KeySpan Corporation
Environmental Asset Management
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April 7, 2003

Amen M. Omorogbe, P.E.
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Western Remedial Action, 11th Floor
625 Broadway
Albany, NY 12233-7010

Re: Halesite Former MGP Site
Supplemental Remedial Investigation – Final Work Plan
Site No. 1-52-173

Dear Mr. Omorogbe:

KeySpan Corporation (KeySpan) is pleased to present this final Work Plan for a Supplemental Remedial Investigation (RI) at the Halesite former manufactured gas plant (MGP) site (the site). The Work Plan scope of work is based on the recommendations provided in the Halesite former MGP site RI report which was transmitted to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) on December 12, 2002. In addition, this work plan incorporates the agreed upon responses to NYSDEC and NYSDOH comments on the draft work plan included in our letter dated April 2, 2003. This scope of work also takes into account site access limitations, our current understanding of the extent of off-site migration of chemical constituents, as well as our current understanding of hydrogeology within the investigation area.

Supplemental RI Objectives

The objectives of the supplemental RI include:

- Further define the on-site nature and extent of nonaqueous phase liquid (NAPL) and associated chemical constituents in the vicinity of former Tar Deposit Area No. 1, the Small Crater, Soil Boring HHSB-41, Tar Deposit Area No. 3 and Tar Deposit Area No. 4 (off-site);

- Further define the off-site migration of chemical constituents to the west, northwest, and south of the site;

- Determine whether unregistered private water supply wells exist in the vicinity of the site and, if wells are identified, determine whether they are impacted;

- Obtain additional soil vapor data in the vicinity of the off-site commercial building to the south of the site and by the Halesite Fire Department building;

- Determine indoor air quality within the off-site commercial building to the south of the site;

- Determine if NYSDEC-registered well S72892 has been impacted by site-related chemical constituents;

- Determine if NAPL seeps exist within Huntington Harbor; and

- Obtain additional data needed to evaluate the potential effectiveness of various remedial technologies under a Remedial Action Plan (RAP).

Supplemental RI Scope of Work

In order to meet the objectives stated above, the proposed scope of work for the supplemental RI will include soil and groundwater probes, soil vapor probes, air sampling and groundwater monitoring well installation and sampling. Unless specified otherwise, all field investigation activities to be completed as part of the supplemental RI will be conducted in accordance with the NYSDEC-approved Generic Work Plan in Volume II of the Remedial Investigation/Feasibility Study Work Plan for the Halesite former MGP site, dated October 2000 (herein referred to as the "approved work plan").

It should be noted that the feasibility of advancing soil borings and groundwater probes within the upland portion of the site as proposed in this Work Plan will be determined in the field and will largely be contingent on site terrain and equipment access.

The following is a summary of the major elements of the supplemental RI:

Soil Probes

Soil probes, using direct push sampling technologies (e.g., Geoprobe™), will be the most cost-effective method to obtain subsurface soil data from on-site, as well as off-site locations. Furthermore, due to site terrain, a more conventional drill rig may not be able to access portions of the site. Soil probes will be completed in the vicinity of Tar Deposit Area No. 1, the Small Crater, HHSB-41, Tar Deposit Area No. 3, Former Tar Deposit Area No. 4 and within the off-site dock/marina areas. At each probe location, soil samples will be collected continuously from ground surface to the planned soil probe termination depth. However, if NAPL is encountered at the soil boring locations, the borings will be continued until at least 10 feet of visibly "clean" soil

has been sampled. In addition, if a soil probe penetrates the shallow fine-grained confining layer that has been identified within portions of the site, the probe hole will be grouted with bentonite to protect the integrity of the confining unit.

Tables 1 and **2** (see **Attachment A**) summarize the number of proposed soil probes, the objective of each probe, proposed depths, as well as the number of samples to be selected for laboratory analysis for on-site and off-site locations, respectively. In addition, **Tables 1** and **2** summarize the planned chemical analysis of each soil sample and the laboratory data turnaround time. The proposed sample locations are shown on **Drawing 1** (see **Attachment B**). Note that all proposed sample locations shown on **Drawing 1** are approximate and that the actual location of each sample point will be determined in the field based on field conditions, equipment access and utility clearance.

Groundwater Probes

Groundwater probes, using direct push sampling technologies, will be completed within on-site and off-site source areas to help identify zones of elevated benzene, toluene, ethylbenzene and xylene (BTEX) and polycyclic aromatic hydrocarbons (PAHs), as well as zones of potentially pooled and mobile NAPL. Groundwater probes will also be completed off-site to further delineate migration of BTEX/PAHs and NAPL. Groundwater probes will be completed in the vicinity of Tar Deposit No. 3, Former Tar Deposit No. 4 and within the off-site dock/marina areas. The selection of groundwater sample intervals at each probe location will be determined in the field and will be based on the current understanding of BTEX/PAHs and NAPL distribution at the probe location, as well as field observations of subsurface soil recovered from soil probes completed in the vicinity of the groundwater probe. As discussed, if a groundwater probe is advanced beyond the shallow fine-grained confining layer, the probe hole will be grouted with bentonite to protect the integrity of the confining unit.

