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INDUSTRIAL

Mr. Charles Post
Project Manager
Remedial Bureau C, 11th Floor
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7014

Subject:
National Grid Rome (Kingsley Avenue) Former MGP Site
Operable Unit No. 2
Investigation Work Plan

Date:
October 9, 2007

Contact:
Gerald Cummins

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Email:
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Our ref:
B0036642.0101

Dear Mr. Post:

On behalf of National Grid, this letter has been prepared to briefly summarize the results of a meeting held between the New York State Department of Environmental Conservation (NYSDEC) and National Grid and to present a Work Plan for future work efforts to be completed in connection with Operable Unit No. 2 (OU-2) at the Rome (Kingsley Avenue) Former Manufactured Gas Plant (MGP) Site located in Rome, New York. This letter Work Plan also addresses NYSDEC items and/or comments as issued via letters from NYSDEC to National Grid, dated March 15 and 29, 2007. Further, on September 4, 2007, the NYSDEC (via letter from Charles Post to William Jones) issued the approval of the Draft Operable Unit No. 2 Investigation Work Plan, dated August 7, 2007. The NYSDEC approval required the incorporation of select comments as identified in the September 4, 2007 NYSDEC correspondence. These comments were incorporated into the final Investigation Work Plan as detailed herein.

June 13, 2007 Meeting

A meeting was held at the National Grid Rome (Kingsley Avenue) Former MGP Site on June 13, 2007. Attendees included Charles Post (NYSDEC), George Heitzman (NYSDEC), Ian Ushe (New York State Department of Health [NYSDOH]), William Jones (National Grid), and Gerald Cummins (ARCADIS BBL). The purpose of the meeting was to discuss NYSDEC expectations of future work efforts associated with OU-2 and to gain a verbal understanding of additional investigation activities that will be performed within OU-2 to facilitate the revision and completion of the OU-2 Feasibility Study (FS).

The main items discussed during the meeting are briefly summarized below:

- NYSDEC requested that non-aqueous phase liquid (NAPL) recovery remain an option within OU-2.
- National Grid and NYSDEC agreed that additional NAPL delineation efforts will be performed within the "peninsula area" located on the east side of the Mohawk River, west of the OU-1 barrier wall. Additional efforts will include gauging existing wells for NAPL and, if necessary, removing and monitoring NAPL recovery, followed by NAPL delineation.
- National Grid and NYSDEC agreed that an additional soil vapor sampling point will be installed proximate to a monitoring well cluster (e.g., MW-25/PZ-05 or MW-26/PZ-06). The soil vapor sampling program will also include forensic analysis.
- National Grid and NYSDEC agreed that additional groundwater investigation activities will be performed within OU-2, on the west side of the Mohawk River. Additional groundwater investigation activities will be performed using a phased approach and will include the sampling of existing shallow and deep monitoring wells (e.g., MW-25/PZ-05, MW-26/PZ-06, MW-27/PZ-07, MW04-35, and MW04-36) located east of East Whitesboro Street. Based upon initial sampling/analysis results, additional groundwater investigation efforts will extend to the west of East Whitesboro Street, as necessary.
- National Grid and NYSDEC agreed that additional investigation activities will include evaluating the Mohawk River proximate to OU-2 to determine if it is "gaining" or "losing" water body.
- A schedule will be developed to present anticipated dates for implementing additional investigation efforts, followed by revision and submittal of the OU-2 FS.

Work Plan

The following presents a summary of proposed soil vapor, groundwater, and NAPL investigation programs to be performed within OU-2 to supplement existing site characterization data. The results of the additional investigations will be incorporated into the OU-2 FS to satisfy NYSDEC comments dated March 15 and 29, 2007.

Soil Vapor Sampling Program

Soil vapor investigation activities will be performed within OU-2 in accordance with the Soil Vapor Sampling Work Plan dated July 21, 2006, as approved by NYSDEC's March 15, 2007 letter. Per the June 13, 2007 meeting, the July 21, 2006 Soil Vapor Sampling Work Plan has been revised to include an additional soil vapor sampling point located proximate to monitoring well MW-26 and piezometer PZ-06. The Work Plan has also been revised to include forensic analysis and reference to appropriate Appendices of the "Soil Vapor Intrusion Evaluation at National Grid MGP Sites in New York State," as approved by NYSDEC on March 15, 2007. Refer to Attachment 1 of this letter for the revised Soil Vapor Sampling Work Plan.

Groundwater Investigation Program

Consistent with the discussions during the June 13, 2007 meeting and to address NYSDEC comments dated March 29, 2007, additional groundwater investigations will be performed within OU-2 using a phased approach. The groundwater investigation activities will include the following three components:

1. Phase I - Groundwater sampling and analysis of shallow and deep overburden groundwater from existing monitoring wells/piezometers MW-25, MW-26, MW-27, PZ-05, PZ-06, PZ-07, MW04-35, and MW04-36.

2. Phase II – A contingent program based on the results of Phase I. This program will consist of sampling and analyzing shallow and deep overburden groundwater from existing monitoring wells MW-28, MW-29, MW-30 (if located), and three new monitoring well clusters installed downgradient.

3. Hydraulic Monitoring Study - A hydraulic monitoring study will be performed to evaluate the hydraulic communication between shallow and deep overburden in OU-2 and the Mohawk River.

The fieldwork covered under these three components will be completed consistent with the methodology described in the Sampling and Analysis Plan (BBL, revised October 2003). The above investigation activities are detailed further in the sections below. Refer to the attached Figure 1 for the investigation locations discussed in this work plan.

1. Phase I Activities

Phase I will be conducted to evaluate whether previously detected benzene, toluene, ethylbenzene, and xylene (BTEX) and naphthalene concentrations in groundwater within OU-2 are MGP-related. Concentrations of BTEX and/or naphthalene were previously detected in deep overburden monitoring wells MW-25, MW-27, MW-29, and MW-30. The well screens for these wells are positioned approximately 40 to 50 feet below grade.

Because it is unclear whether the deeper overburden impacts in OU-2 are MGP-related, Phase I will consist of collecting groundwater samples (using low-flow sampling techniques) from existing monitoring wells/piezometers and testing the samples for an expanded suite of compounds using the PIANO analysis. The PIANO analysis consists of analyzing the samples for paraffin (P), isoparaffin (I), aromatic (A), naphthene (N), and olefin (O) compounds by a modified USEPA Method 8260. The analyte list for the PIANO analysis is provided in Table 1 (attached). A forensic chemist will review the data to evaluate potential source(s) of the detected compounds. The wells and piezometers proposed for the sampling will include MW-25, MW-26, MW-27, PZ-05, PZ-06, and PZ-07, MW04-35, and MW04-36.

Phase I Reporting

The results of the sampling, including the forensic interpretation of the groundwater analytical results will be provided in a letter to NYSDEC. The letter will also include:

- a data validation report of the groundwater laboratory data packages;
- a figure showing the locations of the wells/piezometers sampled in OU-2;
- tables summarizing the analytical results with comparison to applicable criteria; and
- a discussion of the methods employed and the findings from the Phase I work activities, including a presentation of the chemical forensic findings.

If the results suggest that the constituents detected in OU-2 groundwater could be MGP-related, additional Phase II activities will be conducted, as described below.

2. Phase II Activities

Phase II would be conducted to assess the nature and extent of MGP-related constituents in groundwater within OU-2 if the findings of Phase I indicate that the detected constituents may be MGP-related. Phase II fieldwork would consist of the following:

- Attempting to re-establish and sample groundwater from monitoring wells MW-28, MW-29, and MW-30. Concentrations of BTEX were previously detected in these wells, which are the furthest downgradient wells in OU-2. These wells have apparently been paved over. As such, a survey crew will attempt to locate the position of these wells and use a metal detector. If found, the usability of the wells will be evaluated and, if usable, the wells will be redeveloped and groundwater will be sampled. If the well(s) are not located or determined to not be usable, the well(s) will be abandoned and replaced with a new well(s) constructed the same as the original well.

- Three monitoring well clusters will be installed downgradient from MW-28, MW-29, and MW-30 and groundwater samples will be collected and analyzed. Each newly installed monitoring well cluster will consist of a water table monitoring well and a deep overburden monitoring well screened at approximately the same depth as MW-28, MW-29, and MW-30. Information collected from each cluster will be used to assess the downgradient extent of the dissolved phase MGP-related constituents in OU-2 and to evaluate the vertical and horizontal hydraulic gradients in OU-2. The location of these new well clusters (if required) would be discussed and agreed upon with NYSDEC after the completion of Phase I.

- Use low-flow sampling techniques to sample groundwater from the above-mentioned wells.

- Analyze collected groundwater samples from all wells (discussed above) using the PIANO analysis (as discussed under Phase I). A forensic chemist would evaluate the groundwater results to attempt to determine the potential source of detected compounds.

Phase II Reporting

The results of the Phase II investigation, including the forensic interpretation of the groundwater results, will be provided in a brief letter to NYSDEC. The letter would include:

- a data validation report of the groundwater laboratory data packages;
- a figure showing the locations of the new wells in OU-2;
- monitoring well completion logs for newly installed wells;
- table summarizing the groundwater analytical results with comparison to applicable criteria; and
- recommendations for additional investigations, if warranted.

3. Hydraulic Monitoring Study

The third component of the Groundwater Investigation Program is a Hydraulic Monitoring Study. This study will be performed regardless of the results of Phase I. This study will be performed to evaluate the potential hydraulic communication between the shallow and deep overburden in OU-2 with the Mohawk River. This hydraulic study will provide a more reliable set of data for evaluating the hydraulic communication between the overburden and river rather than instantaneous readings taken during one day or series of days. The hydraulic monitoring study will assess the temporal changes in, and the general configuration of horizontal and vertical gradients, and groundwater flow directions at/near OU-2.

The hydraulic study will be performed using transducers with data logging capability. The transducers will be installed in existing monitoring wells and piezometers and the Mohawk River. The transducers will collect relatively continuous (e.g., approximately every 10 to 30 minutes) hydraulic head data over an approximate one-month period. Transducers will be installed at the following monitoring well/piezometer locations:

- MW-25 and PZ-05 – Shallow and deep overburden cluster on the west side of the Mohawk River, upgradient from the dam.

- MW-26 and PZ-06 – Shallow and deep overburden cluster on the west side of the Mohawk River, downgradient from the dam.

- MW-27 and PZ-07 – shallow and deep overburden cluster located on the west side of the Mohawk River and downgradient from MW-25/PZ-05 and MW-26/PZ-06.

- MW04-35 – located on the west side of the Mohawk River, upgradient of the dam, and upgradient of MW-25/PZ-05.

- MW04-36 – located on the west side of the Mohawk River, downgradient of the dam and downgradient of MW-26.

- PZ-03S and PZ-03D – located on the east side of the Mohawk River, upgradient of the dam.

- Two locations in the Mohawk River – one on the upstream and one on the downstream sides of the dam.

In addition, five rounds of generally synoptic water level readings from all OU-2 monitoring wells and two surface water gauges in the Mohawk River will be completed with one round of readings being obtained during each week of the study.

The results of the hydraulic monitoring study will be provided in a summary letter report to NYSDEC. The report will include hydrographs of the measured water levels, water level contour maps (as appropriate), and conclusions relative to the objectives of the study.

NAPL Investigation Program

Additional investigations will be performed at selected wells located within the peninsula area on the east side of the Mohawk River, west of the future OU-1 barrier wall. These additional investigations will be performed in response to NYSDEC's March 29, 2007 request to estimate the volume of NAPL present within this area.

To address NYSDEC's request, NAPL investigation activities will include gauging the existing wells within the peninsula area for the presence of measurable thickness of NAPL. If NAPL is present at measurable thickness, a NAPL monitoring program will be initiated. The NAPL monitoring program will initially include measuring the thickness of NAPL from selected wells, followed by removing NAPL using passive recovery techniques (e.g., hand bailing or peristaltic pump). Recovered NAPL will be placed within a United States Department of Transportation-approved container (e.g., 55-gallon drum), appropriately labeled, and placed onsite for the duration of the NAPL monitoring/passive recovery program. NAPL monitoring/passive recovery will be performed weekly for a period of five weeks. The passive NAPL monitoring will be performed in accordance with Attachment 2 of this letter. The results of this initial NAPL investigation program will be evaluated and additional NAPL investigation activities will be developed and presented to NYSDEC, if necessary.

The results of the NAPL investigation program will be provided in a summary letter report to NYSDEC. The report will include a summary of the NAPL gauging/removal results, mapping indicating the NAPL monitoring/recovery locations, NAPL monitoring monitoring data summary tables, and conclusions and recommendations relative to the objectives of the study.

GP-38 Issue

NYSDEC identified the need for additional information with respect to NAPL being observed at boring location GP-38 in its March 29, 2007 letter. It should be noted that this was addressed in a February 27, 2003 letter to Brian D'Amour (NYSDEC) from James Morgan (Niagara Mohawk [now National Grid]), which summarized why Niagara Mohawk believed that NAPL does not exist in the Area of GP-38. This letter indicated the following:

- The boring log for GP-38 indicates that a "slight blue-black light non-aqueous phase liquid (LNAPL)" was encountered from approximately 6 to 18 feet below grade. The "blue-black" appearance of the supposed LNAPL is likely the result of anoxic degradation of organic material in the subsurface. Organic-rich soil is typical of an aquatic regime, as is the case at GP-38.

