PROPOSED REMEDIAL ACTION PLAN
Former EMCA Site
M**amaroneck (V), Westchester County, New York**
Site No. 3-60-025

February 2005

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Former EMCA site As more fully described in Sections 3 and 5 of this document, operations at the site related to the manufacture of electronic conducting paste used in the electronics industry resulted in the disposal of hazardous wastes, including volatile organic compounds, primarily 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113). These wastes contaminated the groundwater at the site, and resulted in:

- a significant threat to human health associated with potential exposure to contaminated groundwater, and contaminated vapors entering into structures.

- a significant environmental threat associated with the impacts of contaminants (VOCs) to groundwater.

During the course of the investigation certain actions, known as interim remedial measures (IRMs), were undertaken at the Former EMCA site in response to the threats identified above. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation/feasibility study (RI/FS). The IRM undertaken at this site included emulsified vegetable oil injection to accelerate the natural microbial breakdown of Freon 113.

Based on the implementation of the above IRM, the findings of the investigation of this site indicate that the site no longer poses a significant threat to human health or the environment, therefore No Further Action with continued groundwater monitoring and additional emulsified vegetable oil injections, as necessary is proposed as the remedy for this site. The NYSDEC also proposes to reclassify the site to a Class 4 site on the New York State Registry of Inactive Hazardous Waste Disposal Sites.

The proposed remedy, discussed in detail in Section 6, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and

Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the December 2000 "Remedial Investigation Report", the December 2004 "Engineering Evaluation/Cost Analysis Report", and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

NYSDEC Region 3
21 South Putt Corners Road
New Paltz, New York 12561
Attn: Michael Knipfing
(845) 256-3154
Monday - Friday 8:30 am - 4:45 pm

NYSDEC Central Office
625 Broadway, 12th Floor
Albany, New York 12233-7106
Attn: Ronnie Lee
(518) 402-9768
Monday - Friday 8:00 am - 4:15 pm

Mamaroneck Public Library
136 Prospect Avenue
Mamaroneck, New York 10543
Attn: Reference Librarian
(914) 698-1250
Monday & Wednesday 10:00 am - 8:00 pm;
Tuesday 10:00 am - 6:00 pm;
Friday & Saturday 10:00 am - 5:00 pm

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from February 16, 2005 to March 17, 2005 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for March 2, 2005 in the Community Room at the Mamaroneck Public Library, 136 Prospect Avenue, Mamaroneck, NY beginning at 7:00 p.m.

At the meeting, the results of the RI/FS and IRM will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. Ronnie Lee at the above address through March 17, 2005.

The NYSDEC may modify the proposed remedy or select another based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the NYSDEC's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Former EMCA site is a 0.6-acre property located at 605-609 Center Avenue and 604-612 Fayette Avenue in the Village of Mamaroneck, Westchester County (Figure 1) which housed a facility used for the manufacture of thick-filmed precious metal electronic conducting paste. As shown on Figure 1-2, the site is bounded to the northeast by Ogden Avenue; to the northwest by Fayette Avenue; to southeast by Center Avenue; and to the southwest by Ceramic Company and Meta-Glo Furniture.

The setting is commercial/industrial with some residential homes nearby. It is noted that the Happiness Laundry facility is located southeast of the site (upgradient).

There is no domestic groundwater usage within one-half mile of the site.

The nearest surface water body is the Sheldrake River located approximately 300 feet to the west of the site.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

From 1968 to May 1988, EMCA, a subsidiary of Rohm & Haas, owned and operated a business at

the site to manufacture electronic conducting paste used in circuits by the electronics industry. The manufacturing activities were contained on the first floor of the building. The vacant lot (604 Fayette Avenue) was used for waste storage and was a likely area of disposal. Other potential areas of disposal or spills were the material storage room, the ball milling room and the powder room. Freon 113 was used in the ball milling operation.

Rohm & Haas transferred site ownership to UA-Columbia Cablevision who later merged with TCI Cablevision of Westchester and then with Cablevision of Westchester, the current site owner.

3.2: Remedial History

The site has been the subject of several environmental investigations which identified several environmental conditions of concern. As part of a real property transfer, United Artists (UA) Columbia Cablevision of Westchester, Inc. commissioned two environmental investigations of the site by Goldberg Zoino Associates, Inc. (GZA) which included the installation of eighteen (18) borings on the 0.6-acre site, covering most of the accessible portions of the site and focusing on areas of potential contamination such as the waste storage area and a former buried gas tank. Nine (9) of these borings were completed as monitoring wells. Subsurface soil, groundwater and soil gas samples were collected from these locations and analyzed primarily for VOCs.

Based on these investigations, GZA produced a Preliminary Site Assessment report dated March 7, 1988, and an Assessment of Subsurface Conditions report dated June 30, 1988. A Risk Assessment report dated June 15, 1989 was also developed by Woodward-Clyde Consultants in connection with the site closure and sale of the property to the new owners, UA-Columbia Cablevision of Westchester. These reports clearly indicated that the groundwater was impacted by Freon 113 and six (6) other VOCs. Maximum groundwater contamination was as follows: Freon 113 (18,208 ppb), tetrachloroethene (380 ppb), 1,2-dichloroethene (320 ppb), trichloroethene (258 ppb), acetone (190 ppb), benzene (74 ppb) and chloroethene (55 ppb).