Tables 1 and **2** summarize the number of proposed sample points, the objective of each sample point, proposed depths of groundwater probes as well as the number of samples to be selected for laboratory analysis for on-site and off-site locations, respectively. In addition, **Tables 1** and **2** summarize the planned chemical analysis of each sample and the laboratory data turnaround time. The proposed sample locations are shown on **Drawing 1**. Note that all proposed sample locations shown on **Drawing 1** are approximate and that the actual location of each sample point will be determined in the field based on field conditions, equipment access and utility clearance.

Groundwater Monitoring Well Installation

As summarized in **Table 2**, two permanent off-site groundwater monitoring wells (shallow and intermediate) are to be installed (as a cluster) as part of the supplemental RI. All monitoring wells will be installed by the hollow stem auger drilling method downgradient of the site. Given that the primary objective of the additional off-site wells is to identify zones of NAPL and related chemical constituents, well locations and screen settings will be determined in the field and will be based on:

- The current understanding of BTEX/PAHs and NAPL distribution;
- Groundwater probe results, and
- Observations of subsurface soil recovered from completed soil probes.

Therefore, the location of the proposed well cluster is not provided on **Drawing 1**. However, based on the results of the initial investigation, it is anticipated that the well cluster may be installed in the vicinity of proposed borings HHSB-60 and HHSB-61.

As part of the completion of each monitoring well, soil samples will be collected at 5-foot intervals unless geologic information is available from a nearby completed soil probe/boring (i.e., within 20 feet of the planned well cluster). Well construction and development will be in accordance with the approved work plan.

After installation and development, all newly installed and existing monitoring wells will be sampled for BTEX and PAHs. In addition, a selected number of wells will be analyzed for geochemical and monitored natural attenuation (MNA) parameters. If measurable NAPL is identified in a monitoring well, a sample will be collected and submitted for laboratory analysis to determine hydrocarbon composition, as well as basic physical properties, such as density and viscosity.

Soil Vapor Sampling

As indicated in **Table 2**, the field investigation will include the collection of soil vapor samples using direct push sampling technologies and/or hand operated slide hammer. Soil vapor samples will be collected in the vicinity of the office building (south of the site) and the Halesite Fire Department building. Soil vapor samples will be analyzed for VOCs by USEPA Method TO-14 (including naphthalene) utilizing SUMMA canisters. The proposed sample locations are shown on **Drawing 1**. Note that all proposed sample locations shown on **Drawing 1** are approximate and that the actual location of each sample point will be determined in the field based on field

conditions, equipment access and utility clearance. The soil vapor sample on the office building property is planned to be collected immediately adjacent to the building at a depth below the floor slab. This soil vapor sample will be collected concurrent with indoor and outdoor air sampling at the office building pending the successful completion of arrangements for access to this property (see Indoor/Outdoor Air Sampling).

Indoor/Outdoor Air Sampling

Indoor and outdoor air sampling for VOCs by USEPA Method TO-14 (including naphthalene) will be conducted at the office building property located to the south of the site utilizing SUMMA canisters, pending successful completion of arrangements for access to this property. One-hour composite samples will be collected at each sample location. As part of the indoor air sampling program, a questionnaire (provided in the August 2001 NYSDOH Indoor Air Sampling Guidance) will be completed with the occupant and/or property owner to assess existing chemical storage/use, and the most appropriate air sampling location(s) will be selected (during the field investigation) in consultation with the NYSDEC and NYSDOH.

Indoor air samples will be collected in areas representative of different indoor environments, including one in the area most likely to be affected by site-related impacts. It is anticipated that the indoor air samples will be collected at the following locations: one in the lobby near the elevator; one in the office of a tenant; and, one requisite (NYSDOH required) duplicate sample in the office. In addition, an ambient air sample will be collected at a location outside of the structure near the entrance to the building. This outdoor/ambient air sample will be collected in conjunction with the indoor air sampling.

Hydraulic Conductivity Testing

In order to obtain site-specific information on the hydraulic conductivity of the glacial sand unit, slug tests will be performed at monitoring wells HHMW-04I, HHMW-05I and HHMW-09I. Each well will be subjected to a rising head and falling head slug test. Head measurements will be recorded using an automated data logger. The generated field data will be analyzed using the Bouwer & Rice Slug Test Method.