- An analytical soil sample collected from the supposed LNAPL impacted interval (from 6.3 to 7 feet below grade) contained only trace detections of PAH constituents (total polycyclic aromatic hydrocarbon [PAH] concentration of 12.8 parts per million [ppm]) and BTEX constituents were not detected (with detection limits on the order of 6 parts per billion). In addition, the presence of sheens was not noted on the boring log for this location. If LNAPL was present in the analyzed soil sample, one or more BTEX compounds would have been detected and the concentration of PAHs also would have been much higher than those detected.

- The photoionization detector readings for the supposed LNAPL-impacted interval ranged from 0.0 to 0.8 ppm. A much higher reading would have been recorded if LNAPL was present in the soil.

- LNAPL was not observed in any soil borings or well location drilled in the area immediately surrounding GP-38, including GP-02, GP-03, GP-36, GP-37, GP-39, GPC-01, KB-82 and MW22KB89.

As a follow up, in a letter dated March 18, 2003 from Brian D'Amour (NYSDEC) to James Morgan (Niagara Mohawk), NYSDEC indicated they had reviewed the explanation (above) for the GP-38 boring and accepted that no further investigation or testing would be required in this area. As such, no further NAPL investigation is currently planned in the vicinity of boring GP-38. To address NYSDEC's March 29, 2007 comment regarding GP-38, the FS will be revised to include an assessment of the GP-38 area. Refer to Attachment 3 for copies of the 2003 letters.

Feasibility Study Report

Following the completion of the above-detailed investigation activities and the associated reporting described for each activity, the Draft December 2005 Feasibility Study for the Rome (Kingsley Avenue) Site Operable Unit No. 2, Rome New York (Draft OU-2 FS) will be revised. The Draft OU-2 FS will be revised to include the results of the additional investigation activities and will address NYSDEC's March 29, 2007 comments. The Draft OU-2 FS will be issued as a revised draft report and submitted to NYSDEC for final review. Upon NYSDEC's review and acceptance, the revised Draft OU-2 FS will be issued final.

Project Schedule

The investigations described in this letter can begin within 30 days after receiving NYSDEC's approval of the described work. The initiation of investigations is contingent upon acquiring necessary access agreements. We anticipate that the soil vapor investigations, Phase I work, NAPL investigation work, and hydraulic monitoring study will be performed during this fall. The summary reports for each of the work activities will be submitted to NYSDEC within 60 days upon completing the respective investigation activities. Note that some of these reports may be combined into one report depending on when data are received and evaluated. The Draft OU-2 FS will be revised and submitted to NYSDEC within 60 days of NYSDEC's receipt and acceptance of the investigation summary reports.

If you have any questions or comments, please do not hesitate to e-mail or call me.

Sincerely,

ARCADIS of New York, Inc.

Gerald P. Cummins
Project Manager

Attachments

Copies:
William R. Jones, P.E., National Grid
James M. Nuss, P.E., ARCADIS BBL
Scott A. Powlin, ARCADIS BBL

Table

Table 1
Project Analyte List for PIANO Analysis

Investigation Work Plan
Kingsley Avenue, Operable Unit No.2
Rome, New York

Analyte
Isopentane
1-Pentene
2-Methyl-1-butene
Pentane
2-Pentene (trans)
2-Pentene (cis)
Tertiary butanol
Cyclopentane
2,3-Dimethylbutane
2-Methylpentane
MTBE
3-Methylpentane
1-Hexene
Hexane
Diisopropyl Ether (DIPE)
Ethyl Tertiary Butyl Ether (ETBE)
2,2-Dimethylpentane
Methylcyclopentane
2,4-Dimethylpentane
1,2-Dichloroethane
Cyclohexane
2-Methylhexane
Benzene
2,3-Dimethylpentane
Thiophene
3-Methylhexane
TAME
1-Heptene/1,2-DMCP (trans)
Isooctane
Heptane
Methylcyclohexane
2,5-Dimethylhexane
2,4-Dimethylhexane
2,2,3-Trimethylpentane
2,3,4-Trimethylpentane
2,3,3-Trimethylpentane
2,3-Dimethylhexane
3-Ethylhexane
2-Methylheptane
3-Methylheptane
Toluene
2-Methylthiophene
3-Methylthiophene
1-Octene
Octane
1,2-Dibromoethane
Ethylbenzene
2-Ethylthiophene
p/m-Xylene
1-Nonene
Nonane
Styrene
o-Xylene
Isopropylbenzene
n-Propylbenzene
1-Methyl-3-ethylbenzene
1-Methyl-4-ethylbenzene
1,3,5-Trimethylbenzene
1-Decene
1-Methyl-2-ethylbenzene
Decane
1,2,4-Trimethylbenzene
sec-Butylbenzene
1-Methyl-3-isopropylbenzene
1-Methyl-4-isopropylbenzene
1-Methyl-2-isopropylbenzene
Indan
1-Methyl-3-propylbenzene
1-Methyl-4-propylbenzene
n-Butylbenzene
1,2-Dimethyl-4-ethylbenzene
1,2-Diethylbenzene
1-Methyl-2-propylbenzene
1,4-Dimethyl-2-ethylbenzene
Undecane
1,3-Dimethyl-4-ethylbenzene
1,3-Dimethyl-5-ethylbenzene
1,3-Dimethyl-2-ethylbenzene
1,2-Dimethyl-3-ethylbenzene
1,2,4,5-Tetramethylbenzene
Pentylbenzene
Dodecane
Naphthalene
Benzothiophene
MMT
Tridecane
2-Methylnaphthalene
1-Methylnaphthalene

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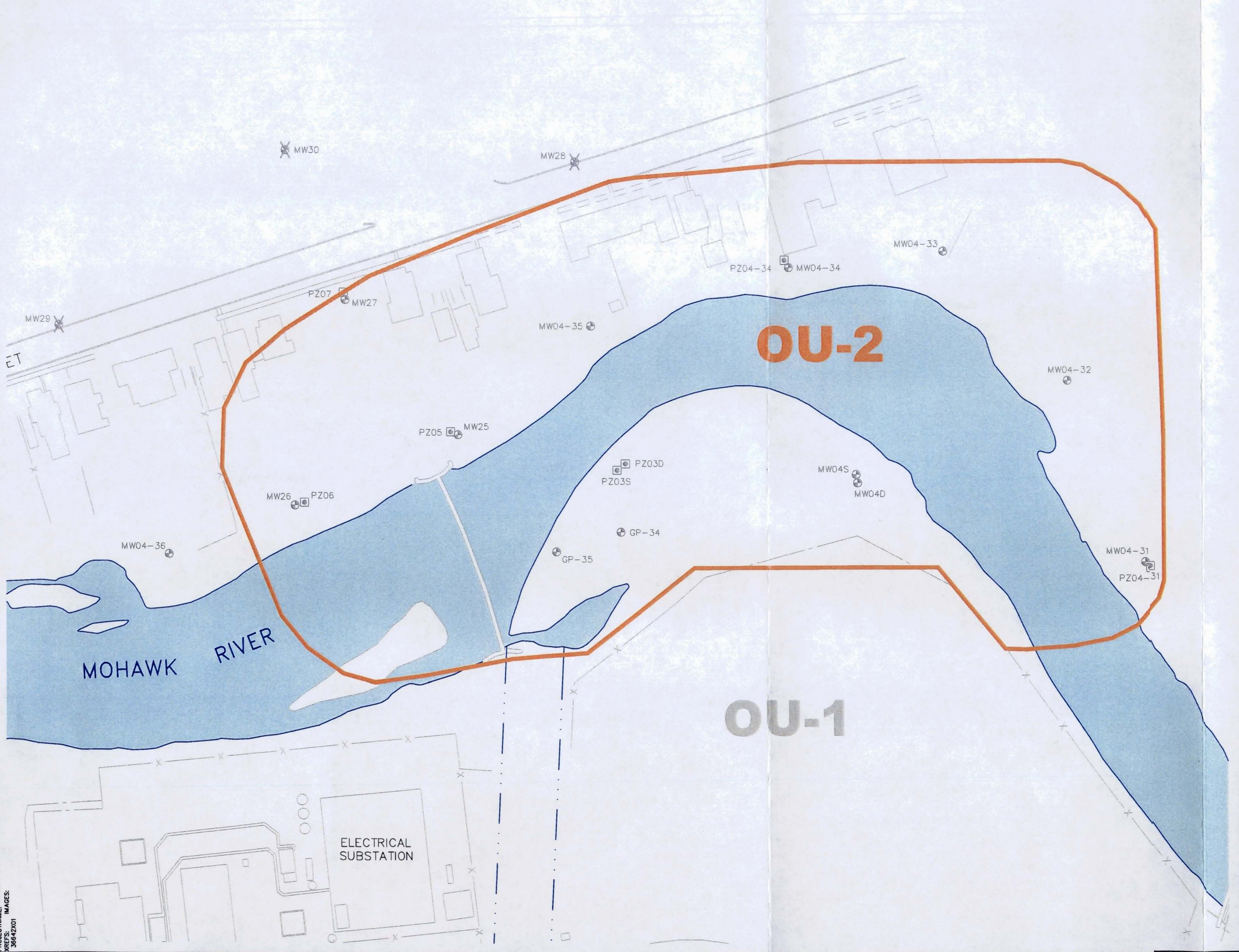
Figure

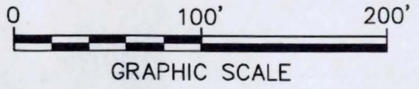


LEGEND:

- FORMER TAILRACE (APPROXIMATE)
- MW04-34 ● MONITORING WELL
- MW28 ⊗ DECOMMISSIONED/MISSING/UNABLE TO LOCATE, OR DAMAGED MONITORING WELL
- PZ02 ▣ PIEZOMETER

NOTES:

1. BASE MAP SUPPLIED BY ERDMAN ANTHONY, AT A SCALE OF 1" = 40' TITLED "KINGSLEY AVENUE", WAS CREATED BY PHOTOGRAMMETRIC METHODS FROM DATA COLLECTED ON NOVEMBER 10, 2003.
2. ALL LOCATIONS ARE APPROXIMATE.
3. AS DEFINED IN THE RECORD OF DECISION (MARCH 2002), THERE IS AN AREA THAT IS IN BOTH OU-1 AND OU-2. THE SOIL/SEDIMENTS IN THE AREA ARE DEFINED AS BEING IN OU-1, AND THE GROUNDWATER/NAPL IS DEFINED AS BEING IN OU-2.
4. OU-2 BOUNDARY AS DEPICTED, OBTAINED FROM FIGURE 1 OF RECORD OF DECISION FOR SITE NO. 6-33-043, DATED MARCH 2002.



NATIONAL GRID
KINGSLEY AVENUE, OPERABLE UNIT No.2
ROME, NEW YORK
INVESTIGATION WORK PLAN

OU-2 SITE PLAN

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
1

SYR-85-RCA RCB L: ON=*, OFF=*REF, |DRIVEWAY-UNPAVED, |TANK
G:\CAD\ACTIVE\-DWG\ACT\36642100\36642B01.DWG SAVED: 7/19/2007 10:40 AM LAYOUT: Layout1 PAGESETUP: ---- PENTABLE: PLTFULL.CTB PRINTED: 7/19/2007 10:41 AM BY: RBASSETT
PROJECTNAME: ----
XREFS: IMAGES:
36642X01

Attachment 1

Soil Vapor Sampling Work Plan

ATTACHMENT 1
SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

I. INTRODUCTION

This attachment (Attachment 1) and associated appendices provide National Grid's Soil Vapor Sampling Work Plan (Work Plan) for Operable Unit No. 2 (OU-2) of the Rome (Kingsley Avenue) former Manufactured Gas Plant (MGP) Site (Site) (refer to Figure 1). This Work Plan has been prepared in response to the New York State Department of Environmental Conservation's (NYSDEC's) and the New York State Department of Health's (NYSDOH's) request for a soil vapor investigation, as discussed in a meeting between NYSDEC, NYSDOH, and National Grid on December 15, 2005. The soil vapor sampling activities described herein (as approved by the NYSDEC [via letter dated March 15, 2007]) has been revised to incorporate NYSDEC comments dated March 15, 2007 and results of June 13, 2007 meeting between National Grid and the NYSDEC. These soil vapor sampling activities will be performed to assess whether Site-related volatile organic compounds (VOCs) are present in subsurface soil vapor near residences located proximate to existing monitoring well locations MW-25, MW-26, and MW-27.

This letter presents relevant background information, followed by a discussion of the proposed sampling locations, analytical method, schedule, and reporting.

II. BACKGROUND

The existing Site information provided in this letter was drawn from the following documents:

- *Remedial Investigation Report for the Rome (Kingsley Avenue) Site, City of Rome, New York,* (Parsons Engineering Science, Inc., March 1999);
- *"Off-Site" Remedial Investigation (RI) Report for the Rome (Kingsley Ave.) Site,* (Foster Wheeler Environmental Engineering Corporation, October 2000);
- *Feasibility Study Report for the Rome (Kingsley Ave.) Site,* (Foster Wheeler Environmental Engineering Corporation, January 2002); and
- *Feasibility Study Report for the Rome (Kingsley Avenue) Site Operable Unit No. 2, Rome, New York,* (Blasland, Bouck & Lee, Inc., February 2006).

These documents were previously submitted to the NYSDEC and provide a detailed discussion of Site conditions as they relate to OU-2.

