensed driller in Alabama. Table 1 – Soil Boring and Sample Summary lists each soil boring completed at the Site.

Two samples were collected from each soil boring proposed for delineation of surface soil and shallow subsurface soil; one (1) sample was collected from the 0.0 to 1.0 foot interval below ground surface (bgs) and one (1) sample was collected from the 1.0 to 4.0 foot interval. Soil borings HG-RES-41, HG-RES-42, and HG-RES-43 were completed to a depth of approximately 0.5 feet bgs. A total of 34 surface soil and 34 shallow subsurface soil samples were collected from the soil borings. The soil samples were analyzed per the RAWP for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) using EPA Method 8260B, Polynuclear Aromatic Hydrocarbons (PAHs) using EPA Method 8270C with Selected Ion Monitoring (SIM), and metals, including arsenic, lead, and mercury using EPA Method 6010/7470A.

The samples were analyzed by Analytical Environmental Services, Inc., of Atlanta, Georgia. Laboratory analytical results for the surface soil and shallow subsurface soil samples are presented in Table 2 (attached). Table 2 compares the results of the soil analysis to the Proposed Removal Goals (PRGs) developed for the Site. The PRGs were developed using exposure scenarios for both Residential Soil and Construction/Utility Soil. PRGs were developed based on a target Cancer Risk Level (CRL) of 1×10^{-4} for carcinogenic compounds. With the exception of arsenic, PRGs were conservatively developed based on a Hazard Quotient (HQ) of 1.0 for non-carcinogenic compounds. For non-carcinogenic risk associated with arsenic, the PRG was developed based on an HQ of 3.0 in accordance with USEPA Region 4 guidance presented in memoranda dated August 20, 2008 and September 19, 2008 regarding the review of the Removal Site Evaluation Report and Final Data for the Huntsville Gas Company Site. When PRGs were developed based on both carcinogenic and non-carcinogenic risk, the lower of the two PRG values is presented in Table 2.

Residential PRGs apply to the top 1 foot of surface soil at the Site while Construction/Utility PRGs apply to subsurface soil at a depth of 1 to 4 feet. Construction/Utility PRGs are based on the assumption that subsurface soil below 1 foot will continue to be subsurface soil in the future and that only an adult worker would be exposed to subsurface soil. Soil PRGs are based on direct contact with soil and include the following exposure routes: incidental ingestion, dermal contact, and inhalation of particulates. Residential PRGs are based on USEPA Regional Screening Levels (RSLs) (USEPA, 2010). USEPA RSLs were updated following submittal of the RAWP; therefore, PRGs presented in Table 2 are consistent with current USEPA RSLs (USEPA, 2010).

Construction/Utility PRGs are based on adult worker exposure to soil for 250 days for a 1-year construction project. Construction worker exposure assumptions are based on default values provided by the Alabama Department of Environmental Management (ADEM, 2008).

Comparison of the soil data to the PRGs shows that no volatile organic compounds were detected above the Residential PRG based on an HQ of 1.0 in soil samples collected in the surface and shallow subsurface zones. Concentrations of PAHs above the Residential PRGs based on cancer risk including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene were detected in 11 soil samples collected from the following surface soil sample locations: HG-RES-15-1-1, HG-RES-15-2-1, HG-RES-18-1-1, HG-RES-24-2-1, HG-RES-25-1-1, HG-RES-27-1-1, HG-RES-27-3-1, HG-RES-30-1-1, HG-RES-31-1-1, HG-RES-32-1-1, HG-Res-41-SW (collected at the base of the un-named ditch slope), and TWP-1-1. No organic compounds were detected above PRGs in shallow subsurface soil samples. Concentrations of compounds exceeding PRGs are presented on Figure 2 for each soil boring location.

No inorganic compounds were detected above Residential PRGs based on cancer risk in soil samples collected in the surface and shallow subsurface zones. Lead concentrations exceeded the Residential PRG of 400 milligrams per kilogram (mg/kg) in four samples HG-RES-18-1-1 (514 mg/kg), HG-RES-18-2-1 (487 mg/kg), HG-RES-27-3-1 (447 mg/kg). Concentrations of inorganic compounds exceeding PRGs are also presented on Figure 2 for each soil boring location.

2.0 Subsurface Soil Investigation

Per the RAWP, 10 soil borings were completed to refusal at the bedrock surface. These soil borings were intended to provide vertical delineation of any potential free and/or residual product. The soil borings advanced to refusal included HG-RES-05-2, HG-RES-15-1, HG-RES-19-1, HG-RES-24-1, HG-RES-24-2, HG-RES-25-1 (TWP-6), HG-RES-28-1, HG-RES-28-2, HG-RES-29-1 (TWP-2), HG-RES-30-1 (TWP-5), HG-RES-31-1, HG-RES-32-1 (TWP-3), TWP-1, and TWP-4. The depth of refusal in each of these soil borings ranged from a minimum of approximately 9.5 feet in HG-RES-24-1 to a maximum of approximately 36.0 feet in two soil borings HG-RES-05-2 and HG-RES-28-1. It should be noted that refusal encountered in HG-RES-24-1 was due to the large holder wall foundation and is not indicative of the bedrock surface. The bedrock surface ranged from approximately 20.5 to 36 feet bgs.

Indications of impacts to the subsurface soils including elevated readings with the photoionization detector (PID), coating and sheens on the soil grains and pore-space water, and odors were observed in all of the deeper soil borings with the exception of HG-RES-05-2, HG-RES-28-1, HG-RES-28-2, and TWP-4. The highest PID reading, 1,400 parts per million (ppm), or instrument units above background, was detected in soil boring HG-RES-29-1 (TWP-2) at a depth of approximately 19.5 feet bgs. Visual indications of the presence of Dense Non-Aqueous Phase Liquids (DNAPL) were also observed in HG-RES-29-1 (TWP-2) when the temporary well screen was removed and noted to be coated with a tar-like substance from the portion of the well screen corresponding to 35 feet to 28 feet bgs.

GEI collected subsurface soil samples from several of the soil borings. The RAWP did not call for any soil samples to be collected below 4.0 feet bgs. However, based on the visual observations, it was determined in consult with the EPA OSC that collection of deeper samples for vertical delineation would be prudent. The OSC was also concerned with establishing subsurface soil

background concentrations. It was decided that soil samples would be collected from the soil boring completed for the installation of temporary well point TWP-4.

A total of eight (8) subsurface soil samples were submitted for analysis. The subsurface soil samples were analyzed for the same parameters as the surface soil and shallow subsurface soils, BTEX, PAHs, and metals. The results of the laboratory analysis are presented in Table 3 (attached). No numerical standards for soils underlying 4.0 feet bgs have been established for the Site at this time. It should be noted that no organic compounds were detected in soil samples collected from TWP-4 at 9.5'-10.0' bgs and 20.0'-20.5' bgs. In addition, soil samples HG-RES-15-1-3 (12.0'-12.5') and HG-RES-32-1-3 (10.0'-10.5') provide data for vertical delineation of compounds exceeding PRGs in surface and shallow subsurface soil samples. Soil sample HG-RES-29-1-3 provides analytical data for soils collected from the soil interval with the highest PID reading at the Site.

3.0 Un-named Ditch and Pinhook Creek Sediment Investigation

The RAWP called for the collection of three (3) sediment samples in the un-named ditch (drainage swale) at locations HG-RES41, HG-RES-42, and HG-RES-43. GEI collected two (2) additional sediment samples in the un-named ditch, referenced as SED-4-SWALE and SED-5-SWALE. The OSC requested that these additional upstream sediment samples be collected; one in the area of the large holder and one upgradient near an observed out cropping of coal-like fill material located outside of the MGP footprint. GEI collected three (3) sediment samples in Pinhook Creek referenced as PC-SED-1, PC-SED-2, and PC-SED-3 per the RAWP. Sediment sample PC-SED-3 was collected upstream of the confluence of Pinhook Creek with the un-named ditch, PC-SED-2 was collected at the confluence of Pinhook Creek with the un-named ditch, and PC-SED-1 was collected downstream of the confluence of Pinhook Creek with the un-named ditch.

The sediment samples were analyzed for the same parameters as the soil samples, BTEX, PAHs, and metals. GEI evaluated the laboratory analytical results for the sediment samples collected in the un-named ditch differently than the sediment samples collected from Pinhook Creek. The un-named ditch is a man-made swale designed for stormwater drainage and has been observed to be intermittently dry. During storms, there is a high-energy flow regime which can cause substantial erosion. Based on this, the un-named ditch is not a viable ecological habitat in comparison to Pinhook Creek. The primary concern for sediment in the un-named ditch is residential exposure via direct contact. Therefore, the laboratory analytical results for the un-named ditch sediment samples are compared to the residential soil PRGs in Table 2. No concentrations of compounds exceeded the PRGs in sediment samples collected from the un-named ditch.

Table 4 (attached) compares the results of the Pinhook Creek sediment analysis to the EPA Region 4 sediment screening values. No compounds detected in sediment exceeded established screening values, with the exception of arsenic and lead. Arsenic exceeded the effects value and screening value of 7.24 mg/kg in all of the sediment samples. Lead exceeded the effects value and screening value of 30.2 in only one sediment sample (PC-SED-1). All of the sediment samples had detected concentrations of BTEX and PAH compounds.

4.0 Groundwater Investigation

GEI completed a groundwater investigation at the Site through installation and monitoring of temporary well points and piezometers. Four (4) temporary well points, referenced as TWP-1 through TWP-4 were proposed to be installed per the RAWP. Temporary well points were installed per the RAWP at the TWP-1 and TWP-4 locations. The proposed TWP-2 location was installed within soil boring HG-RES-29-1 and the proposed TWP-3 location was installed within soil boring HG-RES-32-1. Two additional well points were installed as piezometers to augment data points for a better determination of groundwater flow; TWP-5 was installed in soil boring HG-RES-30-1 and TWP-6 was installed in soil boring HG-RES-25-1.

The piezometers were screened from refusal (assumed bedrock surface) which ranged from approximately 20.5 to 36 feet below grade to approximately 5 feet below grade. Based on depth-to-water measurements, it was determined that a confined aquifer is present immediately overlying the bedrock underlying the site. The confining layer consists of clayey soils present from approximately 15 to 20 feet below grade. A water table aquifer is also present underlying the site. A piezometer was installed approximately 30 feet to the southwest of HG-RES-29-1 (TWP-2) to an approximate depth of 10 feet below grade. A head differential of approximately 2 feet was observed between the wells screened to the bedrock surface and the piezometer. Groundwater in the confined aquifer was determined to flow to the west/southwest from TWP-4 to the swale and Pinhook Creek at an approximate gradient of 0.025 ft./ft.

Groundwater samples were collected from temporary well points TWP-1 through TWP-4. The samples were analyzed for BTEX, PAHs, and metals. The results of the laboratory analysis are presented in Table 5 (attached). Dissolved-phase concentrations of BTEX and PAHs were detected in all of the wells. In temporary well TWP-4, benzene and toluene were detected at concentrations below the EPA drinking water standards. In the remaining temporary wells points, higher dissolved-phase concentrations were detected; with the maximum concentrations detected in temporary well point TWP-2.

The concentrations detected in the temporary well points are most-likely artificially high. However, the data does indicate that there is a dissolved-phase plume present in the confined aquifer immediately overlying the bedrock and possibly impacts to the overlying water table aquifer.

5.0 Structure Investigation

GEI completed contingency task 1 (Section 4.7 of the RAWP) on May 19 and 20 with no impact to the overall initial schedule. Five (5) test pits were excavated at the site (see Figure 1). GEI located the test pits based on the preliminary GPR survey and test boring data. Soil boring HG-RES-24-1 was located in the area of the large holder. Refusal was encountered at 9.5 feet in HG-RES-24-1, which indicated the presence of the holder in that location. The preliminary GPR report also showed the possible holder location near HG-RES-24-1. Test Pit TP-1 was excavated between the possible holder wall as delineated from the GPR preliminary report and soil boring HG-RES-24-1.

The large holder wall was identified and exposed in test pit TP-1, with the test pit located on the exterior of the holder. No indications of impacts to the soils were observed in TP-1. It was determined that soil boring HG-RES-24-1 was advanced directly adjacent to the holder wall and

that refusal was encountered on the holder foundation at 9.5 feet below grade. Test pit TP-2 was then excavated in the interior of the large holder from the identified wall extending 10 feet into the interior of the large holder. The test pit extended to a maximum depth of approximately 10 feet below grade. No base for the holder was encountered at this depth. No impacts were observed within the interior of the large holder.

GEI could not excavate additional test pits within the holder due to the presence of utilities and surface features. We estimated the location of the footprint of the large holder based on the exposed wall. The location closely matches the estimated location plotted in Figure 3 of the RAWP, which was based on the Sanborn fire insurance maps. The approximate location of the large holder is presented in Figure 1.