In addition, up to two undisturbed soil samples will be collected from the shallow fine-grained unit using the Shelby Tube sampling method and analyzed for vertical permeability, as well as total organic carbon (TOC), grain size and specific gravity. One sample will be collected in the general vicinity of completed soil probe HHSB-20 and the second will be collected in the general vicinity of completed soil probe HHSB-24.

Probing within Huntington Harbor

Probing within Huntington Harbor will be conducted, during low tide conditions, at approximate 20-foot intervals at 10 to 12 locations along the bulkhead immediately west of the site. The harbor bottom will be probed utilizing a steel rod. Observations, such as depth and sediment characteristics will be recorded at each probe location, along with any observations of tar, NAPL, sheens or odors. The probing program will be conducted at the end of the supplemental RI field program and will be correlated with existing chemical and geologic data to determine if the Halesite former MGP site has impacted Huntington Harbor. It should be noted that, at this time, no sediment or water samples are planned to be collected for analysis from the harbor.

Private Well Survey

A private well survey will be conducted within 250 feet of the site to further evaluate the presence of any private water supply wells within close proximity of the site. NYSDEC registered water supply well records and the Suffolk County Water Authority (SCWA) customer data base will be obtained and evaluated. The evaluation of the potential presence of private water supply wells will include mailing questionnaires and/or door-to-door interviews. The standard well/basement survey form utilized during prior investigations will be used for the Halesite private well survey. Based on the findings of the survey, developed parcels of property that may utilize private water supply wells will be identified. In addition, if unregistered private water supply wells are identified within the survey area, KeySpan will attempt to collect samples from these wells (active and inactive) that are accessible. All samples collected from private wells will be analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), RCRA metals, total cyanide and free cyanide.

Chemical Analysis of Samples

Based on investigations completed to date, chemical analysis of selected subsurface soil samples will be limited to BTEX and PAHs given they have been determined to be the chemical constituents of concern. In addition, the analysis of the majority of collected groundwater samples will be limited to BTEX and PAHs; however, a number of monitoring well samples will also be analyzed for selected geochemical and MNA parameters. If measurable NAPL is identified in a monitoring well, a sample will be collected and submitted for laboratory analysis to determine hydrocarbon composition, as well as basic physical properties, such as density and viscosity, given this data would be useful in the selection of remedial technologies. **Tables 1** and **2** summarize the specific chemical analysis of each sample to be collected as part of the supplemental RI. Laboratory analysis of samples will be completed under varying turnaround

schedules to assist in the final selection of probe and monitoring well locations as the field investigation progresses.

Quality Assurance/Quality Control Plan

Quality assurance/quality control (QA/QC) samples will be collected as part of the supplemental RI as summarized in **Table 3** (see **Attachment A**). One set of QA/QC samples, consisting of a matrix spike, matrix spike duplicate and field blank will be collected and analyzed for every 20 environmental samples collected in the field.

All sample analysis and data validation will be conducted in accordance with NYSDEC 6/2000 Analytical Services Protocol (ASP). All other information not provided in this scope of work, such as detailed sampling procedures and protocols, is included in the approved work plan.

Health and Safety Plan

All field work will be conducted in a manner consistent with the provisions of the Site-Specific Health and Safety Plan.

Field Program Schedule

Mobilization to the site will take place during the week of April 7, 2003, and field investigation activities will commence on April 15, 2003. It is estimated that the proposed field program will be completed in approximately 6 to 7 weeks. Prior to undertaking the proposed field work, property owners must be notified and access agreements secured. On-site field work will be initiated first while private property access agreements are secured to minimize delays during the field program.

Supplemental RI Summary Report

A report will be prepared documenting the findings of the supplemental RI. The report will include the following:

- A summary of completed field work and boring logs;
- Updated sample location maps;
- Updated geologic cross sections and groundwater contour maps to reflect the additionally acquired data;

- Boring logs and well completion logs;
- Updated graphics depicting source areas and the extent of NAPL;
- Analytical data summary tables including comparison to appropriate standards, criteria and guidance values (SCGs);
- Data validation findings;
- Private well and basement survey findings;
- Private well sampling results; and
- Findings and recommendations.

If you have any questions, feel free to contact me at (516) 545-2563.