As requested by the NYSDEC and NYSDOH in the December 15th meeting, soil vapor analysis will be performed near the monitoring well(s) within OU-2 that have had elevated benzene levels in groundwater samples collected from the deep overburden. The purpose of the sampling will be to confirm that soil vapors are not of concern and that further sampling is not necessary. Groundwater analytical results for VOCs are provided in attached Table 1.

III. SOIL VAPOR SAMPLE LOCATIONS

In response to the NYSDEC's request, soil vapor sampling is proposed in the vicinity of monitoring wells MW-25, MW-26, and MW-27. The northern and southern extent of sampling is limited because the nearest wells (i.e., MW04-35 to the north and MW04-36 to the south) have little or no detectable VOCs. Subsurface soil vapor samples are proposed to be collected at a total of six sampling locations as part of this investigation. Subsurface soil vapor samples will be collected from approximately eight feet below the ground surface, to correspond with the depth of a typical basement. In addition, an ambient air sample will be collected upwind of the soil vapor sample collection points. The proposed sampling locations of the six proposed subsurface samples and the ambient air sample are shown on Figure 1 (subject to field verification).

IV. SOIL VAPOR SAMPLING AND ANALYTICAL METHOD

The methods for collecting subsurface soil vapor samples are detailed in Appendix A, ambient air sample collection procedures are detailed in Appendix B, and Quality Assurance/Quality Control Procedures (QA/QC) are included as Appendix C.

For this program, subsurface soil vapor sampling samples are proposed to be collected at temporary sampling points, with each soil vapor sample collected over an approximate 2-hour sample collection interval.

Samples (including a single duplicate sample drawn from a single canister) are to be collected in laboratory-certified clean 6-liter Summa passivated stainless-steel canisters and analyzed using the United States Environmental Protection Agency (USEPA) Method TO-15, including n-alkanes. The project-specific list of analytes is provided in Table 2 (attached). The proposed analyte list includes benzene and other constituents (i.e., toluene, ethylbenzene, xylenes, and naphthalene) that have historically been detected in deep overburden groundwater samples collected from MW-25, MW-26, and MW-27. The analytes will consist of VOCs that may be MGP-related and/or fuel-related, and therefore do not include chlorinated VOCs. To aid in evaluating whether VOC detections, if any, are potentially due to fuels (e.g., gasoline, diesel) rather than the former MGP, the analyses also include n-alkanes and other fuel-related VOCs. In addition, samples will also be collected and analyzed using the Forensic TO-15 method. This method has been developed specifically for MGP constituents and provides results which can be evaluated by a forensic chemist. The analyte list for the Forensic TO-15 method is provided in Table 3 (attached). Analyses will be conducted by a laboratory with current New York State Environmental Laboratory Approval Program (ELAP) certification in accordance with USEPA Compendium Method TO-15. The data report will be a Category B-equivalent data package from which a Data Usability Summary Report (DUSR) will be prepared.

V. SCHEDULE AND REPORTING

Upon receipt of NYSDEC/NYSDOH written approval and procurement of access agreements with property owners, National Grid will notify the NYSDEC/NYSDOH of the investigation start date. Following receipt of the analytical data, the results will be validated and a sampling report will be provided to the NYSDEC and NYSDOH.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW04-31^1 11/16/2004	MW04-31^2 4/1/2005	MW04-32 12/8/2004	MW04-32^2 4/1/2005	MW04-33^1 11/16/2004
VOCs						
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	3 U	3 U	3 U	3 U	3 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	2 U	2 U	2 U	2 U	2 U
1,2-Dichloroethane	0.6	2 U	2 U	2 U	2 U	2 U
1,2-Dichlorethene (total)	NA	--	--	--	--	--
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50	5 U	5 U	5 U	5 U	5 U
2-Hexanone	50	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	50	5 UJ	5 U	5 U	5 U	5 UJ
Benzene	1	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	1 U	1 U	1 U	1 U	1 U
Bromoform	50	4 U	4 U	4 U	4 U	4 U
Bromomethane	5	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	60	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	2 U	2 U	2 U	2 U	2 U
Chlorobenzene	5	5 U	5 U	5 U	5 U	5 U
Chloroethane	5	5 U	5 U	5 U	5 U	5 U
Chloroform	7	5 U	5 U	5 U	5 U	5 U
Chloromethane	5	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	0.4	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5	4 U	4 U	4 U	4 U	4 U
Methyl bromide	NA	--	--	--	--	--
Methyl chloride	NA	--	--	--	--	--
Methylene chloride	5	3 U	3 U	3 U	3 U	3 U
Styrene	5	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U
Toluene	5	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	0.4	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5	1 U	1 U	1 U	1 U	1 U
Vinyl acetate	NA	--	--	--	--	--
Vinyl chloride	2	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	5	5 U	5 U	5 U	5 U	5 U

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW04-33[2] 3/31/2005	MW04-34[1] 11/15/2004	MW04-34[2] 4/1/2005	MW04-35[1] 11/15/2004	MW04-35[2] 3/31/2005
VOCs						
1,1,1-Trichloroethane	5	5 U	0.3 U	5 U	0.3 U	5 U
1,1,2,2-Tetrachloroethane	5	1 U	0.5 U	1 U	0.5 U	1 U
1,1,2-Trichloroethane	1	3 U	0.3 U	3 U	0.3 U	3 U
1,1-Dichloroethane	5	5 U	0.4 U	5 U	0.4 U	5 U
1,1-Dichloroethene	5	2 U	0.3 U	2 U	0.3 U	2 U
1,2-Dichloroethane	0.6	2 U	0.4 U	2 U	0.4 U	2 U
1,2-Dichlorethene (total)	NA	--	--	--	--	--
1,2-Dichloropropane	1	1 U	0.4 U	1 U	0.4 U	1 U
2-Butanone (MEK)	50	5 U	0.9 U	5 U	0.9 U	5 U
2-Hexanone	50	5 U	0.9 U	5 U	0.9 U	5 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	0.4 U	5 U	0.4 U	5 U
Acetone	50	5 U	1 UJ	5 U	1 UJ	5 U
Benzene	1	1 U	0.3 U	1 U	0.3	1 U
Bromodichloromethane	50	1 U	0.3 U	1 U	0.3 U	1 U
Bromoform	50	4 U	0.3 U	4 U	0.3 U	4 U
Bromomethane	5	5 U	0.3 UJ	5 U	0.3 UJ	5 U
Carbon disulfide	60	5 U	0.2 U	5 U	0.2 U	5 U
Carbon tetrachloride	5	2 U	0.3 U	2 U	0.3 U	2 U
Chlorobenzene	5	5 U	0.3 U	5 U	0.3 U	5 U
Chloroethane	5	5 U	0.4 UJ	5 U	0.4 UJ	5 U
Chloroform	7	5 U	0.3 U	5 U	0.3 U	5 U
Chloromethane	5	5 U	0.4 U	5 U	0.4 U	5 U
cis-1,2-Dichloroethene	5	5 U	0.4 U	5 U	0.4 U	5 U
cis-1,3-Dichloropropene	0.4	5 U	0.3 U	5 U	0.3 U	5 U
Dibromochloromethane	50	5 U	0.2 U	5 U	0.2 U	5 U
Ethylbenzene	5	4 U	0.3 U	4 U	0.3 U	4 U
Methyl bromide	NA	--	--	--	--	--
Methyl chloride	NA	--	--	--	--	--
Methylene chloride	5	3 U	0.9 U	3 U	0.9 U	3 U
Styrene	5	5 U	0.3 U	5 U	0.3 U	5 U
Tetrachloroethene	5	1 U	0.4 U	1 U	0.4 U	1 U
Toluene	5	5 U	0.3 U	5 U	0.3 U	5 U
trans-1,2-Dichloroethene	5	5 U	0.3 U	5 U	0.3 U	5 U
trans-1,3-Dichloropropene	0.4	5 U	0.4 U	5 U	0.4 U	5 U
Trichloroethene	5	1 U	0.4 U	1 U	0.4 U	1 U
Vinyl acetate	NA	--	--	--	--	--
Vinyl chloride	2	5 U	0.4 U	5 U	0.4 U	5 U
Xylenes (total)	5	5 U	0.2 U	5 U	0.2 U	5 U

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW04-36[1] 11/15/2004	MW04-36[2] 3/31/2005	MW04-36-DUP[2] 3/31/2005	MW-04S[3] 10/19/1994	MW-04S[3] 1/17/1995
VOCs						
1,1,1-Trichloroethane	5	0.3 U	5 U	5 U	10 U	--
1,1,2,2-Tetrachloroethane	5	0.5 U	1 U	1 U	10 U	--
1,1,2-Trichloroethane	1	0.3 U	3 U	3 U	10 U	--
1,1-Dichloroethane	5	0.4 U	5 U	5 U	10 U	--
1,1-Dichloroethene	5	0.3 U	2 U	2 U	10 U	--
1,2-Dichloroethane	0.6	0.4	2 U	2 U	10 U	--
1,2-Dichlorethene (total)	NA	--	--	--	10 U	--
1,2-Dichloropropane	1	0.4 U	1 U	1 U	10 U	--
2-Butanone (MEK)	50	0.9 U	5 U	5 U	10 U	--
2-Hexanone	50	0.9 U	5 U	5 U	10 U	--
4-Methyl-2-pentanone (MIBK)	NA	0.4 U	5 U	5 U	10 U	--
Acetone	50	1 UJ	5 U	5 U	10 U	--
Benzene	1	0.3 U	1 U	1 U	2 J	2
Bromodichloromethane	50	0.3 U	1 U	1 U	10 U	--
Bromoform	50	0.3 U	4 U	4 U	10 U	--
Bromomethane	5	0.3 UJ	5 U	5 U	10 U	--
Carbon disulfide	60	0.2 U	5 U	5 U	10 U	--
Carbon tetrachloride	5	0.3 U	2 U	2 U	10 U	--
Chlorobenzene	5	0.3 U	5 U	5 U	10 U	--
Chloroethane	5	0.4 UJ	5 U	5 U	10 U	--
Chloroform	7	0.3 U	5 U	5 U	10 U	--
Chloromethane	5	0.4 U	5 U	5 U	10 U	--
cis-1,2-Dichloroethene	5	0.4 U	5 U	5 U	--	--
cis-1,3-Dichloropropene	0.4	0.3 U	5 U	5 U	10 U	--
Dibromochloromethane	50	0.2 U	5 U	5 U	10 U	--
Ethylbenzene	5	0.3 U	4 U	4 U	10 U	1 U
Methyl bromide	NA	--	--	--	--	--
Methyl chloride	NA	--	--	--	--	--
Methylene chloride	5	0.9 U	3 U	3 U	10 U	--
Styrene	5	0.3 U	5 U	5 U	10 U	--
Tetrachloroethene	5	0.4 U	1 U	1 U	10 U	--
Toluene	5	0.3 U	5 U	5 U	10 U	1 U
trans-1,2-Dichloroethene	5	0.3 U	5 U	5 U	--	--
trans-1,3-Dichloropropene	0.4	0.4 U	5 U	5 U	10 U	--
Trichloroethene	5	0.4 U	1 U	1 U	10 U	--
Vinyl acetate	NA	--	--	--	--	--
Vinyl chloride	2	0.4 U	5 U	5 U	10 U	--
Xylenes (total)	5	0.2 U	5 U	5 U	10 U	1 U

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW-04D[3] 10/19/1994	MW-04D[3] 1/17/1995	MW25[3] 4/8/1997	MW25-DUP[3] 4/8/1997	MW25[4] 7/20/2000
VOCs						
1,1,1-Trichloroethane	5	10 U	--	--	--	5 U
1,1,2,2-Tetrachloroethane	5	10 U	--	--	--	5 U
1,1,2-Trichloroethane	1	10 U	--	--	--	5 U
1,1-Dichloroethane	5	10 U	--	--	--	5 U
1,1-Dichloroethene	5	10 U	--	--	--	5 U
1,2-Dichloroethane	0.6	10 U	--	--	--	5 U
1,2-Dichlorethene (total)	NA	10 U	--	--	--	--
1,2-Dichloropropane	1	10 U	--	--	--	5 U
2-Butanone (MEK)	50	10 U	--	--	--	10 U
2-Hexanone	50	10 U	--	--	--	10 U
4-Methyl-2-pentanone (MIBK)	NA	10 U	--	--	--	10 U
Acetone	50	18	--	--	--	10 U
Benzene	1	10 U	1 U	2,500 D	2,500 D	5 U
Bromodichloromethane	50	10 U	--	--	--	5 U
Bromoform	50	10 U	--	--	--	5 U
Bromomethane	5	10 U	--	--	--	10 U
Carbon disulfide	60	10 U	--	--	--	5 U
Carbon tetrachloride	5	10 U	--	--	--	5 U
Chlorobenzene	5	10 U	--	--	--	5 U
Chloroethane	5	10 U	--	--	--	10 U
Chloroform	7	10 U	--	--	--	5 U
Chloromethane	5	10 U	--	--	--	10 U
cis-1,2-Dichloroethene	5	--	--	--	--	5 U
cis-1,3-Dichloropropene	0.4	10 U	--	--	--	5 U
Dibromochloromethane	50	10 U	--	--	--	5 U
Ethylbenzene	5	10 U	1 U	42	38	5 U
Methyl bromide	NA	--	--	--	--	--
Methyl chloride	NA	--	--	--	--	--
Methylene chloride	5	10 U	--	--	--	5 U
Styrene	5	10 U	--	--	--	5 U
Tetrachloroethene	5	10 U	--	--	--	5 U
Toluene	5	10 U	1 U	260 JD	270 JD	5 U
trans-1,2-Dichloroethene	5	--	--	--	--	5 U
trans-1,3-Dichloropropene	0.4	10 U	--	--	--	5 U
Trichloroethene	5	10 U	--	--	--	5 U
Vinyl acetate	NA	--	--	--	--	10 U
Vinyl chloride	2	10 U	--	--	--	10 U
Xylenes (total)	5	10 U	1 U	24	22	5 U