The approximate location of the small holder was estimated based on the identified large holder wall and the preliminary GPR report. GEI excavated test pit TP-3 to locate the small holder wall. The wall was identified approximately 1.5 feet below grade. The test pit exposed the interior of the small holder which was observed to be filled with demolition debris. Naphthalene-like odors and tarry soils were encountered at an approximate depth of 4 feet below grade. Due to the observed impacts, GEI terminated the soil boring at approximately 5 feet for health and safety purposes. Impacted soil spoils were returned to the excavation and covered with un-impacted soils. A second test pit, TP-4 was excavated to verify the location of small holder wall approximately on the opposite side of the holder wall identified in test pit TP-3. The wall was exposed and the location of the center of the small holder was more accurately determined.

GEI excavated test pit TP-5 to identify the western boundary of the coal shed on the western part of the Site. The test pit extended to an approximate depth 9 feet below grade. No intact elements of the coal shed were identified in the test pit. Demolition debris, presumably from the coal shed was exposed including brick wall sections and floor slab, intermixed with coal-like material and soil.

6.0 Summary and Conclusions

The following summary is based on the preliminary field and laboratory data collected per the approved RAWP:

- Concentrations of PAHs exceeding the established Residential PRGs for the Site were detected in 14 of the 34 surface soil samples. No BTEX or metals compounds were detected in concentrations exceeding the Residential PRGs in any of the samples. No exceedances of the Construction/Utility PRGs were detected in and of the shallow subsurface soil samples.
- Soil impacts are present in surface and subsurface soils. These impacts appear to be confined to the area of the MGP operations, particularly the holders and purifier house. Tar-like material, staining and sheens related to the MGP operation are present in the underlying unconsolidated aquifer. The presence of these materials has not been completely delineated vertically or horizontally.
- The small and large holders have been identified and are present at the Site. Impacts were observed in the soils contained in the small holder. No impacts were observed in the soil in the interior of the large holder.

- Dissolved-phase impacts are likely present in the groundwater underlying the Site
- Arsenic and lead were the only two compounds to exceed the EPA Region 4 sediment effects values and screening values in the sediment samples collected from Pinhook Creek. Concentrations of BTEX and PAHs were detected in all of the sediment samples collected from Pinhook Creek at concentrations below EPA Region 4 sediment effects values and screening values. The presence of these compounds at relatively consistent concentrations in both the upgradient and downgradient samples may represent background concentrations in the area, but suggest that compounds are coming from an off-site source. Based on this data, additional ecological assessment of the Pinhook Creek is not warranted at this time. GEI recommends collecting additional sediment samples from the Pinhook Creek and un-named ditch following the completion of proposed remedial actions to confirm that upgradient sources are contributing to the detected sediment concentrations and that the Site is not a continuing source with the potential to cause ecological impacts.

7.0 Additional Site Characterization Scope of Work

In Section 4.15 of the RAWP, GEI proposed five (5) contingency tasks to be implemented based on field observations as necessary. A discussion of each task is presented below:

- As stated previously, GEI completed contingency Task 1 (Section 4.7 of the RAWP) on May 19 and 20 with no impact to the overall initial schedule. Five (5) test pits were excavated at the site (see Figure 1). To augment Task 1 GEI proposes completing additional direct-push soil borings within the identified small and large holder areas. Completion of the soil borings will aid in more-accurately determining the depth of the holders, the construction of the bases of the holders, and the extent of impacts in the holders from residual MGP materials. To accomplish this, GEI will advance 4 soil borings in the interior of the large holder and 3 soil borings in the interior of the small holder. The proposed locations of these soil borings are presented in Figure 4 (attached). These borings will be advanced to depths required to characterize the material present within each holder, but will not be advanced beyond the base of the holders to prevent potential downward migration of any residual MGP material. Additional soil borings completed on the perimeter of the small and large holders will be advanced to the bedrock surface.
- Contingency Task 2 (Section 4.8 of the RAWP) requires completion if non-aqueous phase liquids/residual MGP-related materials were observed in the deeper soil borings. GEI observed indications of soil impacts present below 4 feet in several soil borings including HG-RES-19-1, HG-RES-30-1, HG-RES-31-1, HG-RES-32-1, HG-RES-29-1, HG-RES-24-2, and TWP-1. The observed impacts included elevated PID readings, coatings and sheen on soil grains and groundwater, and in TWP-1, a tar-like coating on the temporary well casing following removal from the soil boring. Based on these observations, additional investigation and delineation of free and/or residual product is proposed as a contingency task as described in section 4.8 of the RAWP.
 - Based on observed subsurface conditions, contingency Task 2 will be modified from the original work plan due to the localized nature of identified impacts. In lieu of the TarGOST GEI will delineate impacts observed in TWP-2 using a direct-push drill rig. The proposed locations of the soil borings are presented in Figure 4

(attached). GEI will retrieve soils from the ground surface until refusal is encountered at the bedrock surface. The subsurface soils will be reviewed for the presence of impacts through visual and olfactory observations and scanning using a PID.

- Contingency Task 3 (Section 4.9 of the RAWP) outlines investigations into the bedrock underlying the Site to vertically delineate the presence of DNAPL. Prior to implementation of contingency Task 3, GEI recommends installing four permanent monitoring wells terminated at the bedrock surface. Installation of these wells will achieve two objectives. First they will more accurately characterize the potential dissolved-phase plume identified through the sampling of the temporary well points. Secondly they will allow GEI to more accurately determine if significant quantities of DNAPL have accumulated on the bedrock and prior to vertical delineation into the bedrock.

These wells will be screened from the bedrock surface to 10 feet above the bedrock surface and will be constructed with 2" diameter slotted PVC screened with solid PVC riser to reach the surface. All wells will be completed with flush-mount protective caps. The location and elevation of each well will be surveyed by a licensed surveyor.

The wells will be developed using a submersible pump until the water is turbid free. All development water will be containerized in either DOT-approved 55-gallon drums, or a holding tank if the volume of development water warrants it. The wells will be allowed to equilibrate for a minimum of 24 hours following development. Following the equilibration period, GEI will probe each well with an oil/water interface meter to identify any potential DNAPL.

GEI will return to the Site a minimum of two weeks after the development to collect dissolved-phase samples. Prior to sampling, the depth to groundwater in each of the four wells will be measured. Each of the wells will be purged using low flow techniques. In-situ testing (i.e., temperature, pH, dissolved oxygen, oxidation-reduction potential, and conductivity) of the groundwater will be performed continuously during well purging. Purging will continue until the groundwater parameters stabilize. Purge water will be containerized on-site with the development water for future classification and disposal.

Upon completion of purging, a groundwater sample will be collected from each well using low flow sampling techniques. The collected groundwater samples will be immediately transferred into laboratory-prepared sample bottles. The collected groundwater samples will be stored in a cooler containing ice, prior to transport to a certified laboratory for analyses. The collected groundwater samples will be analyzed for BTEX, PAHs, arsenic, lead, and mercury, using the same EPA methods previously employed for sample analysis at the Site.

- The decision to implement contingency Task 4 (Section 4.10 Soil Gas Sampling in the RAWP) will be made following completion of contingency Task 2.
- As discussed in Section 6.0, completion of Task 5, forensic analysis related to sediment impacts in the Pinhook Creek is not warranted at this time. GEI recommends collecting additional sediment samples from the Pinhook Creek and un-named ditch following the

completion of proposed remedial actions to confirm that upgradient sources are contributing to the detected sediment concentrations and that the Site is not a continuing source with the potential to cause ecological impacts.

8.0 Revised Project Schedule

Following approval of the implementation of the contingency tasks discussed above, GEI can mobilize to the Site within three weeks. The RAWP contemplated these contingency activities and presented anticipated schedule impacts. The schedule impact for Contingency Task 2 presented in the RAWP was 6 weeks; the impact for Contingency Task 3 was 3 weeks. As these tasks can be completed during the same mobilization, we estimate a total schedule impact of 6 weeks. The remainder of the proposed removal action schedule approved in the RAWP will be modified as follows:

Task/Milestone	Estimated Task/Milestone Duration (weeks)
Mobilization for Contingency Tasks from EPA Approval	3 weeks
Contingency Investigation Activities	3 weeks
Prepare Bid Documents for Removal Action	12 weeks from completion of investigation
Commencement of removal activities	20 weeks from acceptance of revised RAWP and CBSP
Submission RA Report to EPA	12 weeks from completion of removal activities

If you have any questions, feel free to contact me at (856) 608-6860 or by email at dunites@geiconsultants.com.

Sincerely,



Dennis Unites
Project Coordinator

Attachments

cc: C. Brown (Alagasco)
S. Chapman (Alagasco)
P. Goldman (Alagasco)
D. Smith (Alagasco)
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Table 1
Soil Boring and Sample Summary
Removal Action Work Plan Investigation
Huntsville Former MGP Site
Huntsville, Alabama

Soil Boring Number	Date Started	Date Completed	Total Depth (feet)	Visual Indications of Impacts Detected Y/N	Maximum PID Reading (ppm)	Depth of Maximum PID Reading (feet)	Laboratory Sample Number	Depth (feet)	BTEX (EPA 8260B)	PAHs (EPA 8270C with SIM Analysis)	Metals (EPA 6010/7470A)	Exceedances of PRGs Detected Y/N	Compounds	Concentration (µg/Kg organics mg/Kg metals)
HG-RES-05-1	5/12/2010	5/12/2010	4.0	N	0.0	NA	HG-RES-05-1-1	0.0-1.0	X	X	X	N		
							HG-RES-05-1-2	2.5-3.0	X	X	X	N		
HG-RES-05-2	5/12/2010	5/12/2010	36.0	N	0.0	NA	HG-RES-05-2-1	0.0-1.0	X	X	X	N		
							HG-RES-05-2-2	2.5-3.0	X	X	X	N		
HG-RES-07-1	5/12/2010	5/12/2010	4.0	N	0.0	NA	HG-RES-07-1-1	0.0-1.0	X	X	X	N		
							HG-RES-07-1-2	2.5-3.0	X	X	X	N		
HG-RES-08-1	5/12/2010	5/12/2010	4.0	N	0.0	NA	HG-RES-08-1-1	0.0-1.0	X	X	X	N		
							HG-RES-08-1-2	2.5-3.0	X	X	X	N		
HG-RES-12-1	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-12-1-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	2,200
							HG-RES-12-1-2	3.5-4.0	X	X	X	N		
HG-RES-14-1	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-14-1-1	0.5-1.0	X	X	X	N		
							HG-RES-14-1-2	3.5-4.0	X	X	X	N		
HG-RES-14-2	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-14-2-1	0.5-1.0	X	X	X	N		
							HG-RES-14-2-2	3.5-4.0	X	X	X	N		
HG-RES-14-3	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-14-3-1	0.5-1.0	X	X	X	N		
							HG-RES-14-3-2	3.5-4.0	X	X	X	N		
HG-RES-15-1	5/14/2010	5/14/2010	12.5	Y	0.0	NA	HG-RES-15-1-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	9,300
													Benzo(b)fluoranthene	18,000
													Dibenz(a,h)anthracene	2,000
							HG-RES-15-1-2	3.5-4.0	X	X	X	N		
HG-RES-15-2	5/18/2010	5/18/2010	4.0	N	3.4	4	HG-RES-15-2-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	2,200
							HG-RES-15-2-2	3.5-4.0	X	X	X	N		
HG-RES-16-1	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-16-1-1	0.5-1.0	X	X	X	N		
							HG-RES-16-1-2	3.5-4.0	X	X	X	N		
HG-RES-17-1	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-17-1-1	0.5-1.0	X	X	X	N		
							HG-RES-17-1-2	3.5-4.0	X	X	X	N		

Table 1
Soil Boring and Sample Summary
Removal Action Work Plan Investigation
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