Sincerely,

Fred S. Klet

for Theodore O. Leissing, Jr.
Director, MGP Program – Long Island

TOL/ASP/CBP/mt
cc: W. Parish, NYSDEC, Region 1
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ATTACHMENT A

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUMMARY TABLES (TABLES 1 AND 2)
AND
QA/QC SAMPLE SUMMARY TABLE (TABLE 3)

TABLE 1
Halesite Former MGP Site
Supplemental Remedial Investigation
SUMMARY OF ON-SITE INVESTIGATION ACTIVITIES

Investigation Method/Technology	Sample Point ID	Estimated Maximum Depth Below Grade (ft)	No. of Samples Selected for Analysis	Analysis					Laboratory Data Turnaround	Sample Point Objectives/Comments
				BTEX [1]	PAHs [2]	Geotechnical Parameters [3]	Geochemical Parameters [4]	Field Parameters [5]		
Subsurface Soil Investigation										
Geoprobe Soil Borings	HHSB-45	40	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-41.
	HHSB-46	40	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-41.
	HHSB-47	40	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-41.
	HHSB-48	30	2	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near Former Tar Deposit Area No. 1.
	HHSB-49	30	2	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near Former Tar Deposit Area No. 1.
	HHSB-50	30	2	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near the Small Crater.
	HHSB-51	30	2	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near the Small Crater.
	HHSB-52	30	2	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near the Small Crater.
	HHSB-53	55	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-38/Tar Deposit Area No. 3.
	HHSB-54	55	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-38/Tar Deposit Area No. 3.
	HHSB-55	65	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near Tar Deposit Area No. 3.
	HHSB-56	65	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near Tar Deposit Area No. 3.
	HHSB-57	65	3	X	X	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near Tar Deposit Area No. 3.
	HHSB-20	10	1	--	--	X	--	--	28 days	Collect a geotechnical sample utililizing a Shelby Tube at soil boring location HHSB-20.
	HHSB-24	10	1	--	--	X	--	--	28 days	Collect a geotechnical sample utililizing a Shelby Tube at soil boring location HHSB-24.

TABLE 1
Halesite Former MGP Site
Supplemental Remedial Investigation
SUMMARY OF ON-SITE INVESTIGATION ACTIVITIES

Investigation Method/Technology	Sample Point ID	Estimated Maximum Depth Below Grade (ft)	No. of Samples Selected for Analysis	Analysis					Laboratory Data Turnaround	Sample Point Objectives/Comments
				BTEX [1]	PAHs [2]	Geotechnical Parameters [3]	Geochemical Parameters [4]	Field Parameters [5]		
Groundwater Investigation										
Monitoring Well Sampling	HHMW-01I	47	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	HHMW-04I	42	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	HHMW-05S1	11.5	1	X	X	--	X	--	28 days	Obtain On-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-05S2	30	1	X	X	--	X	--	28 days	Obtain On-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-05I	42	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	HHMW-05D	92	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	HHMW-09S1	11.5	1	X	X	--	X	--	28 days	Obtain On-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-09S2	30	1	X	X	--	X	--	28 days	Obtain On-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-09I	56	1	X	X	--	X	--	28 days	Obtain On-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-09D	97	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	HHMW-10	20	1	X	X	--	X	--	28 days	Obtain On-site groundwater quality data. Collect a geochemical groundwater sample.
	MW-01	25	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	MW-02	26	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	MW-03	12	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	MW-04	21	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.

TABLE 1
Halesite Former MGP Site
Supplemental Remedial Investigation
SUMMARY OF ON-SITE INVESTIGATION ACTIVITIES

Investigation Method/Technology	Sample Point ID	Estimated Maximum Depth Below Grade (ft)	No. of Samples Selected for Analysis	Analysis					Laboratory Data Turnaround	Sample Point Objectives/Comments
				BTEX [1]	PAHs [2]	Geotechnical Parameters [3]	Geochemical Parameters [4]	Field Parameters [5]		
Monitoring Well Sampling (continued)	P-01	15.4	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
	P-02	16.4	1	X	X	--	--	--	28 days	Obtain On-site groundwater quality data.
Groundwater Probe	HHGP-24	65	2	X	X	--	--	X	2 weeks	Determine groundwater quality in the vicinity of Tar Deposit Area No. 3 above and below the fine-grain unit, if possible.

Notes:

-- : Not Applicable.

X : Sample selected for analysis.

[1] BTEX via USEPA Method 8260.

[2] PAHs via USEPA Method 8270.

[3] Geotechnical parameters include vertical permeability via ASTM Method D2434, total organic carbon (TOC) via Method 9060, grain size via ASTM Method D422 and specific gravity via ASTM Method D854

[4] Geochemical parameters include total dissolved solids (TDS) by via Method 160.1, alkalinity via 310.1, total dissolved iron via Method 200, sulfate via Method 300, nitrate via Method 300, manganese via Method 200, cations (sodium, calcium, magnesium, potassium via Method 200), total iron via USEPA Method 6010, dissolved iron via 6010, ferrous iron (Fe II) via Standard Method 3500-Fe-D Modified, dissolved manganese via Method 6010, chemical oxygen demand via Standard Method 5220-C,D, biological oxygen demand via USEPA Method 405.1, microbial plate count via Standard Method 907, ammonia via Standard Method 4500-NH3 B, carbon dioxide via Standard Method 4500-CO2 C, ortho phosphate via Standard Method 4500-P,E, sodium via USEPA Method SW-846-6010B, chloride via Standard Method 4500-Cl,B, methane via EPA Research Laboratory Method RSKSOP-175 and dissolved organic carbon via Method 415.1

[5] Field Parameters include temperature, pH, conductivity, dissolved oxygen and oxidation-reduction potential.