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW25[5] 10/9/2000	MW25[6] 5/2/2001	MW26[3] 4/8/1997	MW26[4] 7/21/2000	MW26[5] 10/6/2000	MW26[6] 5/2/2001
VOCs							
1,1,1-Trichloroethane	5	50 U	--	--	100 U	500 U	--
1,1,2,2-Tetrachloroethane	5	50 U	--	--	100 U	500 U	--
1,1,2-Trichloroethane	1	50 U	--	--	100 U	500 U	--
1,1-Dichloroethane	5	50 U	--	--	100 U	500 U	--
1,1-Dichloroethene	5	50 U	--	--	100 U	500 U	--
1,2-Dichloroethane	0.6	50 U	--	--	100 U	500 U	--
1,2-Dichlorethene (total)	NA	50 U	--	--	--	500 U	--
1,2-Dichloropropane	1	50 U	--	--	100 U	500 U	--
2-Butanone (MEK)	50	100 U	--	--	200 U	1,000 U	--
2-Hexanone	50	100 U	--	--	200 U	1,000 U	--
4-Methyl-2-pentanone (MIBK)	NA	100	--	--	200 U	1,000 U	--
Acetone	50	160	--	--	110 U	1,000 U	--
Benzene	1	1,300	5 U	10,000 D	2,600	19,000	630
Bromodichloromethane	50	50 U	--	--	100 U	500 U	--
Bromoform	50	50 U	--	--	100 U	500 U	--
Bromomethane	5	--	--	--	200 U	--	--
Carbon disulfide	60	50 U	--	--	100 U	500 U	--
Carbon tetrachloride	5	50 U	--	--	100 U	500 U	--
Chlorobenzene	5	50 U	--	--	100 U	500 U	--
Chloroethane	5	100 U	--	--	200 U	1,000 U	--
Chloroform	7	50 U	--	--	100 U	500 U	--
Chloromethane	5	--	--	--	200 U	--	--
cis-1,2-Dichloroethene	5	50 U	--	--	100 U	500 U	--
cis-1,3-Dichloropropene	0.4	50 U	--	--	100 U	500 U	--
Dibromochloromethane	50	50 U	--	--	100 U	500 U	--
Ethylbenzene	5	23 J	5 U	620 JD	100 U	780	25 U
Methyl bromide	NA	100 U	--	--	--	1,000 U	--
Methyl chloride	NA	100 U	--	--	--	1,000 U	--
Methylene chloride	5	50 U	--	--	100 U	500 U	--
Styrene	5	50 U	--	--	100 U	500 U	--
Tetrachloroethene	5	50 U	--	--	100 U	500 U	--
Toluene	5	38 J	5 U	280 JD	100 U	120 J	0.9 J
trans-1,2-Dichloroethene	5	--	--	--	100 U	--	--
trans-1,3-Dichloropropene	0.4	50 U	--	--	100 U	500 U	--
Trichloroethene	5	50 U	--	--	100 U	500 U	--
Vinyl acetate	NA	100 U	--	--	200 U	1,000 U	--
Vinyl chloride	2	100 U	--	--	200 U	1,000 U	--
Xylenes (total)	5	14 J	5 U	350	100 U	430 J	25 U

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW27[3] 4/8/1997	MW27[4] 7/20/2000	MW27[5] 10/6/2000	MW27[6] 5/2/2001	MW28[3] 7/20/2000	MW28[5] 10/6/2000
VOCs							
1,1,1-Trichloroethane	5	--	5 U	50 U	--	< 5	5 U
1,1,2,2-Tetrachloroethane	5	--	5 U	50 U	--	< 5	5 U
1,1,2-Trichloroethane	1	--	5 U	50 U	--	< 5	5 U
1,1-Dichloroethane	5	--	5 U	50 U	--	< 5	5 U
1,1-Dichloroethene	5	--	5 U	50 U	--	< 5	5 U
1,2-Dichloroethane	0.6	--	5 U	50 U	--	< 5	5 U
1,2-Dichlorethene (total)	NA	--	--	50 U	--	< 5	5 U
1,2-Dichloropropane	1	--	5 U	50 U	--	< 5	5 U
2-Butanone (MEK)	50	--	10 U	100 U	--	< 10	10 U
2-Hexanone	50	--	10 U	100 U	--	< 10	10 U
4-Methyl-2-pentanone (MIBK)	NA	--	10 U	100 U	--	< 10	10 U
Acetone	50	--	10 U	100 U	--	< 10	10 U
Benzene	1	72	95	1,300	5 U	< 5	0.7 J
Bromodichloromethane	50	--	5 U	50 U	--	< 5	5 U
Bromoform	50	--	5 U	50 U	--	< 5	5 U
Bromomethane	5	--	10 U	--	--	--	--
Carbon disulfide	60	--	5 U	50 U	--	< 5	5 U
Carbon tetrachloride	5	--	5 U	50 U	--	< 5	5 U
Chlorobenzene	5	--	5 U	50 U	--	< 5	5 U
Chloroethane	5	--	10 U	100 U	--	< 10	10 U
Chloroform	7	--	5 U	50 U	--	--	5 U
Chloromethane	5	--	10 U	--	--	--	--
cis-1,2-Dichloroethene	5	--	5 U	50 U	--	< 5	5 U
cis-1,3-Dichloropropene	0.4	--	5 U	50 U	--	< 5	5 U
Dibromochloromethane	50	--	5 U	50 U	--	< 5	5 U
Ethylbenzene	5	32	13	69	5 U	1	0.9 J
Methyl bromide	NA	--	--	100 U	--	< 10	10 U
Methyl chloride	NA	--	--	100 U	--	< 10	10 U
Methylene chloride	5	--	5 U	16 JB	--	5 U	5 U
Styrene	5	--	5 U	50 U	--	< 5	5 U
Tetrachloroethene	5	--	5 U	50 U	--	< 5	5 U
Toluene	5	12	28	230	5 U	< 5	5 U
trans-1,2-Dichloroethene	5	--	5 U	--	--	--	--
trans-1,3-Dichloropropene	0.4	--	5 U	50 U	--	< 5	5 U
Trichloroethene	5	--	5 U	50 U	--	< 10	5 U
Vinyl acetate	NA	--	10 U	100 U	--	< 10	10 U
Vinyl chloride	2	--	10 U	100 U	--	< 10	10 U
Xylenes (total)	5	17	6	32 J	5 U	< 5	5 U

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Sample ID Sample Date	NYSDEC Class GA Standards	MW29[5] 7/20/2000	MW29[5] 10/6/2000	MW30[5] 7/20/2000	MW30[5] 10/6/2000
VOCs					
1,1,1-Trichloroethane	5	< 5	5 U	< 5	100 U
1,1,2,2-Tetrachloroethane	5	< 5	5 U	< 5	100 U
1,1,2-Trichloroethane	1	< 5	5 U	< 5	100 U
1,1-Dichloroethane	5	< 5	5 U	< 5	100 U
1,1-Dichloroethene	5	< 5	5 U	< 5	100 U
1,2-Dichloroethane	0.6	< 5	5 U	< 5	100 U
1,2-Dichlorethene (total)	NA	< 5	5 U	< 5	100 U
1,2-Dichloropropane	1	< 5	5 U	< 5	100 U
2-Butanone (MEK)	50	< 10	2 J	< 10	200 U
2-Hexanone	50	< 10	10 U	< 10	200 U
4-Methyl-2-pentanone (MIBK)	NA	< 10	10 U	< 10	200 U
Acetone	50	10 U	10 U	10 U	200 U
Benzene	1	< 5	14	< 5	2,200
Bromodichloromethane	50	< 5	5 U	< 5	100 U
Bromoform	50	< 5	5 U	< 5	100 U
Bromomethane	5	--	--	--	--
Carbon disulfide	60	< 5	5 U	< 5	100 U
Carbon tetrachloride	5	< 5	5 U	< 5	100 U
Chlorobenzene	5	< 5	5 U	< 5	100 U
Chloroethane	5	<10	10 U	< 10	200 U
Chloroform	7	< 5	5 U	< 5	100 U
Chloromethane	5	--	--	--	--
cis-1,2-Dichloroethene	5	< 5	5 U	< 5	100 U
cis-1,3-Dichloropropene	0.4	< 5	5 U	< 5	100 U
Dibromochloromethane	50	< 5	5 U	< 5	100 U
Ethylbenzene	5	< 5	4 J	< 5	36 J
Methyl bromide	NA	< 10	10 U	< 10	200 U
Methyl chloride	NA	< 10	10 U	< 10	200 U
Methylene chloride	5	5 U	5 U	10 U	100 U
Styrene	5	< 5	5 U	< 5	100 U
Tetrachloroethene	5	< 5	5 U	< 5	100 U
Toluene	5	< 5	3 J	< 5	100
trans-1,2-Dichloroethene	5	--	--	--	--
trans-1,3-Dichloropropene	0.4	< 5	5 U	< 5	100 U
Trichloroethene	5	< 10	5 U	< 5	100 U
Vinyl acetate	NA	< 10	10 U	< 10	200 U
Vinyl chloride	2	< 10	10 U	< 10	200 U
Xylenes (total)	5	< 5	2 J	< 5	53 J

See notes on page 8.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs)
micrograms per liter (ug/L)

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT NO. 2
ROME, NEW YORK

Notes:

[1] Data as presented in Niagara Mohawk, a National Grid Company. Letter to the NYSDEC regarding well installation and the first round of groundwater sampling and water level measurements for the new wells installed on OU-2, dated January 26, 2005.

[2] Data as presented in Niagara Mohawk, a National Grid Company. Letter to the NYSDEC regarding a second round of groundwater sampling on OU-2, dated August 1, 2005.

[3] Data as presented in Parsons Engineering Science, Inc. 1999. *Remedial Investigation Report for the Rome (Kingsley Avenue) Site, City of Rome, New York.* Prepared for Niagara Mohawk Power Corporation, Syracuse, New York. March 1999.

[4] Data as presented in Foster Wheeler Environmental Corporation, 2000. "Off-Site" Remedial Investigation (RI) Report for the Rome (Kingsley Ave.) Site. Prepared for Niagara Mohawk Power Corporation, October 2000.

[5] Data as presented in Foster Wheeler Environmental Engineering Corporation. 2002. *Feasibility Study Report for the Rome (Kingsley Ave.) Site.* Prepared for Niagara Mohawk Power Corporation, Syracuse, New York. January 2002.

[6] Data as presented in Niagara Mohawk, a National Grid Company. Letter to the NYSDEC in response to comments issued for the *Off-Site RI Work Plan* dated July 10, 2001.

All concentrations reported in micrograms per liter (ug/L); equivalent to parts per billion (ppb).
-- = Sample not analyzed for specified constituent.
New York State Department of Environmental Conservation Class GA Standards from "New York State Ambient Water Quality Standards and Guidance Values," June 1998.
NA = No criteria available.
BTEX and naphthalene were proposed to be analyzed in groundwater samples from MW-25, -26, and 27 in July 2001; however, a report presenting these analytical data could not be located.

Data Qualifiers:

B = Compound was also present in an associated blank.
D = Compound value reported is from a dilution sample.
J = Compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = Compound was not detected at the indicated concentration.

TABLE 2
PROJECT ANALYTE LIST FOR TO-15 ANALYSIS

SOIL VAPOR SAMPLING WORK PLAN
KINGSLEY AVENUE, OPERABLE UNIT No. 2
ROME, NEW YORK

I. Analyte List		
Compound	**Reporting Limit ppb(v/v)**	**Reporting Limit (ug/m^3)**
1,2,4-Trimethylbenzene	0.2	0.63
1,3,5-Trimethylbenzene	0.2	0.49
1,3-Butadiene	0.2	0.69
4-Ethyltoluene (p-Ethyltoluene)	0.2	0.86
Benzene	0.2	0.98
Cyclohexane	1	3.6
Ethylbenzene	0.5	2.62
Methyl tert-butyl ether	0.2	0.85
m-Xylene & p-Xylene	0.2	0.75
Naphthalene	0.2	0.98
n-Butane	0.2	0.98
n-Decane	0.2	0.86
n-Dodecane	0.2	0.86
n-Heptane	0.4	0.95
n-Hexane	1	5.81
n-Nonane	1	6.96
n-Octane	0.5	2.04
n-Pentane	0.5	1.76
n-Undecane	0.5	2.62
o-Xylene	0.4	1.86
Styrene	1	2.95
Toluene	1	6.39

Note:

1. The proposed analyte list includes benzene and other constituents (i.e., toluene, ethylbenzene, xylenes, and naphthalene) that have historically been detected in deep overburden groundwater samples collected from MW-25, MW-26, and MW-27. The analytes will consist of VOCs that may be MGP-related and/or fuel-related, and therefore do not include chlorinated VOCs. To aid in evaluating whether VOC detection, if any, are potentially due to fuels (e.g., gasoline, diesel) rather than the former MGP, the analyses also includes n-alkanes and other fuel-related VOCs.