Soil Boring Number	Date Started	Date Completed	Total Depth (feet)	Visual Indications of Impacts Detected Y/N	Maximum PID Reading (ppm)	Depth of Maximum PID Reading (feet)	Laboratory Sample Number	Depth (feet)	BTEX (EPA 8260B)	PAHs (EPA 8270C with SIM Analysis)	Metals (EPA 6010/7470A)	Exceedances of PRGs Detected Y/N	Compounds	Concentration (µg/Kg organics mg/Kg metals)
HG-RES-18-1	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-18-1-1	0.5-1.0	X	X	X	Y	Benz(a)anthracene	61,000
													Benzo(a)pyrene	51,000
													Benzo(b)fluoranthene	110,000
													Dibenz(a,h)anthracene	57,000
HG-RES-18-2	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-18-1-2	3.5-4.0	X	X	X	N		
							HG-RES-18-2-1	0.5-1.0	X	X	X	N		
							HG-RES-18-2-2	3.5-4.0	X	X	X	N		
HG-RES-19-1	5/17/2010	5/17/2010	24.0	Y	243.8	6.5	No Laboratory Samples Collected							
HG-RES-22/23-1	5/18/2010	5/18/2010	4.0	N	0.0	NA	HG-RES-22/23-1-1	0.5-1.0	X	X	X	N		
							HG-RES-22/23-1-2	3.5-4.0	X	X	X	N		
HG-RES-24-1	5/12/2010	5/13/2010	9.5	N	0.0	NA	HG-RES-24-1-1	0.5-1.0	X	X	X	N		
							HG-RES-24-1-2	3.5-4.0	X	X	X	N		
							HG-RES-24-1-3	9.0-9.5	Sample not analyzed			NA		
HG-RES-24-2	5/14/2010	5/15/2010	30.0	Y	246.6	27.0	HG-RES-24-2-1	0.5-1.0	X	X	X	Y	Benz(a)anthracene	23,000
													Benzo(a)pyrene	26,000
													Benzo(b)fluoranthene	35,000
													Dibenz(a,h)anthracene	5,500
													Indeno(1,2,3-cd)pyrene	16,000
													Lead	449
HG-RES-24-2							HG-RES-24-2-2	3.5-4.0	X	X	X	N		
							HG-RES-24-2-3	25.0-25.5	Sample not analyzed			NA		
HG-RES-25-1 (TWP-6)	5/14/2010	5/14/2010	34.0	Y	165.8	9.5	HG-RES-25-1-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	3,300
							HG-RES-25-1-2	3.5-4.0	X	X	X	N		
							HG-RES-25-1-3	9.5-10.0	Sample not analyzed			NA		
HG-RES-26-1	5/12/2010	5/12/2010	4.0	N	0.0	NA	HG-RES-26-1-1	0.5-1.0	X	X	X	N		
							HG-RES-26-1-2	3.5-4.0	X	X	X	N		
HG-RES-26-2	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG-RES-26-2-1	0.5-1.0	X	X	X	N		
							HG-RES-26-2-2	3.5-4.0	X	X	X	N		

Table 1
Soil Boring and Sample Summary
Removal Action Work Plan Investigation
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

Soil Boring Number Number	Date Started	Date Completed	Total Depth (feet)	Visual Indications of Imapcts Detected Y/N	Maximum PID Reading (ppm)	Depth of Maximum PID Reading (feet)	Laboratory Sample Number	Depth (feet)	BTEX (EPA 8260B)	PAHs (EPA 8270C with SIM Analysis)	Metals (EPA 6010/7470A)	Exceedances of PRGs Detected Y/N	Compounds	Concentration (µg/kg organics mg/kg metals)
HG-RES-27-1	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG=RES-27-1-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	2,300
							HG=RES-27-1-2	3.5-4.0	X	X	X	N		
HG-RES-27-2	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG=RES-27-2-1	0.5-1.0	X	X	X	N		
							HG=RES-27-2-2	3.5-4.0	X	X	X	N		
HG-RES-27-3	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG=RES-27-3-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	2,100
							HG=RES-27-3-2	3.5-4.0	X	X	X	N		
HG-RES-28-1	5/13/2010	5/13/2010	36.0	N	0.0	NA	HG-RES-28-1-1	0.5-1.0	X	X	X	N		
							HG-RES-28-1-2	3.5-4.0	X	X	X	N		
							HG-RES-28-1-3	20.0-20.5	Sample not analyzed			NA		
HG-RES-28-2	5/17/2010	5/17/2010	36.0	N	0.0	NA	No Samples Collected							
HG-RE-29-1 (TWP-2)	5/17/2010	5/17/2010	35.0	Y	1400	19.5	HG-RES-29-1-2	0.5-1.0	X	X	X	N		
							HG-RES-29-1-3	19.5-20.0	X	X	X	NA	PRGs not established for soils below 4 feet	
HG-RES-30-1 (TWP-5)	5/12/2012	5/12/2010	20.5	Y	88.8	12.5	HG-RES-30-1-1	0.5-1.0	X	X	X	Y	Benz(a)anthracene	36,000
													Benzo(a)pyrene	36,000
													Benzo(b)fluoranthene	50,000
													Dibenz(a,h)anthracene	6,400
													Indeno(1,2,3-cd)pyrene	19,000
							HG-RES-30-1-2	3.5-4.0	X	X	X	N		
HG-RES-30-1-3	9.5-10.0	Sample not analyzed			NA									
HG-RES-31-1	5/12/2012	5/13/2010	23.0	Y	376.5	11.0	HG-RES-31-1-1	0.5-1.0	X	X	X	Y	Benz(a)anthracene	19,000
													Benzo(a)pyrene	20,000
													Benzo(b)fluoranthene	30,000
													Dibenz(a,h)anthracene	4,500
													Indeno(1,2,3-cd)pyrene	14,000
							HG-RES-31-1-2	4.5-5.0	Sample not analyzed			NA		
							HG-RES-31-1-3	8.5-9.0	Sample not analyzed			NA		
HG-RES-31-1-4	11.5-12.0	X	X	X	NA	PRGs not established for soils below 4 feet								
HG-RES-31-1-5	22.5-23.0	X	X	X	NA	PRGs not established for soils below 4 feet								

Table 1
Soil Boring and Sample Summary
Removal Action Work Plan Investigation
Huntsville Former MGP Site
Huntsville, Alabama

Soil Boring Number	Date Started	Date Completed	Total Depth (feet)	Visual Indications of Impacts Detected Y/N	Maximum PID Reading (ppm)	Depth of Maximum PID Reading (feet)	Laboratory Sample Number	Depth (feet)	BTEX (EPA 8260B)	PAHs (EPA 8270C with SIM Analysis)	Metals (EPA 60107/470A)	Exceedances of PRGs Detected Y/N	Compounds	Concentration (µg/Kg organics mg/Kg metals)
HG-RES-32-1 (TWP-3)	5/12/2012	5/13/2010	29.5	Y	52.2	5	HG-RES-32-1-1	0.5-1.0	X	X	X	Y	Benzo(a)pyrene	5,000
							HG-RES-32-1-2	3.5-4.0	X	X	X	N		
							HG-RES-32-1-3	10.0-10.5	X	X	X	NA	PRGs not established for soils below 4 feet	
HG-RES-33-1	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG-RES-33-1-1	0.5-1.0	X	X	X	N		
							HG-RES-33-1-2	3.5-4.0	X	X	X	N		
HG-RES-33-2	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG-RES-33-2-1	0.5-1.0	X	X	X	N		
							HG-RES-33-2-2	3.5-4.0	X	X	X	N		
HG-RES-36-1	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG-RES-36-1-1	0.5-1.0	X	X	X	N		
							HG-RES-36-1-2	3.5-4.0	X	X	X	N		
HG-RES-36-2	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG-RES-36-2-1	0.5-1.0	X	X	X	N		
							HG-RES-36-2-2	3.5-4.0	X	X	X	N		
HG-RES-39-1	5/17/2010	5/17/2010	4.0	N	0.0	NA	HG-RES-39-1-1	0.5-1.0	X	X	X	N		
							HG-RES-39-1-2	3.5-4.0	X	X	X	N		
HG-RES-41	5/20/2010	5/20/2010	0.5	N	0.0	NA	HG-RES-41-SW	0.0-0.5	X	X	X	Y	Benzo(a)pyrene	9,100
HG-RES-42	5/20/2010	5/20/2010	0.5	N	0.0	NA	HG-RES-42-SW	0.0-0.5	X	X	X	N		
HG-RES-43	5/20/2010	5/20/2010	0.5	N	0.0	NA	HG-RES-43-SW	0.0-0.5	X	X	X	N		
TWP-1	5/13/2012	5/13/2010	32.0	Y	123.2	22.5	TWP-1-1	0.5-1.0	X	X	X	Y	Benzo(a)anthracene	15,000
													Benzo(a)pyrene	12,000
													Benzo(b)fluoranthene	23,000
													Dibenz(a,h)anthracene	2,600
							TWP-1-2	3.5-4.0	X	X	X	N		
TWP-4	5/14/2010	5/14/2010	34.5	N	0.0	NA	TWP-4-1	9.5-10.0	X	X	X	NA	PRGs not established for soils below 4 feet	
							TWP-4-2	20.0-20.5	X	X	X	NA	PRGs not established for soils below 4 feet	

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

				Sample ID	HG-RES-05-1-1	HG-RES-05-1-2	HG-RES-05-2-1	HG-RES-05-2-2	HG-RES-07-1-1	HG-RES-07-1-2	HG-RES-08-1-1
				Sample Depth:	0.0-1.0'	3.5'-4.0'	0.0-1.0'	3.5'-4.0'	0.0-1.0'	2.5-3.0	0.0-1.0'
				Lab ID:	1005B49-013B	1005B49-008A	1005B49-025A	1005B49-009A	1005H21-028A	1005D29-011A	1005B49-018A
				Date Sampled:	05/13/10	05/13/10	05/13/10	05/13/10	40310	40310	05/13/10
				Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil PRGs	Construction/Utility Soil PRGs								
VOCs (µg/Kg)	CASRN										
Benzene	71-43-2	86,000	341,000	1.1 U	0.91 U	1.1	0.93 U	0.69 U	1.0 U	1.7	
Ethylbenzene	100-41-4	3,500,000	15,600,000	1.1 U	0.91 U	1.1 U	0.93 U	0.69 U	1.0 U	1.1 U	
m,p-Xylene	1330-20-7	630,000	2,160,000	1.1 U	0.91 U	1.1 U	0.93 U	0.69 U	1.0 U	1.1 U	
o-Xylene	1330-20-6	630,000	2,160,000	1.0 U	0.91 U	1.1 U	0.93 U	0.69 U	1.0 U	1.1 U	
Toluene	108-88-3	5,000,000	29,400,000	1.1 U	0.91 U	1.4	0.93 U	0.69 U	1.0 U	3.2	
PAHs (µg/Kg)											
Acenaphthene	83-32-9	3,400,000	18,900,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Acenaphthylene	208-96-8	1,700,000	9,430,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Anthracene	120-12-7	17,000,000	94,300,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Benz(a)anthracene	56-55-3	15,000	3,010,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Benzo(a)pyrene	50-32-8	1,500	301,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	240 U	230 U	230 U	230 U	230 U	240 U	250	
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Chrysene	218-01-9	1,500,000	100,000,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Fluoranthene	206-44-0	2,300,000	12,600,000	240 U	230 U	300	230 U	230 U	240 U	220 U	
Fluorene	86-73-7	2,300,000	12,600,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Naphthalene	91-20-3	140,000	484,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Phenanthrene	85-01-8	1,700,000	9,430,000	240 U	230 U	230 U	230 U	230 U	240 U	220 U	
Pyrene	129-00-0	1,700,000	9,430,000	240 U	230 U	250	230 U	230 U	240 U	220 U	
Metals (mg/Kg)											
Mercury	7439-97-6	5.6	24.9	0.117 U	0.115 U	0.718	0.480	0.436	0.117 U	0.613	
Arsenic	7440-38-2	39	435	7.08	9.24	13.2	11.7	7.99	7.81	23.2	
Lead	7439-92-1	400	800	13.3	17.9	89.1	119	109	9.56	292	