TABLE 2
Halesite Former MGP Site
Supplemental Remedial Investigation
SUMMARY OF OFF-SITE INVESTIGATION ACTIVITIES

Investigation Method/Technology	Sample Point ID	Estimated Maximum Depth Below Grade (ft)	No. of Samples Selected for Analysis	Analysis						Laboratory Data Turnaround	Sample Point Objectives/Comments
				BTEX [1]	PAHs [2]	VOCs [3]	VOCs, SVOCs, RCRA Metals, total CN and free CN [4]	Geochemical Parameters [5]	Field Parameters [6]		
Subsurface Soil Investigation											
Geoprobe Soil Borings	HHSB-58	50	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil to the west of the site.
	HHSB-59	50	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil to the west of the site.
	HHSB-60	50	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil to the west of the site.
	HHSB-61	50	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil to the west of the site.
	HHSB-62	50	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil to the west of the site.
	HHSB-63	40	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-30.
	HHSB-64	40	2	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near soil boring HHSB-30.
	HHSB-65	55	3	X	X	--	--	--	--	28 days	Delineate the vertical and horizontal extent of BTEX/PAHs and NAPL in subsurface soil near Former Tar Deposit Area No. 4.
Groundwater Investigation											
Groundwater Probes	HHGP-25	50	4	X	X	--	--	--	X	2 weeks	Determine groundwater quality northwest of the site. Groundwater probe samples to be collected at the following approximate intervals: 6'-10'; 16'-20'; 26'-30'; and 46'-50'. Actual intervals may be adjusted in the field based on topography, drilling conditions, and depth to groundwater.
	HHGP-26	50	4	X	X	--	--	--	X	2 weeks	Determine groundwater quality west of the site. Groundwater probe samples to be collected at the following approximate intervals: 6'-10'; 16'-20'; 26'-30'; and 46'-50'. Actual intervals may be adjusted in the field based on topography, drilling conditions, and depth to groundwater.
	HHGP-27	50	4	X	X	--	--	--	X	2 weeks	Determine groundwater quality west of the site. Groundwater probe samples to be collected at the following approximate intervals: 6'-10'; 16'-20'; 26'-30'; and 46'-50'. Actual intervals may be adjusted in the field based on topography, drilling conditions, and depth to groundwater.
	HHGP-28	55	2	X	X	--	--	--	X	2 weeks	Determine groundwater quality in the vicinity of the Former Tar Deposit Area No. 4 above and below the fine-grain unit, if possible.
Monitoring Well Installation and Sampling	HHMW-06S1	9.5	1	X	X	--	--	X	X	28 days	Obtain off-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-06S2	24	1	X	X	--	--	X	X	28 days	Obtain off-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-06I	47	1	X	X	--	--	--	--	28 days	Obtain off-site groundwater quality data.
	HHMW-07S1	10	1	X	X	--	--	X	X	28 days	Obtain off-site groundwater quality data. Collect a geochemical groundwater sample.

TABLE 2
Halesite Former MGP Site
Supplemental Remedial Investigation
SUMMARY OF OFF-SITE INVESTIGATION ACTIVITIES