Table 3
Project Analyte List for Forensic TO-15 Analysis

Soil Vapor Samplig Work Plan
Kingsley Avenue, Operable Unit No.2
Rome, New York

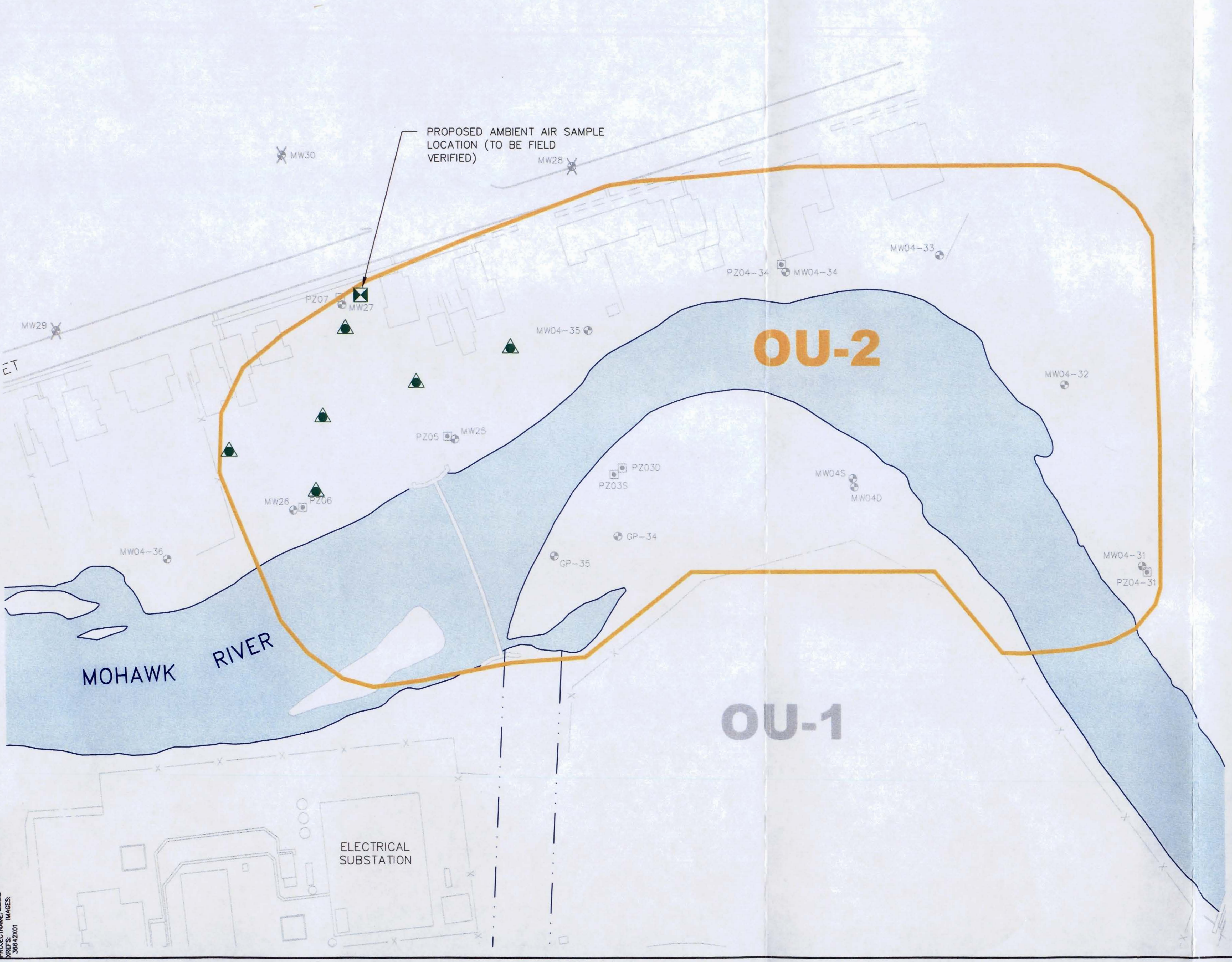
Analyte	Reporting Limits		
	ppbv	ug/m3	mg/m3
1,3-Butadiene	0.04	0.09	88.67
Isopentane	0.04	0.12	118.28
1-Pentene	0.04	0.11	114.97
2-Methyl-1-butene	0.04	0.11	114.97
Pentane	0.04	0.12	118.28
2-Pentene (trans)	0.04	0.11	114.97
2-Pentene (cis)	0.04	0.11	114.97
Tertiary butanol	0.04	0.12	121.51
Cyclopentane	0.04	0.11	114.97
2,3-Dimethylbutane	0.04	0.14	141.28
2-Methylpentane	0.04	0.14	141.28
MTBE	0.04	0.14	144.51
3-Methylpentane	0.04	0.14	141.28
1-Hexene	0.04	0.14	137.97
Hexane	0.04	0.14	141.28
Diisopropyl Ether (DIPE)	0.04	0.17	167.49
Ethyl Tertiary Butyl Ether (ETBE)	0.04	0.17	167.54
2,2-Dimethylpentane	0.04	0.16	164.26
Methylcyclopentane	0.04	0.14	137.97
2,4-Dimethylpentane	0.04	0.16	164.26
1,2-Dichloroethane	0.04	0.16	162.23
Cyclohexane	0.04	0.14	137.97
2-Methylhexane	0.04	0.16	164.26
Benzene	0.04	0.13	128.05
2,3-Dimethylpentane	0.04	0.16	164.26
Thiophene	0.04	0.14	137.93
3-Methylhexane	0.04	0.16	164.26
TAME	0.04	0.17	167.49
1-Heptene	0.04	0.16	160.97
Isooctane	0.04	0.19	187.25
Heptane	0.04	0.16	164.31
Methylcyclohexane	0.04	0.16	160.97
2,5-Dimethylhexane	0.04	0.19	187.26
2,4-Dimethyhexane / 2,2,3-TMP	0.04	0.19	187.26
2,3,4-Trimethylpentane	0.04	0.19	187.26
2,3,3-Trimethylpentane	0.04	0.19	187.26
2,3-Dimethylhexane	0.04	0.19	187.26
3-Ethylhexane	0.04	0.19	187.26
2-Methylheptane	0.04	0.19	187.26
3-Methylheptane	0.04	0.19	187.26
Toluene	0.04	0.15	151.05
2-Methylthiophene	0.04	0.16	160.93
3-Methylthiophene	0.04	0.16	160.93
1-Octene	0.04	0.18	183.97
1-Ethyl-1-methylcyclopentane	0.04	0.18	183.95
Octane	0.04	0.19	187.25
1,2-Dibromoethane	0.04	0.31	307.97
Ethylbenzene	0.04	0.17	174.05

Table 3
Project Analyte List for Forensic TO-15 Analysis

Soil Vapor Samplig Work Plan
Kingsley Avenue, Operable Unit No.2
Rome, New York

Analyte	Reporting Limits		
	ppbv	ug/m3	mg/m3
2-Ethylthiophene	0.04	0.18	183.92
p/m-Xylene	0.04	0.17	174.05
1-Nonene	0.04	0.21	206.95
Nonane	0.04	0.21	210.25
Styrene	0.04	0.17	170.74
o-Xylene	0.04	0.17	174.05
Isopropylbenzene	0.04	0.20	197.03
n-Propylbenzene	0.04	0.20	197.03
1-Methyl-3-ethylbenzene	0.04	0.20	197.03
1-Methyl-4-ethylbenzene	0.04	0.20	197.03
1,3,5-Trimethylbenzene	0.04	0.20	197.05
1-Decene	0.04	0.23	230.00
1-Methyl-2-ethylbenzene	0.04	0.20	197.05
Decane	0.04	0.23	233.28
1,2,4-Trimethylbenzene	0.04	0.20	197.05
sec-Butylbenzene	0.04	0.20	197.05
1-Methyl-3-isopropylbenzene	0.04	0.22	220.03
1-Methyl-4-isopropylbenzene	0.04	0.22	220.03
1-Methyl-2-isopropylbenzene	0.04	0.22	220.03
Indan	0.04	0.19	193.74
Indene	0.04	0.19	190.43
1-Methyl-3-propylbenzene	0.04	0.22	220.03
1-Methyl-4-propylbenzene	0.04	0.22	220.03
n-Butylbenzene	0.04	0.22	220.03
1,2-Dimethyl-4-ethylbenzene	0.04	0.22	220.03
1,2-Diethylbenzene	0.04	0.22	220.03
1-Methyl-2-propylbenzene	0.04	0.22	220.03
1,4-Dimethyl-2-ethylbenzene	0.04	0.22	220.03
Undecane	0.04	0.26	256.23
1,3-Dimethyl-4-ethylbenzene	0.04	0.22	220.03
1,3-Dimethyl-5-ethylbenzene	0.04	0.22	220.03
1,3-Dimethyl-2-ethylbenzene	0.04	0.22	220.03
1,2-Dimethyl-3-ethylbenzene	0.04	0.22	220.03
1,2,4,5-Tetramethylbenzene	0.04	0.22	220.03
Pentylbenzene	0.04	0.24	243.02
Dodecane	0.04	0.28	279.25
Naphthalene	0.04	0.21	210.11
Benzothiophene	0.04	0.22	220.00
MMT	0.04	0.36	357.52
Tridecane	0.04	0.30	302.23
2-Methylnaphthalene	0.04	0.23	233.11
1-Methylnaphthalene	0.04	0.23	233.11

Figure



LEGEND:

- FORMER TAILRACE (APPROXIMATE)
- MW04-34 MONITORING WELL
- MW28 DECOMMISSIONED/MISSING/UNABLE TO LOCATE, OR DAMAGED MONITORING WELL
- PZ02 PIEZOMETER
- ▲ PROPOSED VAPOR MONITORING POINT
- ☒ PROPOSED AMBIENT AIR SAMPLE

NOTES:

1. BASE MAP SUPPLIED BY ERDMAN ANTHONY, AT A SCALE OF 1" = 40' TITLED "KINGSLEY AVENUE", WAS CREATED BY PHOTOGRAMMETRIC METHODS FROM DATA COLLECTED ON NOVEMBER 10, 2003.
2. ALL LOCATIONS ARE APPROXIMATE.
3. AS DEFINED IN THE RECORD OF DECISION (MARCH 2002), THERE IS AN AREA THAT IS IN BOTH OU-1 AND OU-2. THE SOIL/SEDIMENTS IN THE AREA ARE DEFINED AS BEING IN OU-1, AND THE GROUNDWATER/NAPL IS DEFINED AS BEING IN OU-2.
4. OU-2 BOUNDARY AS DEPICTED, OBTAINED FROM FIGURE 1 OF RECORD OF DECISION FOR SITE NO. 6-33-043, DATED MARCH 2002.

0 100' 200'
GRAPHIC SCALE

NATIONAL GRID
KINGSLEY AVENUE, OPERABLE UNIT No.2
ROME, NEW YORK
SOIL VAPOR SAMPLING WORK PLAN

SAMPLING PLAN

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
1

SYR-85-RCA RCB L: ON=*, OFF=*REF, |DRIVEWAY-UNPAVED, |TANK
G:\CAD\ACTIVE\-DWG\ACT\36642101\36642B01.DWG SAVED: 6/26/2007 2:51 PM LAYOUT: Layout1 PAGESETUP: ---- PENTABLE: PLTFULL.CTB PRINTED: 6/26/2007 2:52 PM BY: RBASSETT
PROJECTNAME: ----
XREFS: IMAGES:
36642X01

Appendices

Appendix A

Soil Vapor Sample Collection Procedures

APPENDIX A
SOIL VAPOR SAMPLE COLLECTION PROCEDURES
(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect soil vapor samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations, sample depths, and sampling duration.

Soil Vapor Probe Installation

Permanent and temporary soil vapor probes will be installed using the procedure outlined below:

- Record weather information (temperature, barometric pressure, rainfall, wind speed, and wind direction). Record substantial changes to these conditions that may occur during the course of the probe installation. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).
- Install soil vapor probes using a direct-push drill rig (e.g., GeoProbe® or similar) or manually using a slide hammer. Probes will consist of stainless-steel drive points with stainless steel screens attached to food-grade (inert) Teflon® or polyethylene tubing through which the soil vapor sample will be drawn.
- Attach the drive points to a drive rod (stainless-steel tube) and drive the rod to the target depth, as define in the site-specific work plan.
- Withdraw the drive rods from the hole, leaving the drive point and tubing.
- Place filter pack material, such as glass beads or clean silica sand, in the annular space surrounding the tubing directly above the sample point to a height of approximately 1 to 2 foot. The depth of the filter pack material should always be adequate to prevent the bentonite slurry above from going over the drive point and sample inlet screen.
- Place bentonite slurry in the annulus above the filter pack material to provide a seal in the borehole. Ideally, place the bentonite annular seal at least 3 feet thick, although adjustments

to this thickness may be required based on site-specific conditions. The entire borehole must be filled to the ground surface with either entirely bentonite or with natural fill between two bentonite seals (one above the filter pack material and one at the ground surface). Permanent installations must have a surface seal made of cement or cement/bentonite grout.

- For permanent installations, install flush-mounted protective covers to protect the probe and the tubing.