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

Sample ID Sample Depth: Lab ID: Date Sampled: Matrix: Dilution Factor:				HG-RES-08-1-2 3.5'-4.0' 1005B49-023A 05/13/10 Soil 1	HG-RES-12-1-1 0.5-1.0 1005H21-005A Soil 1	HG-RES-12-1-2 3.5'-4.0' 1005H21-012A Soil 1	HG-RES-14-1-1 0.0-1.0' 1005H21-003A Soil 1	HG-RES-14-1-2 3.5'-4.0' 1005H21-001B Soil 1	HG-RES-14-2-1 0.5'-1.0' 1005H21-022A Soil 1	HG-RES-14-2-2 3.5'-4.0' 1005H21-011A Soil 1
Compound		Residential Soil	Construction/Utility							
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs							
Benzene	71-43-2	86,000	341,000	1.2 U	1.2 U	0.66 U	1.3 U	1.1 U	1.1 U	0.84 U
Ethylbenzene	100-41-4	3,500,000	15,600,000	1.2 U	1.2 U	0.66 U	1.3 U	1.1 U	1.1 U	0.84 U
m,p-Xylene	1330-20-7	630,000	2,160,000	1.2 U	1.2 U	0.66 U	1.3 U	1.1 U	1.1 U	0.84 U
o-Xylene	1330-20-6	630,000	2,160,000	1.2 U	1.2 U	0.66 U	1.3 U	1.1 U	1.1 U	0.84 U
Toluene	108-88-3	5,000,000	29,400,000	1.9	1.2 U	0.66 U	1.3 U	1.1 U	1.1 U	0.84 U
PAHs (µg/Kg)										
Acenaphthene	83-32-9	3,400,000	18,900,000	240 U	230 U	240 U	230 U	230 U	240 U	240 U
Acenaphthylene	208-96-8	1,700,000	9,430,000	240 U	540	240 U	230 U	230 U	240 U	240 U
Anthracene	120-12-7	17,000,000	94,300,000	240 U	460	240 U	230 U	230 U	330	240 U
Benz(a)anthracene	56-55-3	15,000	3,010,000	240 U	1900	240 U	1300	230 U	1200	240 U
Benzo(a)pyrene	50-32-8	1,500	301,000	240 U	2200	240 U	1300	230 U	1000	240 U
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	240 U	3500	240 U	2000	230 U	2200	240 U
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	240 U	1600	240 U	750	230 U	620	240 U
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	240 U	1100	240 U	650	230 U	550	240 U
Chrysene	218-01-9	1,500,000	100,000,000	240 U	2300	240 U	1300	230 U	1300	240 U
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	240 U	230 U	240 U	230 U	230 U	240 U	240 U
Fluoranthene	206-44-0	2,300,000	12,600,000	240 U	4800	240 U	2200	230 U	1900	240 U
Fluorene	86-73-7	2,300,000	12,600,000	240 U	230 U	240 U	230 U	230 U	240 U	240 U
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	240 U	1600	240 U	720	230 U	620	240 U
Naphthalene	91-20-3	140,000	484,000	240 U	260	240 U	240	230 U	240 U	240 U
Phenanthrene	85-01-8	1,700,000	9,430,000	240 U	3600	240 U	830	230 U	1100	240 U
Pyrene	129-00-0	1,700,000	9,430,000	240 U	4300	240 U	2200	230 U	1700	240 U
Metals (mg/Kg)										
Mercury	7439-97-6	5.6	24.9	0.933	0.112 U	0.117 U	0.954	0.115 U	1.11	0.119 U
Arsenic	7440-38-2	39	435	14.6	6.30	5.57 U	16.6	5.23 U	14.3	5.94 U
Lead	7439-92-1	400	800	355	65.1	17.3	164	7.60	163	11.9

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

				Sample ID	HG-RES-14-3-1	HG-RES-14-3-2	HG-RES-15-1-1	HG-RES-15-1-2	HG-RES-15-2-1	HG-RES-15-2-2	HG-RES-16-1-1
				Sample Depth:	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'
				Lab ID:	1005H21-016A	1005H21-002A	1005D29-007A	1005D29-018A	1005H21-015A	1005H21-013A	1005H21-018B
				Date Sampled:			05/14/10	05/14/10	05/18/10	05/18/10	
				Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility								
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs								
Benzene	71-43-2	86,000	341,000	1.2 U	0.72 U	3.8	0.94 U	8.0	1.3 U	1.7	
Ethylbenzene	100-41-4	3,500,000	15,600,000	1.2 U	0.72 U	1.0 U	0.94 U	1.2 U	1.3 U	1.1 U	
m,p-Xylene	1330-20-7	630,000	2,160,000	1.2 U	0.72 U	2.7	0.94 U	1.2 U	1.3 U	1.1 U	
o-Xylene	1330-20-6	630,000	2,160,000	1.2 U	0.72 U	1.0 U	0.94 U	1.2 U	1.3 U	1.1 U	
Toluene	108-88-3	5,000,000	29,400,000	1.2 U	0.72 U	3.2	0.94 U	2.6	1.3 U	1.1 U	
PAHs (µg/Kg)											
Acenaphthene	83-32-9	3,400,000	18,900,000	230 U	230 U	220 U	240 U	230 U	240 U	230 U	
Acenaphthylene	208-96-8	1,700,000	9,430,000	230 U	230 U	1900	240 U	1100	240 U	280	
Anthracene	120-12-7	17,000,000	94,300,000	330	230 U	2000	240 U	990	240 U	420	
Benz(a)anthracene	56-55-3	15,000	3,010,000	1300	230 U	9900	240 U	5100	240 U	1400	
Benzo(a)pyrene	50-32-8	1,500	301,000	1400	230 U	9300	240 U	4300	240 U	1300	
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	2000	230 U	18000	240 U	11000	240 U	2100	
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	910	230 U	8300	240 U	4900	240 U	1000	
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	650	230 U	2400	240 U	1700	240 U	660	
Chrysene	218-01-9	1,500,000	100,000,000	1200	230 U	10000	240 U	5000	240 U	1400	
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	230 U	230 U	2000	240 U	230 U	240 U	230 U	
Fluoranthene	206-44-0	2,300,000	12,600,000	2000	230 U	17000	240 U	11000	240 U	3000	
Fluorene	86-73-7	2,300,000	12,600,000	230 U	230 U	400	240 U	230 U	240 U	230 U	
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	900	230 U	8000	240 U	4600	240 U	940	
Naphthalene	91-20-3	140,000	484,000	230 U	230 U	460	240 U	330	240 U	230 U	
Phenanthrene	85-01-8	1,700,000	9,430,000	1100	230 U	7800	240 U	3600	240 U	1700	
Pyrene	129-00-0	1,700,000	9,430,000	1800	230 U	16000	240 U	9700	240 U	2600	
Metals (mg/Kg)											
Mercury	7439-97-6	5.6	24.9	0.619	0.110 U	0.330	0.114 U	0.192	0.121 U	0.136	
Arsenic	7440-38-2	39	435	13.7	13.5	10.7	14.1	15.1	5.66 U	7.25	
Lead	7439-92-1	400	800	226	10.5	46.8	15.9	56.4	20.1	49.6	

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

				Sample ID	HG-RES-16-1-2	HG-RES-17-1-2	HG-RES-18-1-1	HG-RES-18-1-2	HG-RES-18-2-1	HG-RES-18-2-2	HG-RES-22/23-1-2
				Sample Depth:	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	3.5'-4.0'
				Lab ID:	1005H21-006A	1005H21-007A	1005H21-020A	1005H21-004A	1005H21-021A	1005H21-010A	1005H21-009A
				Date Sampled:	05/18/10	05/18/10	05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
				Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility								
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs								
Benzene	71-43-2	86,000	341,000	0.89 U	1.2 U	5.1	0.85 U	1.7	0.61 U	0.66 U	
Ethylbenzene	100-41-4	3,500,000	15,600,000	0.89 U	1.2 U	1.0 U	0.85 U	1.2 U	0.61 U	0.66 U	
m,p-Xylene	1330-20-7	630,000	2,160,000	0.89 U	1.2 U	1.0 U	0.85 U	1.2 U	0.61 U	0.66 U	
o-Xylene	1330-20-6	630,000	2,160,000	0.89 U	1.2 U	1.0 U	0.85 U	1.2 U	0.61 U	0.66 U	
Toluene	108-88-3	5,000,000	29,400,000	0.89 U	1.2 U	1.3	0.85 U	1.2 U	0.61 U	0.66 U	
PAHs (µg/Kg)											
Acenaphthene	83-32-9	3,400,000	18,900,000	240 U	240 U	2200 U	240 U	230 U	240 U	240 U	
Acenaphthylene	208-96-8	1,700,000	9,430,000	240 U	240 U	9400	240 U	230 U	240 U	240 U	
Anthracene	120-12-7	17,000,000	94,300,000	240 U	240 U	13000	240 U	230 U	240 U	240 U	
Benz(a)anthracene	56-55-3	15,000	3,010,000	240 U	240 U	61000	240 U	680	240 U	240 U	
Benzo(a)pyrene	50-32-8	1,500	301,000	240 U	240 U	51000	240 U	790	240 U	240 U	
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	240 U	240 U	110000	240 U	1300	240 U	240 U	
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	240 U	240 U	59000	240 U	570	240 U	240 U	
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	240 U	240 U	20000	240 U	350	240 U	240 U	
Chrysene	218-01-9	1,500,000	100,000,000	240 U	240 U	59000	240 U	740	240 U	240 U	
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	240 U	240 U	2200 U	240 U	230 U	240 U	240 U	
Fluoranthene	206-44-0	2,300,000	12,600,000	240 U	240 U	130000	240 U	1300	240 U	240 U	
Fluorene	86-73-7	2,300,000	12,600,000	240 U	240 U	2800	240 U	230 U	240 U	240 U	
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	240 U	240 U	57000	240 U	540	240 U	240 U	
Naphthalene	91-20-3	140,000	484,000	240 U	240 U	2800	240 U	230 U	240 U	240 U	
Phenanthrene	85-01-8	1,700,000	9,430,000	240 U	240 U	51000	240 U	710	240 U	240 U	
Pyrene	129-00-0	1,700,000	9,430,000	240 U	240 U	100000	240 U	1200	240 U	240 U	
Metals (mg/Kg)											
Mercury	7439-97-6	5.6	24.9	0.120 U	0.118 U	2.84	0.120 U	0.755	0.119 U	0.117 U	
Arsenic	7440-38-2	39	435	5.67 U	19.6	23.2	5.62 U	12.3	16.7	5.44 U	
Lead	7439-92-1	400	800	12.8	54.0	514	13.1	487	69.5	9.55	

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

				Sample ID	HG-RES-24-1-1	HG-RES-24-1-2	HG-RES-24-2-1	HG-RES-24-2-2	HG-RES-25-1-1	HG-RES-25-1-2	HG-RES-26-1
				Sample Depth:	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'
				Lab ID:	1005B49-011A	1005B49-027A	1005D29-019B		1005B49-014A	1005B49-016A	1005B49-004A
				Date Sampled:	05/12/10	05/12/10	05/14/10	05/14/10	05/13/10	05/13/10	05/12/10
				Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility								
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs								
Benzene	71-43-2	86,000	341,000	13	9.7	2.0	34	7.6	13	1.4	
Ethylbenzene	100-41-4	3,500,000	15,600,000	0.95 U	0.83 U	1.2 U	0.87 U	0.93 U	0.73 U	1.2 U	
m,p-Xylene	1330-20-7	630,000	2,160,000	0.95 U	2.0	1.2 U	3.5	0.93 U	0.73 U	1.2 U	
o-Xylene	1330-20-6	630,000	2,160,000	0.95 U	0.83 U	1.2 U	0.87 U	0.93 U	0.73 U	1.2 U	
Toluene	108-88-3	5,000,000	29,400,000	2.9	2.6	1.7	0.87 U	2.1	0.73 U	1.5	
PAHs (µg/Kg)											
Acenaphthene	83-32-9	3,400,000	18,900,000	220 U	850	820	240 U	220	5000 U	270 U	
Acenaphthylene	208-96-8	1,700,000	9,430,000	1100	7800	1300	240 U	680	10000	270 U	
Anthracene	120-12-7	17,000,000	94,300,000	1100	8800	4100	240 U	680	11000	270 U	
Benz(a)anthracene	56-55-3	15,000	3,010,000	4300	19000	23000	240 U	3400	79000	580	
Benzo(a)pyrene	50-32-8	1,500	301,000	4300	18000	26000	240 U	3300	81000	570	
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	8800	27000	35000	240 U	5800	130000	990	
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	4300	15000	17000	240 U	3000	49000	490	
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	1100	2400	1700	240 U	1400	27000	280	
Chrysene	218-01-9	1,500,000	100,000,000	4200	18000	21000	240 U	3300	73000	610	
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	1500	1000	5500	240 U	930	20000	270 U	
Fluoranthene	206-44-0	2,300,000	12,600,000	8000	46000	23000	240 U	5200	88000	1200	
Fluorene	86-73-7	2,300,000	12,600,000	260	3900	790	240 U	220 U	5000 U	270 U	
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	3900	13000	16000	240 U	2800	49000	430	
Naphthalene	91-20-3	140,000	484,000	570	2600	970	240 U	260	5000 U	270 U	
Phenanthrene	85-01-8	1,700,000	9,430,000	3400	41000	12000	240 U	2300	17000	820	
Pyrene	129-00-0	1,700,000	9,430,000	7700	40000	23000	240 U	5000	94000	930	
Metals (mg/Kg)											
Mercury	7439-97-6	5.6	24.9	0.256	1.11	1.02	0.119 U	0.441	2.21	0.683	
Arsenic	7440-38-2	39	435	13.5	12.8	21.9	5.10 U	9.58	19.3	11.0	
Lead	7439-92-1	400	800	80.1	110	449	14.2	86.7	167	192	