Investigation Method/Technology	Sample Point ID	Estimated Maximum Depth Below Grade (ft)	No. of Samples Selected for Analysis	Analysis						Laboratory Data Turnaround	Sample Point Objectives/Comments
				BTEX [1]	PAHs [2]	VOCs [3]	VOCs, SVOCs, RCRA Metals, total CN and free CN [4]	Geochemical Parameters [5]	Field Parameters [6]		
Monitoring Well Installation and Sampling (continued)	HHMW-07S2	28	1	X	X	--	--	X	X	28 days	Obtain off-site groundwater quality data. Collect a geochemical groundwater sample.
	HHMW-07I	57	1	X	X	--	--	--	--	28 days	Obtain off-site groundwater quality data.
	HHMW-07D	127	1	X	X	--	--	--	--	28 days	Obtain off-site groundwater quality data.
	HHMW-08S	14	1	X	X	--	--	--	--	28 days	Obtain off-site groundwater quality data.
	HHMW-08I	47	1	X	X	--	--	--	--	28 days	Obtain off-site groundwater quality data.
	HHMW-11S	TBD	1	X	X	--	--	X	X	28 days	Determine shallow groundwater quality west of the site. Exact location will be determined based on a review of the data associated with the proposed groundwater probes and the existing groundwater data.
	HHMW-11I	TBD	1	X	X	--	--	X	X	28 days	Determine intermediate groundwater quality west of the site. Exact location will be determined based on a review of the data associated with the proposed groundwater probes and the existing groundwater data.
Groundwater Sampling of NYSDEC Registered Well No. S72892	S72892	60	1	--	--	--	X	--	X	28 days	Determine groundwater quality southwest of the site.
Soil Vapor Investigation											
Soil Vapor Sampling	HHSV-11	3	1	--	--	X	--	--	--	28 days	Characterize soil vapor in the vicinity of the office building located south of the site.
	HHSV-12	3	1	--	--	X	--	--	--	28 days	Characterize soil vapor in the vicinity of the Halesite Fire Department building located northwest of the site.
	HHSV-13	3	1	--	--	X	--	--	--	28 days	Characterize soil vapor in the vicinity of the Halesite Fire Department building located northwest of the site.
Indoor Air Investigation											
Air Sampling	HHAA-04	--	3	--	--	X	--	--	--	2 weeks	Determine air quality within the commercial building located south of the site.
	HHAA-05	--	1	--	--	X	--	--	--	2 weeks	Determine ambient air quality outside of the commercial building located south of the site.

Notes:
TBD: To be determined.
-- : Not Applicable.
[1] Geochemical Parameters include Dissolved Iron (Fe II), Dissolved Manganese, Chemical Oxygen Demand and Biological Oxygen Demand.
X : Sample selected for analysis.
[1] BTEX via USEPA Method 8260.
[2] PAHs via USEPA Method 8270.
[3] VOCs by Method TO-14
[4] VOCs by Method 8260, SVOCs by Method 8270, RCRA Metals by Methods 6010/7471, Total Cyanide by Method 9012 and Free Cyanide by Method SM4500-CN1.
[5] Geochemical parameters include total dissolved solids (TDS) by via Method 160.1, alkalinity via 310.1, total dissolved iron via Method 200, sulfate via Method 300, nitrate via Method 300, manganese via Method 200, cations (sodium, calcium, magnesium, potassium via Method 200), total iron via USEPA Method 6010, dissolved iron via 6010, ferrous iron (Fe II) via Standard Method 3500-Fe-D Modified, dissolved manganese via Method 6010, chemical oxygen demand via Standard Method 5220-C,D, biological oxygen demand via USEPA Method 405.1, microbial plate count via Standard Method 907, ammonia via Standard Method 4500-NH3 B, carbon dioxide via Standard Method 4500-CO2 C, ortho phosphate via Standard Method 4500-P,E, sodium via USEPA Method SW-846-6010B, chloride via Standard Method 4500-Cl,B, methane via EPA Research Laboratory Method RSKSOP-175 and dissolved organic carbon via Method 415.1
[6] Field Parameters include Temperature, pH, Conductivity, Dissolved Oxygen and Oxidation-Reduction Potential.

Table 3

HALESITE FORMER MGP SITE
SUPPLEMENTAL REMEDIAL INVESTIGATION
QA/QC SAMPLE SUMMARY

PROGRAM ELEMENT	Environmental Media	QA/QC Samples	Number of Samples	Equipment	Laboratory Analysis*
On-Site Investigation • Subsurface Soil Sampling	Soil	Collect 2 sets of QA/QC samples	2 MS 2 MSD	Decontaminated Geoprobe sampler	BTEX (Method 8260) and PAHs (Method 8270)
• Subsurface Soil Sampling	Soil	Collect 1 set of QA/QC samples	1 MS 1 MSD 1 FB	Decontaminated Geoprobe sampler	Geotechnical parameters including vertical permeability via ASTM Method D2434, total organic carbon (TOC) via Method 9060, grain size via ASTM Method D422 & specific gravity via ASTM Method D854

Table 3 (continued)