- Cut the end of the tubing to allow proper closure of the flush-mounted protective cover, but with a sufficient length of tubing exposed at the surface to facilitate connection of sampling equipment.

- Close or cap the sample tubing following installation and following collection of each sample.

Collection of Soil Vapor Samples

Collecting soil vapor samples will be accomplished by using the following procedure:

- Record weather information (i.e., temperature, barometric pressure, rainfall, wind speed, and wind direction) at the beginning of the sampling event. Also, record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Identify sampling locations on a plot plan that also identifies buildings, other landmarks, and potential sources of VOC contamination to both the surface and outdoor air. Record the depth of the probe screen below grade.

- If necessary, connect additional tubing to the tubing extending from the soil vapor probe to allow for connection to sample collection equipment.

- Calculate the volume of air in the probe, tubing (volume = $\pi r^2 h$), including any additional tubing added in the step above and the annular space between the probe and the native material if sand or glass beads were used.

- Connect a vacuum pump or gas-tight syringe (~60 cubic centimeters [cc]) to the sample tubing. At a flow rate of no more than 0.2 liter per minute (lpm), purge air from the tubing until one to three of the above-calculated air volumes are removed.

- During purging, evaluate the potential for ambient air to be introduced in the soil vapor sample through the annulus of the soil vapor probe or tubing connections using a tracer gas such as helium. The procedures for the tracer gas evaluation are described below. Note that the bentonite used in the probe installation should have sufficient time to seal before the samples are collected. The tracer gas evaluation will verify if the seal is sufficient.

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the soil vapor sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as identified in the project-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be batch certified as clean by the laboratory.

- Remove the protective brass plug from the canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of-custody form for each sample.

- Connect the tubing from the soil vapor probe to the flow controller.

- Completely open the valve on the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling.

- Stop sample collection when the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valve. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

- Provided that no additional sampling is expected to be conducted, either pull out (if practical) or abandon in place the sampling probe. When abandoning, cut the tubing back as far down as practical and cover to surface with native soil.

Tracer Gas Evaluation

The tracer gas evaluation provides a means to evaluate the integrity of the soil vapor probe seal and assess the potential for introduction of ambient air into the soil vapor sample. A tracer gas evaluation should be conducted on all soil vapor probes. After the initial round of sampling and with the approval of the regulating agency, the use of tracer gas may be reduced to a minimum of 10 percent for permanent and semi-permanent probes if the initial round results showed installations with competent seals.

The following tracer gas evaluation procedure uses in-field tracer gas measurements and tracer gases (e.g., helium) that can be measured by portable detectors.

- Retain the tracer gas around the sample probe by filling an air-tight chamber (such as a plastic bucket) positioned over the sample location.

- Make sure the chamber is suitably sealed to the ground surface.

- Introduce the tracer gas into the chamber. The chamber will have tubing at the top of the chamber to introduce the tracer gas into the chamber and a valved fitting at the bottom to let the ambient air out while introducing tracer gas. A tracer gas detector will be attached to the valve fitting at the bottom of the chamber to verify the presence of the tracer gas. Close the valve after the chamber has been enriched with tracer gas at concentrations >50%.

- The chamber will have a gas-tight fitting or sealable penetration to allow the soil vapor sample probe tubing to pass through and exit the chamber.

- After the chamber has been filled with tracer gas, attach the sample probe tubing to a pump that will be pre-calibrated to extract soil vapor at a rate of no more than 0.2 lpm. Purge the tubing using the pump. Calculate the volume of air in the tubing and probe and purge one to three tubing/probe volumes prior measuring the tracer gas concentration.

- Use the tracer gas detector to measure the tracer gas concentration in the pump exhaust.

- Record the tracer gas concentrations in the chamber and in the soil vapor sample.

If the evaluation indicates a high concentration of tracer gas in the sample (>10% of the concentration of the tracer gas in the chamber), then the surface seal is not sufficient and requires improvement via repair or replacement prior to commencement of the sample collection. A non-detectable level of tracer gas is preferred; however, if the evaluation indicates a low potential for introduction of ambient air into the sample (<10% of the concentration of the tracer gas in the chamber), then proceed with the soil vapor sampling. While lower concentrations of tracer gas are acceptable, the impact of the detectable leak on sample results should be evaluated in the sampling report.

ARCADIS BBL

SAMPLING SUMMARY FORM

I. SAMPLING INFORMATION

Sample Technician: ______________________________ Phone number: (   ) _______ - ______________

Sample Source: Exterior Soil Vapor

Sampler Type: Stainless Steel Canister

Analytical Method: TO-15 Cert. Laboratory: __________________

Sample Locations:

Field ID # _____ - _________________________ Field ID # _____ - ___________________________________

Field ID # _____ - _________________________ Field ID # _____ - ___________________________________

II. METEOROLOGICAL CONDITIONS

Was there significant precipitation within 12 hours prior to (or during) the sampling event? *Yes / No*

Describe the general weather conditions: ____

____

III. GENERAL OBSERVATIONS

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

____

____

____

____

ARCADIS BBL

Appendix B

Ambient Air Sample Collection Procedures

APPENDIX B

AMBIENT AIR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect ambient air samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations and sampling duration.

The following procedures will be followed for the collection of ambient air samples:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Select a location upwind of the building or other area that is being evaluated. If possible, select a location upwind or near the HVAC air intake for the building being sampled.

- Record weather information (i.e., temperature, barometric pressure, relative humidity, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the ambient air sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be individually certified as clean by the laboratory.

- Place the canister at the sampling location. If the sample should be collected from breathing height (e.g., 3 to 5 feet above ground), then mount the canister on a stable platform such that the sample inlet will be at the proper height.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of custody form for each sample.

- Completely open the valve on the vacuum pressure in the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Document on a field form an outdoor plot sketch that indicates the building being sampled, streets, sampling location, location of potential outdoor air sources, north direction and paved areas. Also record pertinent observations such as odors, readings from field instrumentation, and significant activities in the vicinity that result in air emissions.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical). During monitoring, note the vacuum pressure on the gauge.

- Stop sample collection after the scheduled duration of sample collection but make sure that the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valves. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

Appendix C

Quality Assurance/Quality Control Procedures

QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

I. INTRODUCTION

This attachment summarizes the quality assurance/quality control (QA/QC) procedures to be implemented in conjunction with the soil vapor sampling and analysis activities to be performed at OU-2. A summary of compounds to be analyzed and reporting limits are provided in Table 1.

II. LABORATORY QUALIFICATIONS

Analytical laboratory services must be provided by a qualified New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program-certified laboratory experienced in the analyses of soil vapor, ambient air, and groundwater samples using the methods specified herein.

III. LABORATORY QA/QC REQUIREMENTS

QA/QC for Laboratory Analysis

Specific procedures related to project-specific QA/QC for soil vapor samples are described in the following subsections. Specific procedures related to project-specific QA/QC for groundwater are described in the *Sampling, Analysis, and Monitoring Plan* (BBL, revised October 2003).

Method Blank Samples

A method blank sample will be analyzed by the laboratory at a frequency of 1 per 20 (or fewer) analyses. The method blank (consisting of an aliquot of humidified VOC-free air or nitrogen) will be carried through the entire analytical procedures.

Laboratory Control Samples

A Laboratory Control Sample (LCS) will be analyzed by the laboratory at a frequency of 1 per 20 (or fewer) investigative samples or once per tune period for the mass spectrometer, whichever is more frequent. The LCS will consist of a known standard prepared from a different source than the supplier of the calibration standard. The LCS will be used to evaluate accuracy of the analytical system, based on consistency with the control limits listed below. The following compounds will be part of the LCS standard: benzene and ethylbenzene.

Analyte	Concentration Spiked (ppbv)	Lower Control Limit %	Upper Control Limit %
Benzene	10.65	70	150
Ethylbenzene	10.9	65	145

Trip Blanks

A trip blank sample will accompany field samples at a rate of one trip blank per shipment container. Trip blanks will originate at the analytical laboratory. Each trip blank will consist of a canister, sent to the field with other canisters, and returned without being opened. The canister will be filled with humidified nitrogen (the same gas used for method blanks) upon return to the laboratory and will be analyzed. The trip blanks will accompany the sample containers throughout transport and sampling activities and will be returned to the laboratory with the field samples.

Duplicate Samples

Duplicate samples will be collected at a frequency of 1 per 20 (or fewer) as part of this project.

Calibration Procedures and Frequency

Calibration of instrumentation is required to ensure that the analytical system is operating correctly and functioning at the property sensitivity to meet established quantitation and reporting limits.

The quantitation limit (QL) is the value at which an instrument or method can measure an analytic at a specified level of accuracy. The QL is established by the upper and lower limits of the calibration range with the lower QL set at the concentration of the low calibration standard. Due to significant amount of error (~±100%) associated with results near the Method Detection Limit (MDL), the lower QL should be at least three times the MDL or greater.

The reporting limit (RL) is a threshold value for which results are reported as non-detected. In the absence of project specific or method requirements, the laboratory sets the RL at the same value as the QL (i.e., the RL is associated with the calibration standard). When project-specific RLs are established below the QL, sample results below the QL are quantified as estimated. If very low levels of quantitation are required and data cannot be estimated due to a risk assessment or compliance issue, upon client request, the laboratory will analyze a RL check standard (taken through appropriate sample prep procedures) to assess accuracy at this concentration. The performance criteria and/or any method modifications required to achieve a project RL is determined in conjunction with the client.

This procedure is based on 40 CFR Part 136, Appendix B and is intended to meet the requirements of the NELAC Quality Systems Standard, July 2001; the Department of Defense (DOD) Quality Systems Manual, Final Version, June 2002; and the United States Army Corps of Engineers (USACOE) Shell for Analytical Chemistry.

Each instrument will be calibrated with certified standard solutions and the linear range established for the analytical method. The frequency of calibration and the concentration of calibration standards will be determined by the analytical method.

Standards containing compounds of interest will be analyzed at various concentrations to establish the linear range of the detector, the limit of detection, and the retention time windows. All calibrations will be performed using either average response factors or first-order linear regression. Higher order fits will be allowed if permitted by the method, provided method criteria are met. The resulting calibration curves must meet all method specified criteria prior to sample analyses.

The calibration curve or average response factor will be verified each day at a frequency specified in the appropriate analytical method. The response from the continuing calibration standard will be checked against the average response factors or calibration curve established during initiation calibration.

Data Validation

Data assessment will be accomplished by the joint efforts of the Project QA/QC Officer and the Project Manager. The data assessment of the Project Manager will be based on the criteria that the sample was properly collected and handled according to the Standard Operating Procedures (Attachment 1). The project Manager will review logbooks, field logs, and sampling reports to monitor the integrity of all field operations.

All analytical data will be reported by the laboratory with NYSDEC Analytical Protocol Category B deliverables. An electronic data deliverable (EDD) will also be provided by the laboratory. The EDD will facilitate transfer of data into a project database for the Site. A copy of the laboratory data package and/or the EDD will be provided to the NYSDEC upon request.

A chemist(s) that is not employed by the analytical laboratory will validate the data generated by the contract laboratory. The chemist(s) will be experienced in performing data validations and will be familiar with the analytical methods used. The applicable analytical methods and the following document will be used to validate all data generated by the laboratory:

- "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," EPA 540/R-99-088, October 1999

IV. DATA DOCUMENTATION AND REPORTING

A project file will be maintained that contains project plans, log books and data records, maps and drawings, sample identification documents, chain-of-custody records, the entire analytical data package provided by the laboratory including QA/QC documentation, data validation notes, references and literature, report notes and calculations, progress and technical reports, correspondence, and other pertinent information. A project file will be kept at BBL's office in Syracuse, New York, and the file will be maintained for the duration of the project.

The analytical laboratory will review appropriate quality control data to assure the validity of the analytical results. The analytical laboratory will prepare and retain full analytical and QA/QC documentation as required by the analytical methods used.

All results of chemical analyses will be supplied in a laboratory report that include the following items: custody documentation; methodology review, non-conformance summary; sample results summary; quality control summary including method blank, matrix spike, duplicate and laboratory control sample results; and initial and continuing calibration results. The analytical laboratory will supply one hard copy of the analytical and QA/QC documentation to BBL, which will be included with the reports of analyses in the project file.

V. REFERENCES

- New York State Department of Health. February 2005. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York – Public Comment Draft.*

- New York Department of Environmental Conservation. November 22, 2004. *Evaluating Potential for Vapor Intrusion at Past, Current, and Future Sites – DEC Program Policy – Draft.*

- Environmental Protection Agency. 2001. *Draft Guidance for Evaluating Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance).*

Attachment 2

Passive NAPL Recovery
Procedures

Attachment 2
Standard Operating Procedure: DNAPL Gauging and Removal
Kingsley Avenue, Operable Unit No. 2
Rome, New York

I. Scope and Application

This procedure describes the process to monitor for, and if observed, remove dense non-aqueous phase liquid (DNAPL) from a monitoring well. Implementing this Standard Operating Procedure (SOP) will help ensure that data are accurate, recovered DNAPL is properly managed and that the work is conducted safely.

II. Personnel Qualifications

In addition to the required health and safety qualifications/training, staff implementing this SOP must have performed this activity previously under the supervision of an individual with experience deemed as adequate by the BBL Project Manager.