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

Sample ID Sample Depth: Lab ID: Date Sampled: Matrix: Dilution Factor:				HG-RES-26-1-2 3.5'-4.0' 1005B49-021A 05/13/10 Soil 1	HG-RES-26-2-1 0.5'-1.0' 1005F46-023A 05/17/10 Soil 1	HG-RES-26-2-2 3.5'-4.0' 1005F46-022A 05/17/10 Soil 1	HG-RES-27-1-1 0.5'-1.0' 1005F46-010A 05/17/10 Soil 1	HG-RES-27-1-2 3.5'-4.0' 1005F46-011A 05/17/10 Soil 1	HG-RES-27-2-1 0.5'-1.0' 1005F46-012A 05/17/10 Soil 1	HG-RES-27-2-2 3.5'-4.0' 1005F46-013A 05/17/10 Soil 1
Compound		Residential Soil	Construction/Utility							
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs							
Benzene	71-43-2	86,000	341,000	0.86 U	4.4	0.62 U	3.1	0.69 U	3.0	0.87 U
Ethylbenzene	100-41-4	3,500,000	15,600,000	0.86 U	1.1 U	0.62 U	0.81 U	0.69 U	1.1 U	0.87 U
m,p-Xylene	1330-20-7	630,000	2,160,000	0.86 U	1.1 U	0.62 U	0.81 U	0.69 U	1.1 U	0.87 U
o-Xylene	1330-20-6	630,000	2,160,000	0.86 U	1.1 U	0.62 U	0.81 U	0.69 U	1.1 U	0.87 U
Toluene	108-88-3	5,000,000	29,400,000	0.86 U	1.6	0.62 U	1.9	0.69 U	2.2	0.87 U
PAHs (µg/Kg)										
Acenaphthene	83-32-9	3,400,000	18,900,000	230 U	230 U	230 U	230 U	230 U	230 U	260 U
Acenaphthylene	208-96-8	1,700,000	9,430,000	230 U	320	230 U	540	230 U	370	260 U
Anthracene	120-12-7	17,000,000	94,300,000	230 U	250	230 U	490	230 U	370	260 U
Benz(a)anthracene	56-55-3	15,000	3,010,000	230 U	1500	230 U	2600	230 U	1500	260 U
Benzo(a)pyrene	50-32-8	1,500	301,000	230 U	1500	230 U	2300	230 U	1400	260 U
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	230 U	2700	230 U	4600	230 U	2400	260 U
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	230 U	1500	230 U	2700	230 U	1300	260 U
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	230 U	780	230 U	1600	230 U	730	260 U
Chrysene	218-01-9	1,500,000	100,000,000	230 U	1500	230 U	2900	230 U	1400	260 U
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	230 U	420	230 U	600	230 U	310	260 U
Fluoranthene	206-44-0	2,300,000	12,600,000	230 U	2400	230 U	5100	230 U	2600	260 U
Fluorene	86-73-7	2,300,000	12,600,000	230 U	230 U	230 U	230 U	230 U	230 U	260 U
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	230 U	1400	230 U	2400	230 U	1200	260 U
Naphthalene	91-20-3	140,000	484,000	230 U	320	230 U	230 U	230 U	230 U	260 U
Phenanthrene	85-01-8	1,700,000	9,430,000	230 U	990	230 U	1600	230 U	1100	260 U
Pyrene	129-00-0	1,700,000	9,430,000	230 U	2200	230 U	4600	230 U	2500	260 U
Metals (mg/Kg)										
Mercury	7439-97-6	5.6	24.9	0.116 U	0.868	0.114 U	0.466	0.115 U	0.117	0.185
Arsenic	7440-38-2	39	435	8.55	14.1	24.0	17.9	14.1	11.6	36.3
Lead	7439-92-1	400	800	25.0	362	118	64.9	25.1	35.4	207

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

				Sample ID	HG-RES-27-3-1	HG-RES-27-3-2	HG-RES-28-1-1	HG-RES-28-1-2	HG-RES-29-1-2	HG-RES-30-1-1	HG-RES-30-1-2
				Sample Depth:	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'
				Lab ID:	1005F46-014A	1005F46-015A	1005D29-006A	1005D29-014B	1005B49-010A	1005B49-022A	1005B49-019A
				Date Sampled:	05/17/10	05/17/10	05/14/10		05/12/10	05/12/10	05/12/10
				Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility								
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs								
Benzene	71-43-2	86,000	341,000	2.1	0.75 U	0.98 U	0.90 U	2.4	4.6	9.8	
Ethylbenzene	100-41-4	3,500,000	15,600,000	1.5 U	0.75 U	0.98 U	0.90 U	0.65 U	0.89 U	0.69 U	
m,p-Xylene	1330-20-7	630,000	2,160,000	1.5 U	0.75 U	0.98 U	0.90 U	0.65 U	0.89 U	0.69 U	
o-Xylene	1330-20-6	630,000	2,160,000	1.5 U	0.75 U	0.98 U	0.90 U	0.65 U	0.89 U	0.69 U	
Toluene	108-88-3	5,000,000	29,400,000	1.8	0.75 U	0.98 U	0.90 U	0.72	0.93	2.9	
PAHs (µg/Kg)											
Acenaphthene	83-32-9	3,400,000	18,900,000	230 U	230 U	220 U	240 U	230 U	1200	2400 U	
Acenaphthylene	208-96-8	1,700,000	9,430,000	480	230 U	220 U	240 U	420	10000	14000	
Anthracene	120-12-7	17,000,000	94,300,000	580	230 U	220 U	240 U	230 U	12000	19000	
Benz(a)anthracene	56-55-3	15,000	3,010,000	2100	230 U	220 U	240 U	240	36000	63000	
Benzo(a)pyrene	50-32-8	1,500	301,000	2100	230 U	220 U	240 U	790	36000	41000	
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	3700	230 U	220 U	240 U	710	50000	1700	
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	1900	230 U	220 U	240 U	740	21000	25000	
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	1000	230 U	220 U	240 U	230 U	9000	17000	
Chrysene	218-01-9	1,500,000	100,000,000	2300	230 U	220 U	240 U	290	30000	52000	
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	450	230 U	220 U	240 U	230 U	6400	13000	
Fluoranthene	206-44-0	2,300,000	12,600,000	4200	230 U	220 U	240 U	320	81000	2400	
Fluorene	86-73-7	2,300,000	12,600,000	230 U	230 U	220 U	240 U	230 U	5000	7400	
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	1800	230 U	220 U	240 U	510	19000	26000	
Naphthalene	91-20-3	140,000	484,000	490	230 U	220 U	240 U	230 U	5500	14000	
Phenanthrene	85-01-8	1,700,000	9,430,000	2500	230 U	220 U	240 U	230 U	56000	59000	
Pyrene	129-00-0	1,700,000	9,430,000	3700	230 U	220 U	240 U	740	73000	2000	
Metals (mg/Kg)											
Mercury	7439-97-6	5.6	24.9	1.07	0.115 U	0.109 U	0.115 U	0.111 U	0.300	0.200	
Arsenic	7440-38-2	39	435	16.3	18.2	15.8	5.68 U	5.61 U	17.8	26.0	
Lead	7439-92-1	400	800	447	26.4	26.9	15.9	19.1	78.9	67.4	

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

Sample ID		HG-RES-31-1-1	HG-RES-32-1-1	HG-RES-32-1-2	HG-RES-33-1-1	HG-RES-33-1-2	HG-RES-33-2-1	HG-RES-33-2-2
Sample Depth:		0.5'-1.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'	0.5'-1.0'	3.5'-4.0'
Lab ID:		1005B49-006A	1005B49-007A	1005B49-005A	1005F46-001A	1005F46-002A	1005F46-006A	1005F46-007A
Date Sampled:		05/12/10	05/12/10	05/12/10	05/17/10	05/17/10	05/17/10	05/17/10
Matrix:		Soil	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor:		1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility					
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs					
Benzene	71-43-2	86,000	341,000	56	18	1700	1.7	3.5
Ethylbenzene	100-41-4	3,500,000	15,600,000	1.3 U	1.4 U	1100	0.96 U	0.96 U
m,p-Xylene	1330-20-7	630,000	2,160,000	1.3 U	1.4 U	14000	0.96 U	0.96 U
o-Xylene	1330-20-6	630,000	2,160,000	1.3 U	1.4 U	7700	0.96 U	0.96 U
Toluene	108-88-3	5,000,000	29,400,000	1.3 U	7.1	4100	1.6	3.6
PAHs (µg/Kg)								
Acenaphthene	83-32-9	3,400,000	18,900,000	1300 U	250 U	120000	220 U	210 U
Acenaphthylene	208-96-8	1,700,000	9,430,000	3600	1600	120000	220 U	210 U
Anthracene	120-12-7	17,000,000	94,300,000	3500	1300	690000	220 U	210 U
Benz(a)anthracene	56-55-3	15,000	3,010,000	19000	5000	730000	630	210 U
Benzo(a)pyrene	50-32-8	1,500	301,000	20000	5000	520000	620	210 U
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	30000	8000	800000	850	250
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	15000	3100	450000	540	210 U
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	7100	2000	220000	310	210 U
Chrysene	218-01-9	1,500,000	100,000,000	17000	4500	610000	670	210 U
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	4500	1000	85000	220 U	210 U
Fluoranthene	206-44-0	2,300,000	12,600,000	26000	11000	2500000	1200	210 U
Fluorene	86-73-7	2,300,000	12,600,000	1300 U	320	360000	220 U	210 U
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	14000	2900	420000	460	210 U
Naphthalene	91-20-3	140,000	484,000	2400	490	3800000	220 U	210 U
Phenanthrene	85-01-8	1,700,000	9,430,000	12000	3100	3500000	610	210 U
Pyrene	129-00-0	1,700,000	9,430,000	25000	9600	2000000	1200	210 U
Metals (mg/Kg)								
Mercury	7439-97-6	5.6	24.9	0.540	0.210	0.323	0.208	0.105 U
Arsenic	7440-38-2	39	435	23.7	6.23	28.6	17.2	4.78
Lead	7439-92-1	400	800	53.5	54.9	57.3	174	46.5

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

		Sample ID	HG-RES-36-1-1	HG-RES-36-1-2	HG-RES-36-2-1	HG-RES-36-2-2	HG-RES-39-1-1	HG-RES-39-1-2	TWP-1-1
		Sample Depth:	1005F46-003A	0.5'-1.0'	3.5'-4.0'	1005F46-005A	1005F46-008A	1005F46-009A	0.5'-1.0'
		Lab ID:		1005F46-004A	1005F46-025A				1005B49-031A
		Date Sampled:	05/17/10	05/17/10	05/17/10	05/17/10	05/17/10	05/17/10	05/13/10
		Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility						
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs						
Benzene	71-43-2	86,000	341,000	2.1	0.96 U	0.65 U	0.68 U	0.62 U	4.0
Ethylbenzene	100-41-4	3,500,000	15,600,000	0.85 U	0.96 U	0.65 U	0.68 U	0.62 U	1.0 U
m,p-Xylene	1330-20-7	630,000	2,160,000	0.85 U	0.96 U	0.65 U	0.68 U	0.62 U	1.0 U
o-Xylene	1330-20-6	630,000	2,160,000	0.85 U	0.96 U	0.65 U	0.68 U	0.62 U	1.0 U
Toluene	108-88-3	5,000,000	29,400,000	1.5	0.96 U	0.83	0.68 U	0.62 U	1.8
PAHs (µg/Kg)									
Acenaphthene	83-32-9	3,400,000	18,900,000	220 U	240 U	230 U	240 U	230 U	220 U
Acenaphthylene	208-96-8	1,700,000	9,430,000	220 U	240 U	230 U	240 U	230 U	2000
Anthracene	120-12-7	17,000,000	94,300,000	220 U	240 U	230 U	240 U	230 U	2400
Benz(a)anthracene	56-55-3	15,000	3,010,000	740	240 U	230 U	240 U	230 U	15000
Benzo(a)pyrene	50-32-8	1,500	301,000	770	240 U	230 U	240 U	230 U	12000
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	1100	240 U	300	240 U	230 U	23000
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	750	240 U	230 U	240 U	230 U	10000
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	390	240 U	230 U	240 U	230 U	2400
Chrysene	218-01-9	1,500,000	100,000,000	820	240 U	230 U	240 U	230 U	14000
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	220 U	240 U	230 U	240 U	230 U	2600
Fluoranthene	206-44-0	2,300,000	12,600,000	1500	240 U	360	240 U	230 U	25000
Fluorene	86-73-7	2,300,000	12,600,000	220 U	240 U	230 U	240 U	230 U	460
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	630	240 U	230 U	240 U	230 U	9900
Naphthalene	91-20-3	140,000	484,000	220 U	240 U	320	240 U	230 U	520
Phenanthrene	85-01-8	1,700,000	9,430,000	580	240 U	350	240 U	230 U	11000
Pyrene	129-00-0	1,700,000	9,430,000	1400	240 U	300	240 U	230 U	23000
Metals (mg/Kg)									
Mercury	7439-97-6	5.6	24.9	0.123	0.117 U	0.129	0.117 U	0.110 U	1.09
Arsenic	7440-38-2	39	435	8.68	11.8	5.45	15.9	6.58	17.7
Lead	7439-92-1	400	800	42.0	25.0	197	62.5	12.9	83.6