HALESITE FORMER MGP SITE
SUPPLEMENTAL REMEDIAL INVESTIGATION
QA/QC SAMPLE SUMMARY

PROGRAM ELEMENT	Environmental Media	QA/QC Samples	Number of Samples	Equipment	Laboratory Analysis*
• Groundwater Monitoring Well Sampling (17 existing wells)	Groundwater	Collect 1 set of QA/QC samples	1 MS 1 MSD 1 FB 1 TB	Decontaminated polyethylene bailer	BTEX (Method 8260) and PAHs (Method 8270), Geochemical parameters including TDS by via Method 160.1, alkalinity via 310.1, total dissolved iron via Method 200, sulfate via Method 300, nitrate via Method 300, manganese via Method 200, cations (sodium, calcium, magnesium, potassium via Method 200), total iron via USEPA Method 6010, dissolved iron via 6010, ferrous iron (Fe II) via SM 3500-Fe D Modified, dissolved manganese via Method 6010, chemical oxygen demand via SM 5220-C,D, biological oxygen demand via USEPA Method 405.1, microbial plate count via SM 907, ammonia via SM 4500-NH3 B, carbon dioxide via SM 4500-CO2 C, ortho phosphate via SM 4500-P,E, sodium via USEPA Method SW-846-6010B, chloride via SM 4500-Cl,B, methane via EPA Research Laboratory Method RSKSOP-175 and dissolved organic carbon via Method 415.1

Table 3 (continued)

HALESITE FORMER MGP SITE
SUPPLEMENTAL REMEDIAL INVESTIGATION
QA/QC SAMPLE SUMMARY

PROGRAM ELEMENT	Environmental Media	QA/QC Samples	Number of Samples	Equipment	Laboratory Analysis*
Off-Site Investigation • Subsurface Soil Sampling	Soil	Collect 1 set of QA/QC samples	1 MS 1 MSD 1 FB	Decontaminated split spoon sampler	BTEX (Method 8260) and PAHs (Method 8270)
• Groundwater Probe Sampling	Groundwater	Collect 1 set of QA/QC samples	1 MS 1 MSD 1 FB 1 TB	Decontaminated Geoprobe screen point sampler	BTEX (Method 8260) and PAHs (Method 8270)

Table 3 (continued)

HALESITE FORMER MGP SITE
SUPPLEMENTAL REMEDIAL INVESTIGATION
QA/QC SAMPLE SUMMARY

PROGRAM ELEMENT	Environmental Media	QA/QC Samples	Number of Samples	Equipment	Laboratory Analysis*
• Groundwater Monitoring Well Sampling (2 new wells and 9 existing wells)	Groundwater	Collect 1 set of QA/QC samples	1 MS 1 MSD 1 FB 1 TB	Decontaminated polyethylene bailer	BTEX (Method 8260) and PAHs (Method 8270), Geochemical parameters including TDS by via Method 160.1, alkalinity via 310.1, total dissolved iron via Method 200, sulfate via Method 300, nitrate via Method 300, manganese via Method 200, cations (sodium, calcium, magnesium, potassium via Method 200), total iron via USEPA Method 6010, dissolved iron via 6010, ferrous iron (Fe II) via SM 3500-Fe D Modified, dissolved manganese via Method 6010, chemical oxygen demand via SM 5220-C,D, biological oxygen demand via USEPA Method 405.1, microbial plate count via SM 907, ammonia via SM 4500-NH3 B, carbon dioxide via SM 4500-CO2 C, ortho phosphate via SM 4500-P,E, sodium via USEPA Method SW-846-6010B, chloride via SM 4500-Cl,B, methane via EPA Research Laboratory Method RSKSOP-175 and dissolved organic carbon via Method 415.1

Table 3 (continued)