III. Equipment List

- Health and safety monitoring equipment and Personal Protective Equipment (PPE) (as required by the site-specific Health and Safety Plan [HASP]);
- Keys for access to the site and wells;
- Cleaning equipment (as required by the appropriate Equipment Decontamination SOP); Plastic sheeting;
- Field note book and indelible ink pens;
- Absorbent pads;
- Peristaltic pump, appropriate tubing, and power supply;
- Appropriate fittings for linking tubing connections;
- New or dedicated, disposable bottom-loading, weighted transparent bailers with VOC-sampler attachments;
- Bailer cord;
- Graduated containers to measure recovered DNAPL ;
- Containers for transporting recovered DNAPL to site storage vessels (e.g., 5-gallon buckets);
- Appropriate equipment to open on-site DNAPL storage vessels;
- Oil-water interface probe; and
- Well construction records.

IV. Cautions

When collecting DNAPL with a peristaltic pump, cut the intake-end of the tubing at a slight angle to mitigate collection of sediment that could be at the well bottom.

Take care to minimize mixing of the groundwater and DNAPL, and/or creating an emulsion during removal. If mixing does occur, allow time for the groundwater and DNAPL to separate or "break" before measuring the DNAPL volume. Some MGP-related DNAPLs may be susceptible to forming emulsions and may even be present in the subsurface as an emulsion. If an emulsion does not break in an approximate one-half hour timeframe, record as an estimated volume, noting the presence of an emulsion.

V. Health and Safety Considerations

Refer to the site-specific HASP for site-specific health and safety considerations.

VI. Procedure

At the monitoring well, the field personnel unlock and open the protective casing and well cap if present. Visually observe the physical conditions of the well. All observations, measurements, calculations, equipment used, times, and dates are to be recorded in the field note book using an indelible ink pen.

Place plastic sheeting and oil absorbent pads next to the well for staging equipment and minimizing the potential that DNAPL (if present) will contact the ground surface.

Measure the depth to water using an oil-water interface probe from the pre-established mark at the top of the well casing.

Carefully measure the depth to DNAPL using an oil-water interface probe from the pre-established mark at the top of the well casing. Take care to lower the interface probe slowly so as not to plunge the probe into DNAPL that may be present. Plunging the interface probe into DNAPL could result in an erroneous measurement (depending on DNAPL density, viscosity, etc.), and could require significant effort to clean the probe before another measurement attempt can be made. Use the well construction records, if needed, to determine the depths to the screened interval, sump length, and well bottom. If DNAPL is present, do not measure the total depth of the well is at this time.

If DNAPL is not present, measure the total depth of the well using the oil-water interface probe from the pre-established mark at the top of the well casing. Clean the oil-water interface probe according to the Equipment Decontamination SOP before moving to another well location or leaving the site.

If DNAPL is observed in the well during gauging, a determination must be made on how best to remove it. Generally, if the DNAPL thickness is less than 0.5 feet, a new or dedicated, weighted disposable or dedicated polyethylene bailer will be used. If the DNAPL thickness is greater than 0.5 feet thick, a peristaltic pump and new or dedicated, disposal tubing will be used. Regardless of the removal method, it is important to minimize, to the extent practicable, removal of water.

Once the proper procedure is determined, don additional PPE if required by the HASP. Before removing DNAPL, estimate its volume using the depth to DNAPL measurement and the well construction records. Convenient conversion factors for estimating DNAPL volume in common well diameters are included below.

Conversion Factors

Gallons per foot of Water Column	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gallon = 3.785 Liters = 3785 milliliters = 0.1337 cubic feet				

Place an appropriately-sized graduated container and enough transfer containers (e.g., 5-gallon buckets) in the work area.

<u>Bailer Method</u>

Gently lower the new, disposable or dedicated bailer into the well using bailer cord. Once the bailer reaches the bottom of the well casing, gently raise and lower the bailer several times to load as much DNAPL as possible. Withdraw the bailer and insert the VOC-sampler device into the bailer to empty the DNAPL into the graduated container. Empty any water in the bailer into a transfer container. Repeat this process until DNAPL has been removed to the extent practicable. Once as much DNAPL as practicable is removed, carefully measure and record the volume of DNAPL in the graduated container. Gently pour the DNAPL into the transfer container and carefully transport the water and DNAPL to the on-site storage vessel. Use the oil-water interface probe to measure the total depth of the well and thickness of remaining DNAPL, if any. Compare the measured total depth of the well to the depth of well measured immediately after the well was installed. This information will be evaluated to determine whether sediment collected in the well should be removed and to assess the relationship of the top of the sump to the top of the DNAPL (i.e., whether the DNAPL is overtopping the sump). Finally, remove PPE, equipment, and supplies from the work area, and re-lock the cap and/or outer protective casing of the well.

Pump Method

When using a peristaltic pump, two types of disposable tubing are required. The tubing that goes into the well is typically 3/8" inner diameter (ID) low-density polyethylene (LDPE). The tubing used on the peristaltic pump head is typically 1/2" ID low-density silicone tubing. Gently lower the disposable LDPE tubing into the well. Once the tubing reaches the bottom of the well, raise the tubing off of the well bottom by approximately 0.3 feet to mitigate collecting sediment that may have accumulated at the well bottom. Connect all pump tubing and power supply cables to the peristaltic pump. Start the pump at a low flow rate. Direct the pump discharge into the graduated container until DNAPL can no longer be retrieved from the well, gently lower the tubing to remove the remaining 0.3' of DNAPL at the well bottom. Once as much DNAPL as possible is removed, measure and record the volume of DNAPL in the graduated container. Gently empty the contents of the graduated container into the transfer container and carefully transport the contents to the on-site storage vessel. Use the oil-water interface probe to measure the total depth of the well and thickness of remaining DNAPL, if any. Finally, remove PPE, equipment, and supplies from the work area, and re-lock the cap and/or outer protective casing of the well.

Regardless of the removal method, clean all equipment in accordance with the Equipment Decontamination SOP, and discard disposable investigation derived waste (IDW) and PPE in accordance with the site-specific protocols.

VII. Waste Management

The DNAPL and water mixture recovered from the wells will be disposed of according to the site-specific protocols. IDW such as PPE, used bailers, used peristaltic tubing, absorbent pads, etc., will also be disposed of according to the site-specific protocols, or other project documentation.

VIII. Data Recording and Management

All observations, measurements, calculations, equipment used, times, and dates are to be recorded in the field note book using an indelible ink pen.

IX. Quality Assurance

Mitigate the potential for cross-contamination by decontaminating the oil-water interface probe per the Equipment Decontamination SOP, or other appropriate site-specific procedure, before using it at subsequent wells.

If there are previous DNAPL measurement records that indicate which wells consistently accumulate DNAPL, make every attempt to start work at wells that are historically DNAPL-free and finish work with those that have had DNAPL in the past.

X. References

None.

Attachment 3

2003 Correspondence

SAP

Niagara Mohawk
A **National Grid** Company

Transmitted Fax/US Postal Service

February 27, 2003

Mr. Brian D'Amour
MGP Remedial Section
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7017

Re: Operable Unit No. 2
Response to NYSDEC Comments of January 17, 2003
Rome (Kingsley Avenue) Former Manufactured Gas Plant Site
Rome, New York

Dear Mr. D'Amour:

Niagara Mohawk, a National Grid Company (Niagara Mohawk) received your letter dated January 17, 2003 on January 27, 2003 that provided comments on the Feasibility Study (FS) for Operable Unit No. 2 (OU-2) at the Rome (Kingsley Avenue) former MGP site. Niagara Mohawk's letter dated December 23, 2002 presented information regarding the OU-2 FS. Your January 17, 2003 letter requested that Niagara Mohawk:

- Submit a plan and schedule, within 30 days of receipt of the January 17, 2003 letter (received on January 27, 2003), for conducting a treatability study to address dense non-aqueous phase liquid (DNAPL) to the west of the proposed OU-1 barrier wall; and

- Respond to the NYSDEC's request that Niagara Mohawk develop a plan to address the apparent LNAPL observed at GP-38.

Your letter, however, did not provide an approval of Niagara Mohawk's proposal (as described in the December 23, 2002 letter) to reposition one of the six proposed OU-2 monitoring wells to be installed on the west side of the Mohawk River.

These outstanding OU-2 issues are discussed below.

Treatability Study

It is premature to develop a plan and schedule for a treatability study to assess the potential impacts of DNAPL downgradient of the proposed OU-1 barrier wall. Based on a review of existing NAPL measurement data from the site wells, only one (GP35) of the six wells located downgradient of the proposed wall has had documented accumulations of DNAPL. Furthermore, only one (MW22D) of 15 wells located immediately upgradient (within 50 feet) of the proposed wall had accumulations of DNAPL. An assessment must be conducted to determine the occurrence and mobility of the DNAPL in the area of the wall. If DNAPL is determined to be immobile (residual) downgradient of the wall, monitored natural attenuation (MNA) would be a viable remedial alternative for impacted OU-2 groundwater. If the DNAPL is determined to be mobile downgradient of the wall, then a plan will be developed to appropriately address this mobile DNAPL. The attached DNAPL Mobility Assessment Plan provides an approach for collecting data to enhance our understanding of the DNAPL characteristics in the area of the proposed wall. Following implementation of the attached plan, Niagara Mohawk will develop an approach to appropriately address the issues identified by this assessment.

LNAPL at GP-38

As discussed in the bullets below, Niagara Mohawk believes that LNAPL does not exist in the area of GP38.

- The boring log for GP38 indicates that a "slight blue-black LNAPL" was encountered from approximately 6 to 18 feet below grade. The "blue-black" appearance of the supposed LNAPL is likely the result of anoxic degredation of organic material in the subsurface. Organic-rich soil is not atypical of an aquatic regime, as is the case at GP38.

- An analytical soil sample collected from the supposed LNAPL impacted interval (from 6.3 to 7 feet below grade) contained only trace detections of PAH constituents (total PAH concentration of 12.8 parts per million [ppm]) and BTEX constituents were not detected (with detection limits on the order of 6 parts per billion [ppb]). In addition, the presence of sheens was not noted on the boring log for this location. If LNAPL was present in the analyzed soil sample, one or more BTEX compounds would have been detected and the concentration of PAHs also would have been much higher than those detected.

- The photoionization detector (PID) readings for the supposed LNAPL-impacted interval ranged from 0.0 to 0.8 ppm. A much higher reading would have been recorded if LNAPL was present in the soil.

- LNAPL was not observed in any soil borings or well locations drilled in the area immediately surrounding GP38, including GP02, GP03, GP36, GP37, GP39, GPC01, KB82, and MW22KB89.

Given the information presented above, Niagara Mohawk believes that no further investigation or testing is warranted to address the material erroneously-identified at soil boring location GP38 as LNAPL.

Location of Proposed OU-2 Monitoring Wells

In our December 23, 2002 letter, Niagara Mohawk responded to the NYSDEC's suggestion that additional monitoring wells may be necessary in an area on the west side of Mohawk River. The additional wells would be used to monitor potential groundwater impacts across the river from an area impacted by DNAPL on the downgradient side of the proposed OU-1 barrier wall. Niagara Mohawk's December 23, 2002 response to this suggestion is restated below:

> "In response to your suggestion that additional monitoring points may be needed in the area across the Mohawk River from the observed NAPL, Niagara Mohawk proposes to modify the location of one proposed monitoring well. The monitoring well which had been proposed to be installed near the former railroad bridge on the northwestern side of the river will be relocated to be approximately 120 feet south-southeast of existing monitoring well MW26. This new well, in concert with existing monitoring wells MW-25, and MW-26 and the previously proposed OU-2 monitoring wells (in my letter of November 15, 2002), will provide sufficient lateral coverage on the western side of the Mohawk River."

Niagara Mohawk has temporarily postponed its pursuit of all required access agreements for the properties proposed for the OU-2 monitoring wells. We will pursue access to all required properties upon NYSDEC acceptance of the proposed well locations. To ease your review, we have revised the figure showing OU-2 well locations (attached) that was included with Niagara Mohawk's November 15, 2002 original proposal of field activities to support the OU-2 FS. The revised figure shows the location of the proposed relocated well.

Schedule

As indicated in Niagara Mohawk's previous submittals, initiation of the OU-2 field activities will be coordinated with the field activities to be completed in OU-1 and dependent on acquiring property access agreements for the proposed monitoring wells. To avoid scheduling delays with regard to installation of the OU-2 monitoring wells, Niagara Mohawk would appreciate a timely response to this letter so we can proceed with acquiring access to appropriate properties on the west side of the Mohawk River.

Niagara Mohawk trusts that this letter addresses the comments and concerns presented in the NYSDEC's January 17, 2003 letter. Please feel free to contact me at (315) 428-3101 should you have any questions.

Sincerely,

James F. Morgan

James F. Morgan
Environmental Affairs

cc: Charles Willard, Niagara Mohawk, a National Grid Company
Steven Stucker, Niagara Mohawk, a National Grid Company
Joe Atchley, Niagara Mohawk, a National Grid Company
Greg Rys, New York State Department of Health
James Nuss, Blasland, Bouck & Lee, Inc.
George Thomas, Blasland, Bouck & Lee, Inc.