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

		Sample ID	TWP-1-2	HG-RES-41-SW	HG-RES-42-SW	HG-RES-43-SW	HR-RES-41	HG-RES-42	HG-RES-43
		Sample Depth:	3.5'-4.0'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'
		Lab ID:	1005B49-015A	1005H21-025A	1005H21-008A	1005H21-023A	1005B49-001A	1005B49-002A	1005B49-003A
		Date Sampled:	05/13/10	05/20/10	05/20/10	05/20/10	05/11/10	05/11/10	05/11/10
		Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		Dilution Factor:	1	1	1	1	1	1	1
Compound		Residential Soil	Construction/Utility						
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs						
Benzene	71-43-2	86,000	341,000	2.1	6.9	0.87 U	0.81 U	1.4	1.0
Ethylbenzene	100-41-4	3,500,000	15,600,000	0.98 U	0.88 U	0.87 U	0.81 U	0.75 U	0.69 U
m,p-Xylene	1330-20-7	630,000	2,160,000	0.98 U	0.88 U	0.87 U	0.81 U	1.9	0.69 U
o-Xylene	1330-20-6	630,000	2,160,000	0.98 U	0.88 U	0.87 U	0.81 U	0.75 U	0.69 U
Toluene	108-88-3	5,000,000	29,400,000	0.98 U	1.6	0.87 U	0.81 U	2.5	1.5
PAHs (µg/Kg)									
Acenaphthene	83-32-9	3,400,000	18,900,000	260 U	560	270 U	280 U	240 U	240 U
Acenaphthylene	208-96-8	1,700,000	9,430,000	260 U	2400	270 U	280 U	240 U	240 U
Anthracene	120-12-7	17,000,000	94,300,000	260 U	2500	270 U	280 U	370	240 U
Benz(a)anthracene	56-55-3	15,000	3,010,000	760	11000	270 U	280 U	1700	240 U
Benzo(a)pyrene	50-32-8	1,500	301,000	630	9100	270 U	280 U	1400	240 U
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	1200	9100	270 U	280 U	2300	240 U
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	590	4500	270 U	280 U	810	240 U
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	330	2200	270 U	280 U	710	240 U
Chrysene	218-01-9	1,500,000	100,000,000	740	10000	270 U	280 U	1700	240 U
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	260 U	240 U	270 U	280 U	300	240 U
Fluoranthene	206-44-0	2,300,000	12,600,000	1500	19000	270 U	280 U	3000	240 U
Fluorene	86-73-7	2,300,000	12,600,000	260 U	780	270 U	280 U	240 U	240 U
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	560	4300	270 U	280 U	810	240 U
Naphthalene	91-20-3	140,000	484,000	260 U	970	270 U	280 U	240 U	240 U
Phenanthrene	85-01-8	1,700,000	9,430,000	670	8100	270 U	280 U	1200	240 U
Pyrene	129-00-0	1,700,000	9,430,000	1300	17000	270 U	280 U	2600	240 U
Metals (mg/Kg)									
Mercury	7439-97-6	5.6	24.9	0.125 U	0.120	0.131 U	0.138 U	0.120 U	0.119 U
Arsenic	7440-38-2	39	435	13.6	19.8	15.5	19.1	27.0	9.08
Lead	7439-92-1	400	800	26.1	71.7	27.7	25.3	51.5	53.3

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 2
Surface Soil and Shallow Subsurface Soil Laboratory Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP Site
Huntsville, Alabama

Unvalidated Data

		Sample ID	SED-4-SWALE	SED-5-SWALE
		Sample Depth:	0.0-.0.5'	0.0-.0.5'
		Lab ID:	1005H21-019A	1005H21-024A
		Date Sampled:	05/20/10	05/20/10
		Matrix:	Soil	Soil
		Dilution Factor:	1	1
Compound		Residential Soil	Construction/Utility	
VOCs (µg/Kg)	CASRN	PRGs	Soil PRGs	
Benzene	71-43-2	86,000	341,000	3.9
Ethylbenzene	100-41-4	3,500,000	15,600,000	1.2 U
m,p-Xylene	1330-20-7	630,000	2,160,000	1.2 U
o-Xylene	1330-20-6	630,000	2,160,000	1.2 U
Toluene	108-88-3	5,000,000	29,400,000	4.9
PAHs (µg/Kg)				
Acenaphthene	83-32-9	3,400,000	18,900,000	270 U
Acenaphthylene	208-96-8	1,700,000	9,430,000	270 U
Anthracene	120-12-7	17,000,000	94,300,000	280
Benz(a)anthracene	56-55-3	15,000	3,010,000	1500
Benzo(a)pyrene	50-32-8	1,500	301,000	1500
Benzo(b)fluoranthene	205-99-2	15,000	3,010,000	2800
Benzo(g,h,i)perylene	191-24-2	1,700,000	9,430,000	1100
Benzo(k)fluoranthene	207-08-9	150,000	30,100,000	710
Chrysene	218-01-9	1,500,000	100,000,000	1900
Dibenz(a,h)anthracene	53-70-3	1,500	301,000	270 U
Fluoranthene	206-44-0	2,300,000	12,600,000	3200
Fluorene	86-73-7	2,300,000	12,600,000	270 U
Indeno(1,2,3-cd)pyrene	193-39-5	15,000	3,010,000	1100
Naphthalene	91-20-3	140,000	484,000	270 U
Phenanthrene	85-01-8	1,700,000	9,430,000	1500
Pyrene	129-00-0	1,700,000	9,430,000	2700
Metals (mg/Kg)				
Mercury	7439-97-6	5.6	24.9	0.145
Arsenic	7440-38-2	39	435	13.2
Lead	7439-92-1	400	800	297

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

PRG = Proposed Removal Goal

Residential Soil PRGs apply to surface soil at depths of 0 to 1 foot.

Construction/Utility Soil PRGs apply to soil at depths of 1 to 4 feet.

Shaded and bolded cell indicates compound concentration exceeds a PRG.

CASRN - Chemical Abstract Services Registry Number

Table 3
Subsurface Soil Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP
Huntsville, Alabama

Unvalidated Data

Sample ID	HG-RES-15-1-3	HG-RES-29-1-3	HG-RES-31-1-4	HG-RES-31-1-5	HG-RES-32-1-3	TWP-1-3	TWP-4-1	TWP-4-2	
Sample Depth:	12.0-12.5	19.5-20.0	11.5-12.0	22.5-23.0	10.0-10.5	22.0-22.5	9.5-10.0	20.0-20.5	
Lab ID:	1005J30-008B	1005J30-005A	1005J30-001A	1005J30-002A	1005J30-003A	1005J30-004A	1005J30-007A	1005J30-006A	
Date Sampled:	05/14/10	05/13/10	05/12/10	05/12/10	05/13/10	05/13/10	05/13/10	05/13/10	
Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Dilution Factor:	1	1	1	1	1	1	1	1	
Units:	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	
Compound									
VOCs (µg/Kg)	CASRN								
Benzene	71-43-2	0.72 U	150000	1700	8.9	0.66 U	5900	0.69 U	1.2 U
Ethylbenzene	100-41-4	0.72 U	9600	19000	20	0.66 U	890	0.69 U	1.2 U
m,p-Xylene	1330-20-7	0.72 U	67000	68000	64	0.66 U	3300	0.69 U	1.2 U
o-Xylene	1330-20-6	0.72 U	29000	25000	28	0.66 U	1200	0.69 U	1.2 U
Toluene	108-88-3	0.72 U	130000	14000	17	0.66 U	2300	0.69 U	1.2 U
PAHs (µg/Kg)									
Acenaphthene	83-32-9	260 U	1700	54000	360	240 U	4300 U	250 U	300 U
Acenaphthylene	208-96-8	260 U	1800	36000	320 U	240 U	1800	250 U	300 U
Anthracene	120-12-7	260 U	11000	79000	810	240 U	12000	250 U	300 U
Benzo(a)anthracene	56-55-3	260 U	11000	64000	880	240 U	8600	250 U	300 U
Benzo(a)pyrene	50-32-8	260 U	6500	57000	640	240 U	6800	250 U	300 U
Benzo(b)fluoranthene	205-99-2	260 U	4300	43000	900	240 U	6600	250 U	300 U
Benzo(g,h,i)perylene	191-24-2	260 U	3800	32000	370	240 U	3300	250 U	300 U
Benzo(k)fluoranthene	207-08-9	260 U	5900	39000	320 U	240 U	1800	250 U	300 U
Chrysene	218-01-9	260 U	9600	57000	740	240 U	8000	250 U	300 U
Dibenz(a,h)anthracene	53-70-3	260 U	250 U	23000 U	320 U	240 U	260 U	250 U	300 U
Fluoranthene	206-44-0	260 U	28000	200000	2200	240 U	21000	250 U	300 U
Fluorene	86-73-7	260 U	6000	76000	660	240 U	9000	250 U	300 U
Indeno(1,2,3-cd)pyrene	193-39-5	260 U	3200	27000	360	240 U	2700	250 U	300 U
Naphthalene	91-20-3	260 U	280000	910000	1700	240 U	170000	250 U	300 U
Phenanthrene	85-01-8	260 U	72000	320000	2600	240 U	66000	250 U	300 U
Pyrene	129-00-0	260 U	37000	160000	1700	240 U	28000	250 U	300 U
Metals (mg/Kg)									
Mercury	7439-97-6	0.127 U	0.121 U	0.289	0.161 U	0.121 U	0.125 U	0.124 U	0.148 U
Arsenic	7440-38-2	17.1	11.8	9.96	10.5	6.89	13.3	8.31	6.23
Lead	7439-92-1	6.69	53.0	68.7	10.3	8.62	24.5	11.1	5.94

Notes:

mg/kg = miligrams per kilogram

µg/kg = micrograms per kilogram

CASRN - Chemical Abstract Services Registry Number

Table 4
Sediment Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP
Huntsville, Alabama

Unvalidated Data

				Sample ID	PC-SED-1	PC-SED-2	PC-SED-3
				Sample Depth:	0.0-0.5'	0.0-0.5'	0.0-0.5'
				Lab ID:	1005H21-026A	1005H21-027A	1005H21-017A
				Date Sampled:	05/19/10	05/19/10	05/19/10
				Matrix:	Soil	Soil	Soil
				Dilution Factor:	1	1	1
Compound							
VOCs (µg/Kg)	CASRN	Effects Value	Screening Value				
Benzene	71-43-2	NS	NS	1.8	1.1	1.6	
Ethylbenzene	100-41-4	NS	NS	1.1 U	0.60 U	0.85 U	
m,p-Xylene	1330-20-7	NS	NS	1.1 U	0.60 U	2.0	
o-Xylene	1330-20-6	NS	NS	1.1 U	0.60 U	0.85 U	
Toluene	108-88-3	NS	NS	19	2.1	2.8	
PAHs (µg/Kg)							
Acenaphthene	83-32-9	6,710	330,000	300 U	260 U	250 U	
Acenaphthylene	208-96-8	5,870	330,000	310	260 U	250 U	
Anthracene	120-12-7	46,900	330,000	300 U	260 U	250 U	
Benzo(a)anthracene	56-55-3	74,800	330,000	2100	280	250 U	
Benzo(a)pyrene	50-32-8	88,800	330,000	1600	260 U	250 U	
Benzo(b)fluoranthene	205-99-2	NS	330,000	2500	470	250 U	
Benzo(g,h,i)perylene	191-24-2	NS	330,000	960	260 U	250 U	
Benzo(k)fluoranthene	207-08-9	NS	330,000	660	260 U	250 U	
Chrysene	218-01-9	108,000	330,000	2000	340	250 U	
Dibenz(a,h)anthracene	53-70-3	6,220	330,000	300 U	260 U	250 U	
Fluoranthene	206-44-0	113,000	330,000	3100	600	300	
Fluorene	86-73-7	NS	330,000	300 U	260 U	250 U	
Indeno(1,2,3-cd)pyrene	193-39-5	NS	330,000	930	260 U	250 U	
Naphthalene	91-20-3	34,600	330,000	300 U	260 U	250 U	
Phenanthrene	85-01-8	86,700	330,000	860	260 U	250 U	
Pyrene	129-00-0	153,000	330,000	2900	490	250 U	
Metals (mg/Kg)							
Mercury	7439-97-6	0.13	0.13	0.150 U	0.127 U	0.125 U	
Arsenic	7440-38-2	7.24	7.24	18.9	19.1	15.2	
Lead	7439-92-1	30.2	30.2	43.6	28.7	26.4	