HALESITE FORMER MGP SITE
SUPPLEMENTAL REMEDIAL INVESTIGATION
QA/QC SAMPLE SUMMARY

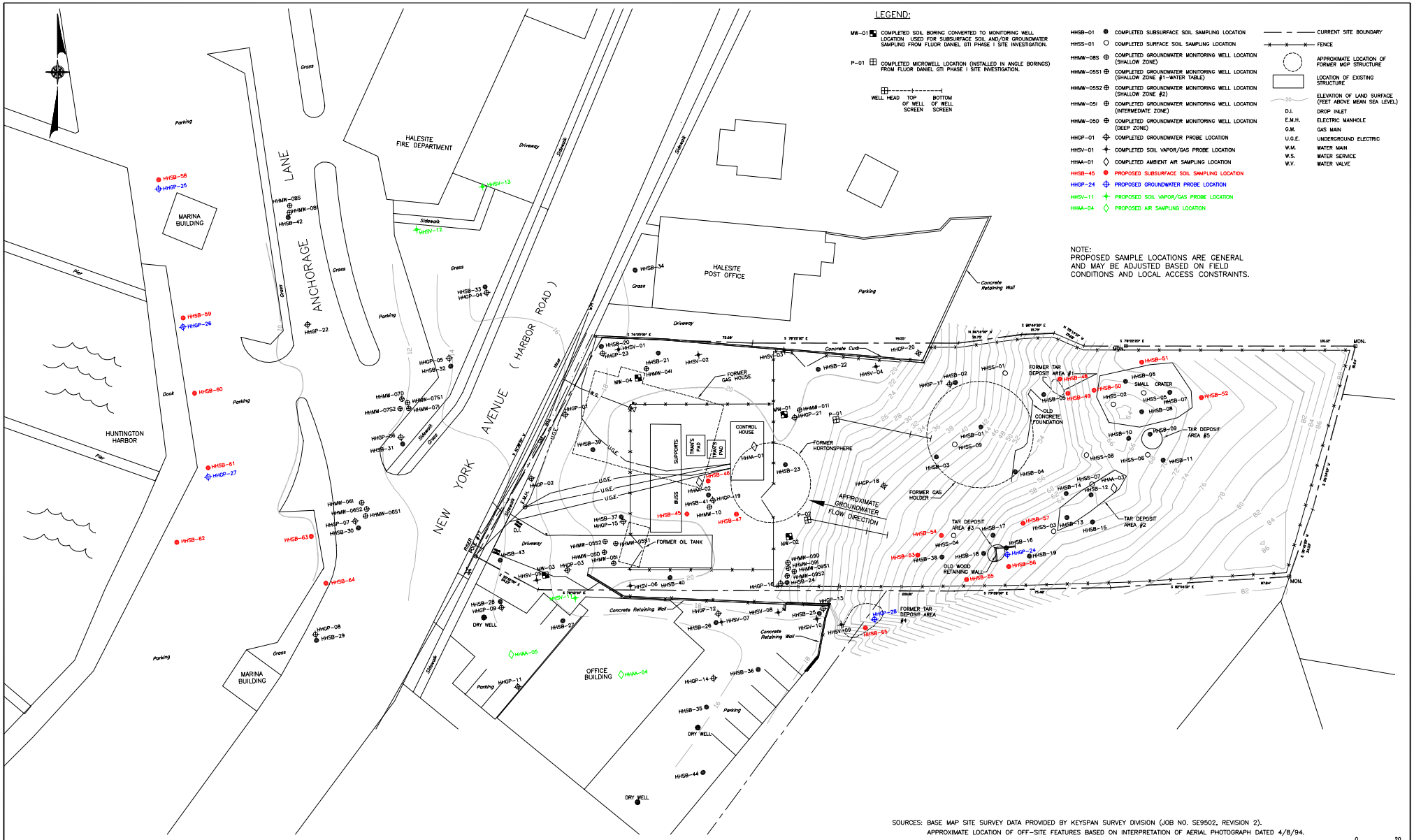
PROGRAM ELEMENT	Environmental Media	QA/QC Samples	Number of Samples	Equipment	Laboratory Analysis*
• Groundwater Monitoring Well Sampling (1 existing NYSDEC Registered Well)	Groundwater	Collect 1 set of QA/QC samples	1 MS 1 MSD 1 FB 1 TB	Decontaminated polyethylene bailer	VOCs by Method 8260, SVOCs by Method 8270, RCRA Metals by Methods 6010/7471, Total Cyanide by Method 9012 and Free Cyanide by Method SM4500-CN1.
• Soil Vapor Sampling	Soil Vapor	Collect one duplicate and one blank	1 Duplicate 1 Blank	Slide hammer with stainless steel drive rods and perforated tips or Geoprobe tooling and perforated tips, Summa canisters	VOCs & Naphthalene (TO-14)
• Air Sampling	Air	Collect one duplicate and one blank	1 Duplicate 1 Blank	Summa canisters equipped with 1-hour regulators	VOCs & Naphthalene (TO-14)

Notes:

*Trip blanks are to accompany each shipment of groundwater samples sent to the laboratory.
MS: Matrix Spike
MSD: Matrix Spike Duplicate
FB: Field Blank
TB: Trip Blank

ATTACHMENT B

DRAWING 1



SOURCES: BASE MAP SITE SURVEY DATA PROVIDED BY KEYSPAN SURVEY DIVISION (JOB NO. SE9502, REVISION 2).
APPROXIMATE LOCATION OF OFF-SITE FEATURES BASED ON INTERPRETATION OF AERIAL PHOTOGRAPH DATED 4/8/94.

NOTE: SITE SURVEY DATA SHOWN ON THIS MAP IS FOR KEYSPAN USE ONLY AND IS NOT TO BE RELIED UPON BY OTHERS.

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: | DRAWN BY:
DESIGNED BY: | CHECKED BY:

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HALESITE FORMER MANUFACTURED GAS PLANT SITE SUPPLEMENTAL REMEDIAL INVESTIGATION HALESITE, NEW YORK

SAMPLE LOCATION MAP

PROJECT NO.: 06392
DATE: APRIL 2003
SCALE: AS SHOWN
DRAWING NO.: 1