Niagara Mohawk, a National Grid Company
Rome (Kingsley Avenue) Former MGP Site

Operable Unit No. 2
DNAPL Mobility Assessment Plan

This DNAPL Mobility Assessment Plan (Plan) was developed to address the New York State Department of Environmental Conservation's (NYSDEC's) concerns regarding the potential impact to Operable Unit No. 2 (OU-2) groundwater if dense non-aqueous phase liquid (DNAPL) is left in place downgradient of the proposed Operable Unit No. 1 (OU-1) barrier wall at Niagara Mohawk's Rome (Kingsley Avenue) Former MGP Site. Because the extent of the potential impact of DNAPL on groundwater quality is largely dependent on the mobility and characteristics of the DNAPL, studies must first be conducted to assess the probability that DNAPL is mobile in the area of the proposed OU-1 barrier wall.

The approach for collecting data to facilitate a DNAPL mobility assessment in the area of the proposed OU-1 wall is provided below.

DNAPL Recoverability Testing

DNAPL recoverability tests will be conducted at available piezometers and monitoring wells in the area of the proposed OU-1 barrier wall to evaluate whether the NAPL observed in the area of the wall is potentially mobile. Each monitoring point will be gauged first to assess the presence/absence and thickness (if present) of DNAPL. Based on the results of the initial gauging, up to four monitoring points will be chosen for recoverability testing over a period of one month. The following monitoring points will be gauged: GP02, GP04, GP21, GP32, GP33, GP34, GP35, GP41, MW4S, MW4D, MW14, MW10S, MW10D, MW22S, MW22D, MW25, MW26, MW27, PZ06, PZ05, and PZ07. The Standard Operating Procedure (SOP) for conducting the initial gauging and recoverability tests is attached to this Plan. The data collected during the recoverability testing will be evaluated using graphical analysis to estimate NAPL recovery rates at those monitoring points exhibiting recovery.

DNAPL Physical Properties Testing

DNAPL physical characterization testing will be performed on DNAPL encountered during the DNAPL recoverability testing (discussed above). The testing will only be performed if a sufficient DNAPL volume can be purged from a particular well. The number of DNAPL samples selected for testing will be dependent on the physical appearance of DNAPL encountered during the recoverability testing. For example, if three distinctively different DNAPLs are encountered based on physical appearance (i.e., color, apparent viscosity, and apparent density), three DNAPL samples will be collected for testing. The DNAPL samples will be sent to a laboratory for testing of density, interfacial tension, and viscosity. The tests will be performed at the average ambient groundwater temperature measured at the site at the time of sample collection.

Schedule and Reporting

We anticipate the DNAPL recovery testing program will be performed during Spring 2003. Upon completion of the field activities and evaluation of the collected data, Niagara Mohawk will submit a letter report summarizing the results of the testing. The report will also provide an approach to appropriately address the issues identified by this assessment.

Procedures for Assessing NAPL Recovery Rate in Monitoring Wells

Overview

The following procedure details the equipment and methods necessary for collecting data and bailing/pumping light non-aqueous phase liquids (LNAPLs) and dense non-aqueous phase liquids (DNAPLs) from monitoring wells to assess the potential NAPL recovery rate.

Equipment

- Keys for well padlocks;
- Pre-cleaned top-loading clear bailer for LNAPL bailing;
- Pre-cleaned bottom-loading clear bailer or stainless steel bailer for DNAPL bailing;
- Polypropylene rope;
- Peristaltic pump and new silicon and polyethylene tubing for LNAPL or DNAPL removal (if necessary);
- Data collection form or field notebook, indelible pen;
- Oil/water interface probe (IFP);
- Graduated cylinder or measuring cup;
- 5-gallon bucket;
- Paper towels;
- 55-gallon drum designed to hold liquids, properly labeled;
- Decontamination fluids (water based non-phosphate soap, distilled water, citrus-based cleaner); and
- Health and safety equipment, as appropriate, based on the site Health and Safety Plan (HASP).

Procedure

1. Arrive at subject well as early as possible in the day.

2. Carefully wash the sensor tip and measuring tape of the IFP according to the manufacturer's instructions, then rinse with distilled water. Turn the IFP on and check the battery. Replace/recharge battery if necessary. Make sure to read the manufacturer's instructions on using the IFP prior to use.

3. Record the well number, well diameter, date, and time. Don appropriate safety clothing/equipment. Unlock the padlock. Open the well cap. Monitor air conditions, as appropriate, based on the procedures detailed in the HASP.

4. Slowly lower the sensor tip of the IFP into the well. Record the depth to water if LNAPL is not present, and then record the depth to water or LNAPL(if present). Depths are measured using the gradations on the IFP tape and are measured from the top of the inner well casing. NOTE: MAKE SURE TO READ THE MEASURING TAPE CORRECTLY (TENTHS AND HUNDREDTHS OF FEET VERSUS INCHES).

5. Continue lowering the IFP sensor tip through the LNAPL (if present) until the sensor indicates the LNAPL/water interface. Record depth to base of LNAPL (if present). Continue to lower the sensor to the DNAPL/water interface (if DNAPL is present) and record depth of interface. Continue to lower the sensor to the bottom of the well or water below DNAPL (if present). Record the total well depth/depth to water below DNAPL.

6. Calculate the apparent LNAPL thickness before bailing by subtracting depth to LNAPL from the depth to water. Calculate the apparent DNAPL thickness by subtracting the depth to DNAPL from the depth to water beneath the DNAPL (if present) or the depth to the bottom of the well; record LNAPL and/or DNAPL thickness.

7. Slowly retract the IFP from the well. Carefully wipe off any liquids using paper towels, soapy water and/or citrus-based cleaner. Carefully clean the sensor tip and rinse with distilled water.

8. NAPL removal should first be attempted with a peristaltic pump. Depending on the viscosity of the NAPL, a peristaltic pump may be more appropriate (and more efficient) for NAPL removal. For LNAPL, the intake end of the polyethylene tubing should be immersed just below the LNAPL/air interface. If DNAPL is present, the intake of the tubing should be lowered to just above the bottom of the well. NAPL should be directly discharged into a graduated cylinder or measuring cup and the volume of the recovered NAPL should be recorded. If using a peristaltic pump is not possible, then use a bailer, as described in steps 9 and 10.

9. Tie an appropriate length of polypropylene rope to the bailer; make sure the knot is secure. Tie the loose end of the twine to the well's protective casing; this will minimize the potential that the rope/bailer doesn't get lost down the well.

10. Bail liquids from the well in a smooth and easy motion. Do not splash the bailer down into the liquid or allow the bailer to drop rapidly into the well. For top loading bailers (LNAPL bailing), the bailer should be immersed just below the LNAPL/air interface. For bottom loading bailers (DNAPL bailing), the bailer should be lowered to the bottom of the well. Try to recover as much LNAPL or DNAPL as possible in each bailer. Record the appearance and thickness (if measurable) of all LNAPL or DNAPL layers present in each bailer retrieved from the well. To allow the total volume of NAPL removed from the well to be calculated, measure the NAPL volume of each bailer with a graduated cylinder or measuring cup.

11. Empty the bailer/pump tubing and graduated cylinder/measuring cup into appropriate sample bottles, if physical characterization is to be completed on the NAPL, or into the 5-gallon bucket and transfer the bucket contents to the 55-gallon drum, as necessary.

12. Stop bailing/pumping when the NAPL is non-recoverable <u>or</u> after 30 minutes of continuous bailing/pumping. If 30 minutes of continuous bailing/pumping elapses and NAPL is still present in the well, measure and record the remaining NAPL thickness using the above procedures.

13. Record the total volume of NAPL recovered from the well. Estimate the total amount of NAPL removed from the well to the nearest 100 milliliters.

14. Return to the well toward the middle of the day and monitor/remove any additional NAPL that may have entered the well (possible from sand pack drainage) using the methods described in steps 5 through 13, above.

15. Properly decontaminate bailers (or dispose of used disposable bailers) and the bucket, and properly dispose of rope, gloves, paper towels, decontamination fluids, and tubing (if necessary). Lock the well.

16. Measure the NAPL recovery (using Steps 4 through 6 above) throughout the remainder of the day. The schedule for measuring NAPL thickness will vary depending on the NAPL characteristics; however, the schedule summarized in the table below is a good "rule of thumb" for the first hour of recovery.

Proposed Frequency of NAPL Measurements for Baildown Tests

Time Interval (min)	0-5	5-10	10-15	15-20	20-25	25-30	30-60
Number of NAPL Thickness Measurements During Time Interval	7 to 10	5 to 7	3 to 5	2 to 3	1 to 2	1	1

NAPL thickness measurements should be obtained every hour after the first hour of measurements throughout the remainder of the day.

17. If, at the end of the day, the final NAPL thickness measurement is not within 10 percent of the initial NAPL thickness measurement made under Step 5, then subsequent thickness measurements will be required. The schedule of the additional NAPL thickness measurements will be determined based on the estimated rate of NAPL recovery recorded during the first day of measurements. Subsequent measurements may be made up to approximately one month after the first day of the test.

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Western Remedial Action
625 Broadway, Albany, New York 12233-7017
Phone: (518) 402-9662 • **FAX:** (518) 402-9679
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

March 18, 2003

Mr. Jim Morgan
Environmental Analyst
Niagara Mohawk Corporation
300 Erie Boulevard West
Syracuse, NY 13202-4250

Re: Rome - Kingsley Ave Former MGP
Remedial Design Work Plan - Operable Unit No. 1

Dear Mr. Morgan:

The New York State Department of Environmental Conservation (DEC) has received the revised Operable Unit No. 1 Remedial Design Work Plan. The plan and proposed schedule for additional investigation work this year is acceptable. Niagara Mohawk, A National Grid Company (Niagara Mohawk) should proceed with the predesign investigations described in the plan. The overall schedules for both OU1 and OU2 are not acceptable and will be discussed during the upcoming yearly meeting between Niagara Mohawk and the DEC.

In addition, as I will be transferring to our Region 5 office, please refer all future correspondence regarding this site to Mr. Tony Karweil, the new project manager. Mr. Karweil can be reached at 402-9813.

Sincerely,

Brian D'Amour
Project Manager
MGP Remedial Section
Division of Environmental Remediation

ec: G. Rys, NYS DOH, Herkimer
M. Rivara, NYSDOH, Troy

New York State Department of Environmental Conservation
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Erin M. Crotty
Commissioner

March 18, 2003

Mr. Jim Morgan
Environmental Analyst
Niagara Mohawk Corporation
300 Erie Boulevard West
Syracuse, NY 13202-4250

Re: Rome - Kingsley Ave Former MGP
Feasibility Study for Operable Unit 2, (OU2) - Off Site

Dear Mr. Morgan:

The New York State Department of Environmental Conservation (DEC) has received your letter of February 27, 2003 regarding the Feasibility Study for OU2 of the Kingsley Avenue Former MGP. Based upon our review of the response's presented in this letter:

- The DEC in our original letter of January 17, 2003, accepted the previous response to comments which included the revised locations for the OU2 monitoring wells west of the Mohawk River. However, to avoid further confusion by Niagara Mohawk/A National Grid Company (NM) on this matter, the location of the monitoring wells west of the Mohawk River are approved and NM should immediately complete the necessary access arrangements.

- The DEC has, for the first time, reviewed your explanation report of LNAPL at GP-38 and finds your conclusion acceptable.

- The purpose of the treatability study requested by my letter of DATE, is not, "to assess the potential impacts of DNAPL downgradient of the proposed OU1 barrier wall", as stated in the **DNAPL Mobility Assessment Plan** submitted by NM. The mobility and impact of DNAPL downgradient of the proposed wall has already been assessed and confirmed based on groundwater monitoring west of the Mohawk River which began in July 2000. The wells closest to the site, on the west side of the river, have each had levels of BTEX and/or naphthalene exceeding New York Sate Class GA groundwater effluent standards since that time. Rather, the scope of work requested was for a treatability study to assess potential treatment options for in-situ treatment of DNAPL which is known to exist in an area that will be downgradient of the proposed barrier wall, and therefore, not addressed by the OU1 selected remedy. The DEC does not consider the DNAPL Mobility Assessment Plan, as proposed, will provide substantial new information to assess potential remedial alternatives for OU2. Sufficient investigations have been completed to show that DNAPL not only exists, but it is likely mobile within the plume which will be intersected by the proposed barrier wall. Product gauging results from wells MW-22D and MW-16D have both historically had significant accumulations of DNAPL. Downgradient of the barrier wall location, DNAPL was also found to accumulate on one of the wells (GP-35). Although these occurrences represent a minority of the wells, they were among the few installed within the DNAPL plume, and thus the findings can not be discounted. Additionally, no remedial strategy has been proposed for the DNAPL which will remain downgradient of the proposed barrier wall. This is considered an ongoing source as long as impacts continue to exist in groundwater west of the Mohawk River, regardless of what could be shown in a DNAPL mobility assessment. Alternatives must be developed and evaluated in the OU2 FS which will remove, treat, contain or otherwise prevent this DNAPL from acting as a source of groundwater contamination west of the river.

- The revised figure showing OU-2 well locations was not included in your previous letter.

The DEC still expects Niagara Mohawk to complete this FS within one year, including treatability studies. A schedule that provides for all data to be collected and treatability studies concluded during this field season, must be developed and submitted so that a completed FS can be submitted within this time frame. In addition, as I will be transferring to our Region 5 office, please refer all future correspondence regarding this site to Mr. Tony Karweil, the new project manager. Mr. Karweil can be reached at 402-9813.

Sincerely,

Brian D'Amour
Project Manager
MGP Remedial Section
Division of Environmental Remediation

ec: G. Rys, NYS DOH, Herkimer
M. Rivara, NYSDOH, Troy