Notes:

mg/kg = milligrams per kilogram

µg/kg = micrograms per kilogram

Shaded and bolded cell indicates compound concentration exceeds a EPA
Region 4 Sediment Effects Value or Sediment Screening Value

CASRN - Chemical Abstract Services Registry Number

Table 5
Temporary Monitoring Well Groundwater Analytical Results
Removal Action Work Plan Investigations
Huntsville Former MGP
Homes
Huntsville, Alabama

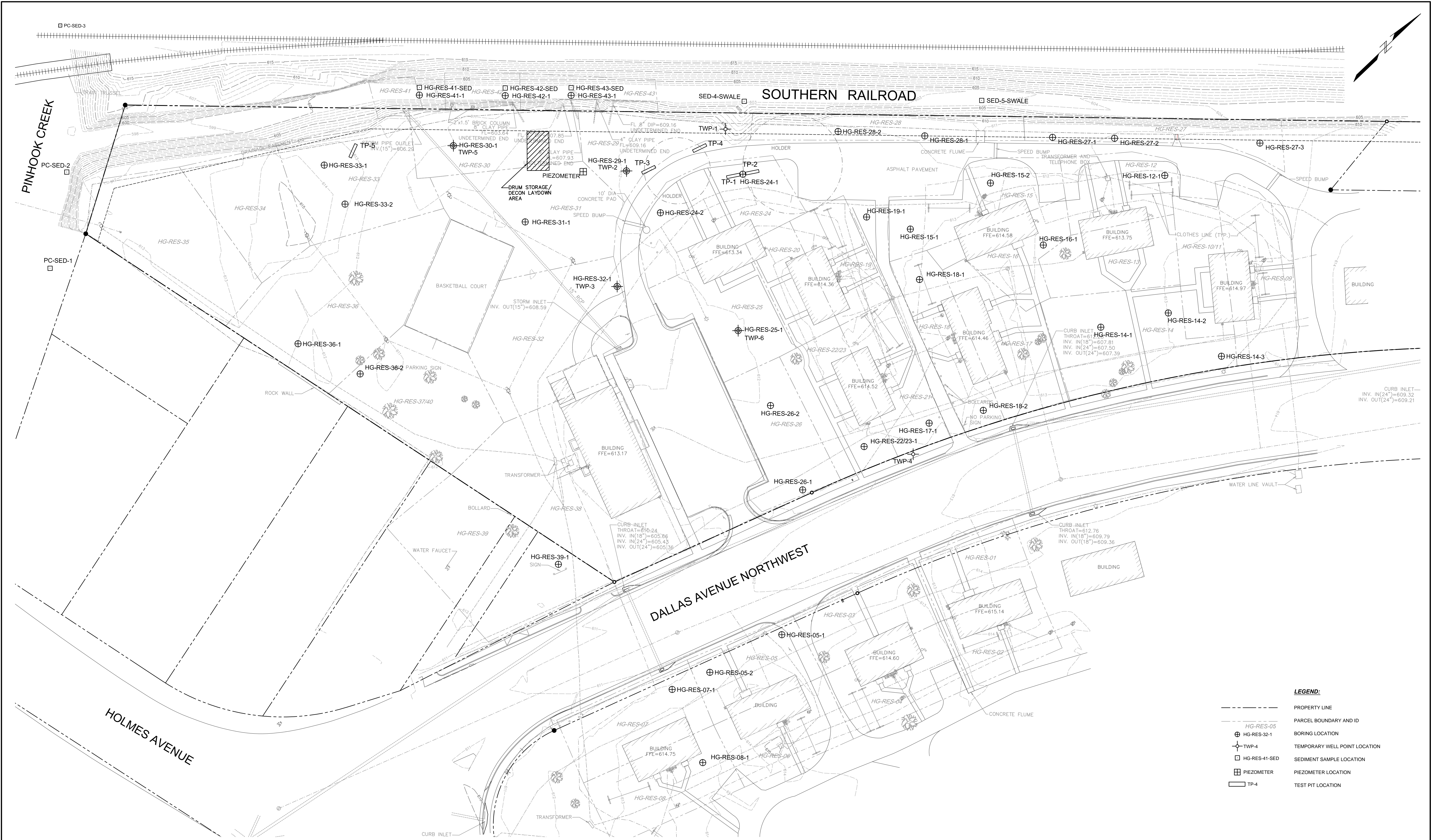
Unvalidated Data

Sample ID Lab ID:		TWP-1 1005F46-016A	TWP-2 1005F46-017A	TWP-3 1005F46-018A	TWP-4 1005F46-019A
Date Sampled:		05/17/10	05/17/10	05/17/10	05/17/10
Matrix:		Water	Water	Water	Water
Dilution Factor:		1	1	1	1
Units:		µg/L	µg/L	µg/L	µg/L
Compound					
VOCs (µg/L)	CASRN				
Benzene	71-43-2	4300	40000	150	1.8
Ethylbenzene	100-41-4	250	470	18	1.0 U
m,p-Xylene	1330-20-7	230	2400	240	1.0 U
o-Xylene	1330-20-6	58	1100	65	1.0 U
Toluene	108-88-3	230	11000	20	1.3
PAHs (µg/L)					
Acenaphthene	83-32-9	15	21	8.7	0.50 U
Acenaphthylene	208-96-8	6.0	38	100 U	1.0 U
Anthracene	120-12-7	3.3	11	6.1	0.050 U
Benzo(a)anthracene	56-55-3	0.25	2.2	1.5	0.050 U
Benzo(a)pyrene	50-32-8	0.18	1.6	1.1	0.050 U
Benzo(b)fluoranthene	205-99-2	0.15	1.3	1.3	0.10 U
Benzo(g,h,i)perylene	191-24-2	0.14	0.76	0.51	0.10 U
Benzo(k)fluoranthene	207-08-9	0.080	0.55	0.43	0.050 U
Chrysene	218-01-9	0.19	1.6	1.2	0.050 U
Dibenz(a,h)anthracene	53-70-3	0.10 U	0.10 U	0.10 U	0.10 U
Fluoranthene	206-44-0	1.8	8.4	5.1	0.10 U
Fluorene	86-73-7	10	39	23	0.10 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.090	0.61	0.47	0.050 U
Naphthalene	91-20-3	860	11000	960	2.7
Phenanthrene	85-01-8	17	65	21	0.14
Pyrene	129-00-0	2.4	9.5	3.9	0.050 U
Metals (µg/L)					
Mercury	7439-97-6	0.00020 U	0.00020 U	0.00020 U	0.00020 U
Arsenic	7440-38-2	5.00 U	5.00 U	5.00 U	5.00 U
Lead	7439-92-1	5.45	3.94	16.6	15.3

Notes:

µg/L - micrograms per liter

CASRN - Chemical Abstract Services Registry Number



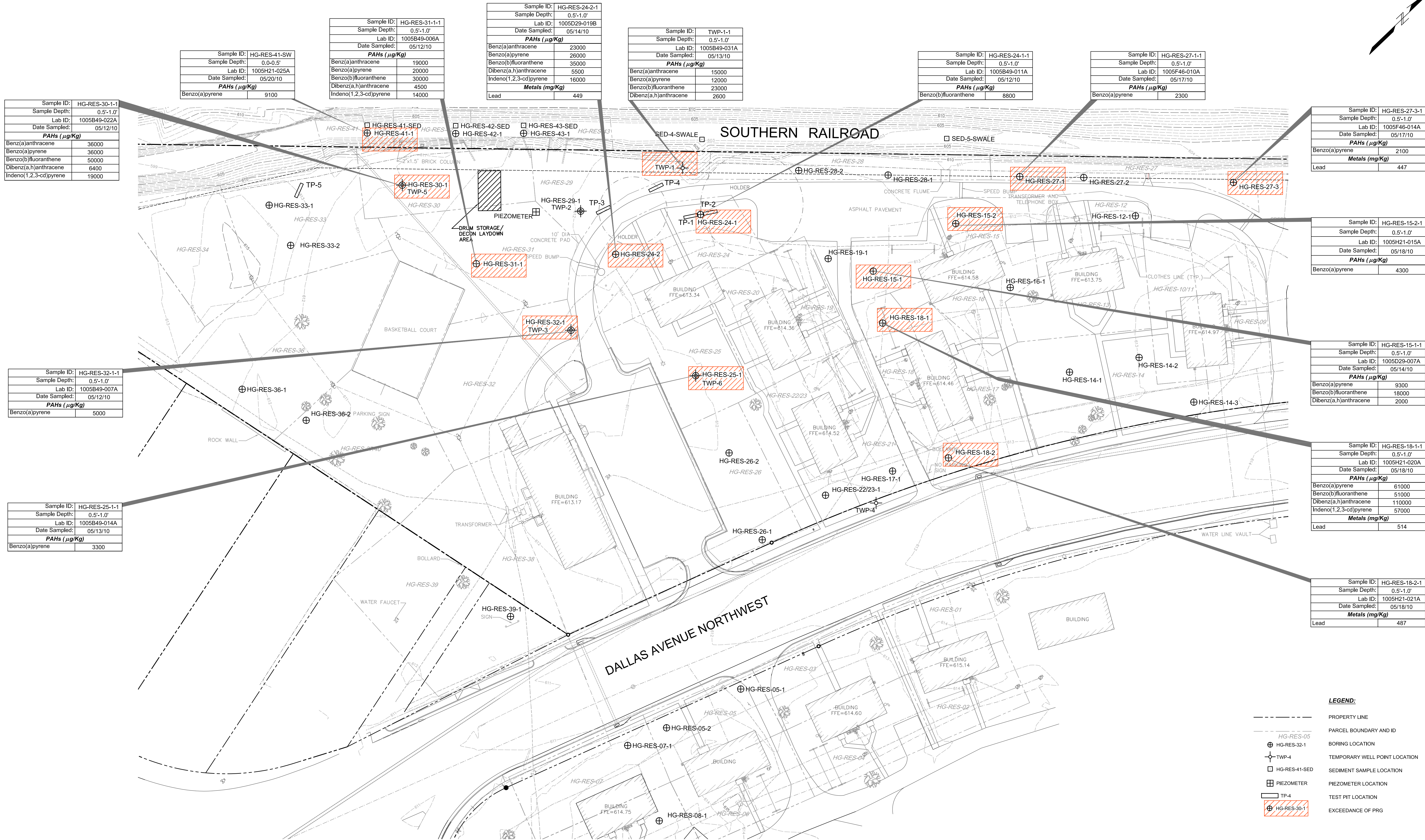
SOURCE:
PLAN BASED ON DRAWING TITLED 'HUNTSVILLE GAS BOUNDARY SURVEY'
PREPARED BY GOODWYN, MILLS & CAWOOD, INC., HUNTSVILLE, ALABAMA,
DATED 04/22/2010, PREPARED FOR ALAGASCO, BIRMINGHAM, ALABAMA.

REMEDIAL ACTION WORK PLAN
HUNTSVILLE FORMER MGP SITE
HUNTSVILLE, ALABAMA
Alagasco
AN ENERGEN COMPANY
PROJECT 993600-1006

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

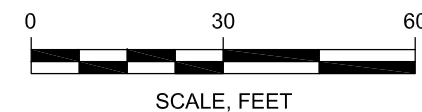
SAMPLE LOCATIONS
July 2010

Figure 1



SOURCE:

PLAN BASED ON DRAWING TITLED HUNTSVILLE GAS BOUNDARY SURVEY
PREPARED BY GOODWYN, MILLS & CAWOOD, INC., HUNTSVILLE, ALABAMA,
DATED 04/22/2010, PREPARED FOR ALAGASCO, BIRMINGHAM, ALABAMA.



REMEDIAL ACTION WORK PLAN
HUNTSVILLE FORMER MGP SITE
HUNTSVILLE, ALABAMA



PROJECT 993600-1006



455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

**SURFACE AND SHALLOW
SUBSURFACE SOIL**

July 2010

Figure 2

Sample ID:	HG-RES-31-1-4
Sample Depth:	11.5-12.0
Lab ID:	1005J30-001A
Date Sampled:	05/12/10
VOCs (µg/Kg)	
Benzene	1700
Ethylbenzene	19000
m,p-Xylene	68000
o-Xylene	25000
Toluene	14000
PAHs (µg/Kg)	
Acenaphthene	54000
Acenaphthylene	36000
Anthracene	79000
Benzo(a)anthracene	64000
Benzo(a)pyrene	57000
Benzo(b)fluoranthene	43000
Benzo(g,h,i)perylene	32000
Benzo(k)fluoranthene	39000
Chrysene	57000
Dibenz(a,h)anthracene	23000
Fluoranthene	200000
Fluorene	76000
Indeno(1,2,3-cd)pyrene	27000
Naphthalene	910000
Phenanthrene	320000
Pyrene	160000
Metals (mg/Kg)	
Mercury	0.289
Arsenic	9.96
Lead	68.7

Sample ID:	HG-RES-31-1-5
Sample Depth:	22.5-23.0
Lab ID:	1005J30-002A
Date Sampled:	05/12/10
VOCs (µg/Kg)	
Benzene	8.9
Ethylbenzene	20
m,p-Xylene	64
o-Xylene	28
Toluene	17
PAHs (µg/Kg)	
Acenaphthene	360
Acenaphthylene	320
Anthracene	810
Benzo(a)anthracene	880
Benzo(a)pyrene	640
Benzo(b)fluoranthene	900
Benzo(g,h,i)perylene	370
Benzo(k)fluoranthene	320
Chrysene	740
Dibenz(a,h)anthracene	320
Fluoranthene	2200
Fluorene	660
Indeno(1,2,3-cd)pyrene	360
Naphthalene	1700
Phenanthrene	2600
Pyrene	1700
Metals (mg/Kg)	
Mercury	0.161
Arsenic	10.5
Lead	10.3

Sample ID:	HG-RES-29-1-3
Sample Depth:	19.5-20.0
Lab ID:	1005J30-006A
Date Sampled:	05/13/10
VOCs (µg/Kg)	
Benzene	150000
Ethylbenzene	9600
m,p-Xylene	67000
o-Xylene	29000
Toluene	130000
PAHs (µg/Kg)	
Acenaphthene	1700
Acenaphthylene	1800
Anthracene	11000
Benzo(a)anthracene	11000
Benzo(a)pyrene	6500
Benzo(b)fluoranthene	4300
Benzo(g,h,i)perylene	3800
Benzo(k)fluoranthene	5900
Chrysene	9600
Dibenz(a,h)anthracene	250
Fluoranthene	28000
Fluorene	6000
Indeno(1,2,3-cd)pyrene	3200
Naphthalene	280000
Phenanthrene	72000
Pyrene	37000
Metals (mg/Kg)	
Mercury	0.121
Arsenic	11.8
Lead	53.0

Sample ID:	TWP-1-3
Sample Depth:	22.0-22.5
Lab ID:	1005J30-004A
Date Sampled:	05/13/10
VOCs (µg/Kg)	
Benzene	5900
Ethylbenzene	890
m,p-Xylene	3300
o-Xylene	1200
Toluene	2300
PAHs (µg/Kg)	
Acenaphthene	4300
Acenaphthylene	1800
Anthracene	12000
Benzo(a)anthracene	8600
Benzo(a)pyrene	6800
Benzo(b)fluoranthene	6600
Benzo(g,h,i)perylene	3300
Benzo(k)fluoranthene	1800
Chrysene	8000
Dibenz(a,h)anthracene	260
Fluoranthene	21000
Fluorene	9000
Indeno(1,2,3-cd)pyrene	2700
Naphthalene	170000
Phenanthrene	66000
Pyrene	28000
Metals (mg/Kg)	
Mercury	0.125
Arsenic	13.3
Lead	24.5

Sample ID:	HG-RES-15-1-3
Sample Depth:	12.0-12.5
Lab ID:	1005J30-008B
Date Sampled:	05/14/10
VOCs (µg/Kg)	
Benzene	0.72
Ethylbenzene	0.72
m,p-Xylene	0.72
o-Xylene	0.72
Toluene	0.72
PAHs (µg/Kg)	
Acenaphthene	260
Acenaphthylene	260
Anthracene	260
Benzo(a)anthracene	260
Benzo(a)pyrene	260
Benzo(b)fluoranthene	260
Benzo(g,h,i)perylene	260
Benzo(k)fluoranthene	260
Chrysene	260
Dibenz(a,h)anthracene	260
Fluoranthene	260
Fluorene	260
Indeno(1,2,3-cd)pyrene	260
Naphthalene	260
Phenanthrene	260
Pyrene	260
Metals (mg/Kg)	
Mercury	0.127
Arsenic	17.1
Lead	6.69

Sample ID:	HG-RES-32-1-3
Sample Depth:	10.0-10.5
Lab ID:	1005J30-003A
Date Sampled:	05/13/10
VOCs (µg/Kg)	
Benzene	0.66
Ethylbenzene	0.66
m,p-Xylene	0.66
o-Xylene	0.66
Toluene	0.66
PAHs (µg/Kg)	
Acenaphthene	240
Acenaphthylene	240
Anthracene	240
Benzo(a)anthracene	240
Benzo(a)pyrene	240
Benzo(b)fluoranthene	240
Benzo(g,h,i)perylene	240
Benzo(k)fluoranthene	240
Chrysene	240
Dibenz(a,h)anthracene	240
Fluoranthene	240
Fluorene	240
Indeno(1,2,3-cd)pyrene	240
Naphthalene	240
Phenanthrene	240
Pyrene	240
Metals (mg/Kg)	
Mercury	0.121
Arsenic	6.89
Lead	8.62

Sample ID:	TWP-4-1
Sample Depth:	9.5-10.0
Lab ID:	1005J30-007A
Date Sampled:	05/13/10
VOCs (µg/Kg)	
Benzene	0.69
Ethylbenzene	0.69
m,p-Xylene	0.69
o-Xylene	0.69
Toluene	0.69
PAHs (µg/Kg)	
Acenaphthene	250
Acenaphthylene	250
Anthracene	250
Benzo(a)anthracene	250
Benzo(a)pyrene	250
Benzo(b)fluoranthene	250
Benzo(g,h,i)perylene	250
Benzo(k)fluoranthene	250
Chrysene	250
Dibenz(a,h)anthracene	250
Fluoranthene	250
Fluorene	250
Indeno(1,2,3-cd)pyrene	250
Naphthalene	250
Phenanthrene	250
Pyrene	250
Metals (mg/Kg)	
Mercury	0.124
Arsenic	8.31
Lead	11.1

Sample ID:	TWP-4-2
Sample Depth:	20.0-20.5
Lab ID:	1005J30-006A
Date Sampled:	05/13/10
VOCs (µg/Kg)	
Benzene	1.2
Ethylbenzene	1.2
m,p-Xylene	1.2
o-Xylene	1.2
Toluene	1.2
PAHs (µg/Kg)	
Acenaphthene	300
Acenaphthylene	300
Anthracene	300
Benzo(a)anthracene	300
Benzo(a)pyrene	300
Benzo(b)fluoranthene	300
Benzo(g,h,i)perylene	300
Benzo(k)fluoranthene	300
Chrysene	300
Dibenz(a,h)anthracene	300
Fluoranthene	300
Fluorene	300
Indeno(1,2,3-cd)pyrene	300
Naphthalene	300
Phenanthrene	300
Pyrene	300
Metals (mg/Kg)	
Mercury	0.148
Arsenic	6.23
Lead	5.94

LEGEND:

- PROPERTY LINE
- PARCEL BOUNDARY AND ID
- BORING LOCATION
- TEMPORARY WELL POINT LOCATION
- SEDIMENT SAMPLE LOCATION
- PIEZOMETER LOCATION
- TEST PIT LOCATION
- VISUAL INDICATIONS OF IMPACTS DETECTED

SOURCE:

PLAN BASED ON DRAWING TITLED HUNTSVILLE GAS BOUNDARY SURVEY
PREPARED BY GOODWYN, MILLS & CAWOOD, INC., HUNTSVILLE, ALABAMA,
DATED 04/22/2010, PREPARED FOR ALAGASCO, BIRMINGHAM, ALABAMA.



REMEDIAL ACTION WORK PLAN
HUNTSVILLE FORMER MGP SITE
HUNTSVILLE, ALABAMA



PROJECT 993600-1006

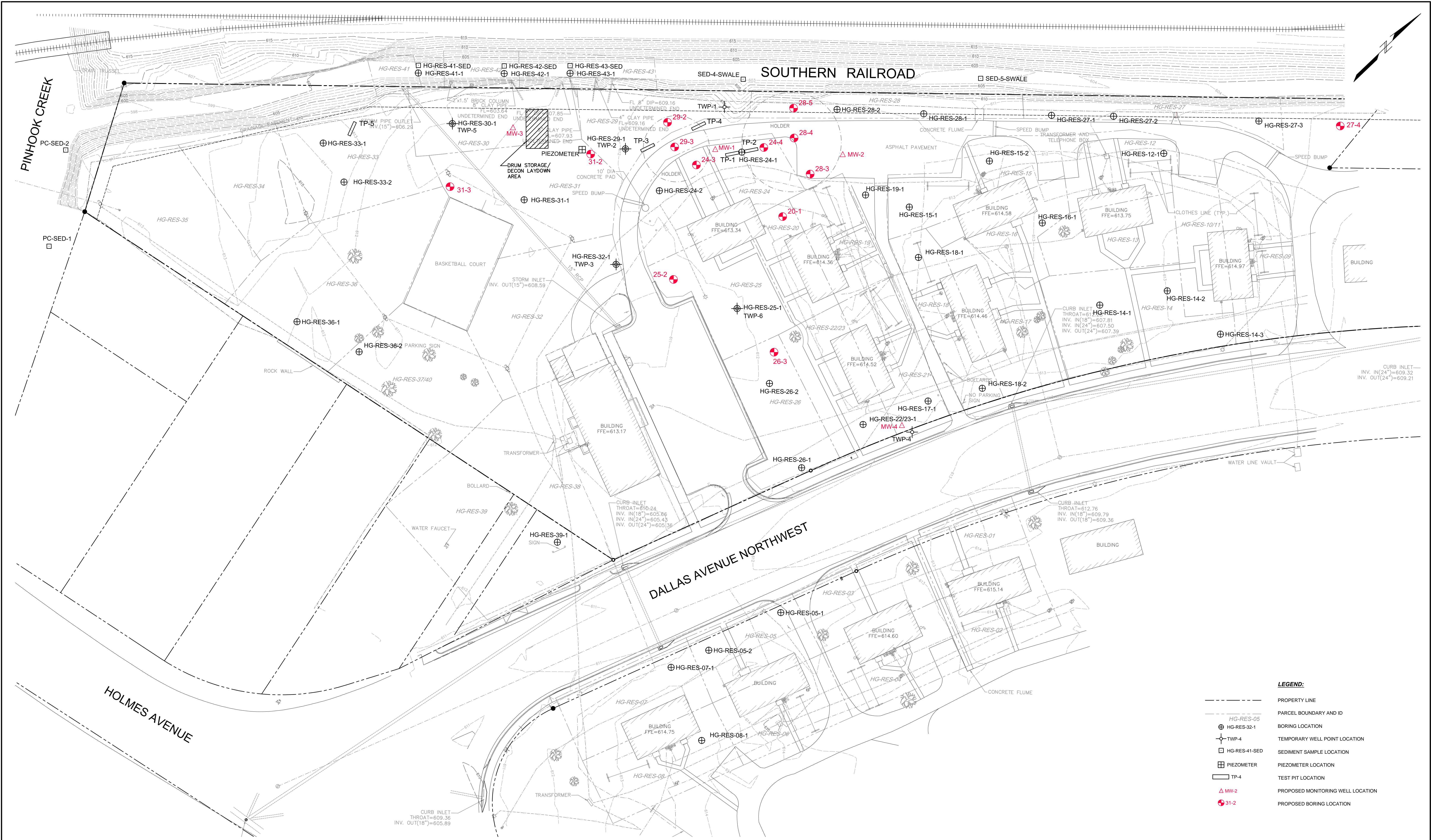


455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

SUBSURFACE SOIL

July 2010

Figure 3



SOURCE:
PLAN BASED ON DRAWING TITLED HUNTSVILLE GAS BOUNDARY SURVEY
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REMEDIAL ACTION WORK PLAN
HUNTSVILLE FORMER MGP SITE
HUNTSVILLE, ALABAMA
Alagasco
AN ENERGEN COMPANY
PROJECT 993600-1006

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

- LEGEND:**
- PROPERTY LINE
 - - - - - PARCEL BOUNDARY AND ID
 - ⊕ HG-RES-32-1 BORING LOCATION
 - ⊕ TWP-4 TEMPORARY WELL POINT LOCATION
 - ⊕ HG-RES-41-SED SEDIMENT SAMPLE LOCATION
 - ⊕ PIEZOMETER PIEZOMETER LOCATION
 - ⊕ TP-4 TEST PIT LOCATION
 - △ MW-2 PROPOSED MONITORING WELL LOCATION
 - ⊕ 31-2 PROPOSED BORING LOCATION

**PROPOSED
SAMPLE LOCATIONS**