Metals data from the GZA report showed levels below standards for filtered groundwater samples. No unfiltered samples were collected at the time.

On site soils were only slightly impacted by three (3) VOCs. The soil sampling conducted by GZA in May 1988 found that the soil cleanup guidelines were not exceeded for VOC contaminants.

The soil vapor survey conducted in May 1988 detected the presence of an area of elevated photo-ionization detector (PID) response within the vacant lot north of the former waste storage area. A PID reading provides an indication of the presence of VOCs in an air or vapor sample.

In 1991, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and Rohm & Haas entered into a Consent Order on March 29, 1999. The Order obligates the responsible parties to implement a RI and any IRM(s) deemed appropriate. After the remedy is selected, the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

SECTION 5: SITE CONTAMINATION

A remedial investigation (RI) and engineering evaluation/cost analysis (EE/CA) has been

conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted in two phases. The first phase was conducted in October 1999, and the second phase in July 2000. A supplemental field investigation was also conducted in July 2001 to provide additional data for the preparation of the Draft Final EE/CA Report. The field activities and findings of the investigation are described in the RI report.

The following activities were conducted during the RI:

- Research of historical information;
- Installation of two (2) temporary piezometers and five (5) geoprobe monitoring wells for analysis of groundwater as well as physical properties of soil and hydrogeologic conditions;
- Sampling of six (6) new and existing monitoring wells;
- Collection of one (1) discrete groundwater samples using a direct push technique;
- A survey of public and private water supply wells in the area around the site;
- Collection of four (4) soil vapor samples. Collection of three (3) indoor air samples. Collection of two (2) outdoor air samples.

To determine whether the soil, groundwater and indoor air contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.
- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".
- Concentrations of VOCs in air were compared to the NYSDOH's "Volatile Organic Compound Database" (NYSDOH Database).
- A background surface soil sample was taken from a single location. This location was upgradient of the site, and was unaffected by historic or current site operations. The sample was analyzed for barium, copper, lead, silver and zinc. The results of the analysis were compared to data from the RI (Table 1) to determine appropriate site remediation goals.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site required remediation. These are summarized below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

Geologic conditions at the site are characterized by unconsolidated deposits composed predominantly of stratified medium to fine sand with localized beds of coarse sand, gravel, silt, and clay. Bedrock is assumed at an approximate depth of 40 feet. Groundwater conditions consist of a water table aquifer encountered at a depth of approximately 6 feet below ground surface. Groundwater generally flows to the northwest towards the Sheldrake River.

5.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater, soil vapor and indoor air samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs).

The VOCs of concern are primarily Freon 113 and its breakdown by-products including 1,2-dichloro-1,1,2-trifluoroethane (Freon 123a) and chlorotrifluoroethene (Freon 1113). Other VOCs were also detected at elevated concentrations, however, the distribution of these contaminants suggested an off-site (upgradient) source.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment, and micrograms per cubic meter ($\mu g/m^3$) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in soil, groundwater, soil vapor, and indoor air and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Surface Soil

Direct contact was identified by the NYSDEC as a potential exposure pathway for metals based on previous investigations which showed that the groundwater contained concentrations of barium, copper, lead, silver and zinc, albeit at levels below groundwater standards. Therefore, as part of the RI, surface soil samples were collected from below the turf in grassed areas near Fayette Avenue and Ogden Avenue, and composited for laboratory analysis. See Figure 2 for location of the composited surface soil sample. This composite sample (SS-02) was considered to be an off-site background sample, and was analyzed for barium (134 ppm), copper (56.8 ppm), lead (214 ppm), silver (1.1 ppm) and zinc (167 ppm).

Subsurface Soil

Prior to the RI, eighteen (18) borings were installed on the 0.6-acre site, covering most of the accessible portions of the site and focusing on areas of potential contamination such as the waste storage area and a former buried gas tank. Nine (9) of the borings were completed as monitoring wells. Subsurface soil samples were collected from these locations and analyzed for VOCs. This soil sampling found that the soil cleanup guidelines were not exceeded for VOC contaminants. Specifically, Freon 113 was detected at 1.2 parts per million (ppm) at a depth of 2-4 feet below grade, and tetrachloroethene at 0.58 ppm and trichloroethene at 0.27 ppm at a depth of 6-8 feet (below the water table). The SCGs for these compounds are 6 ppm, 1.4 ppm, and 0.7 ppm, respectively.

As part of the RI, an on-site soil sample (SS-01) was collected from 0 to 6 inches below the existing asphalt and sub-base layers near former groundwater monitoring well location GZ-02 from an area that was actively used during EMCA's former industrial activities. See Figure 2 for sample location. This sample was analyzed for select metals including barium, copper, lead, silver and zinc, and contained a lead concentration of 445 ppm which is within the concentration range for background soils, as defined in NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046. All other metals concentrations in this sample were less than or comparable to background metals concentrations in soils. It should be noted that the surface of the site is almost entirely paved or covered by existing structures, although minor

grassy areas exist along median strips between sidewalks and roadways.

Groundwater

During the RI, four (4) geoprobe wells with a screen slot size of 0.010-inch were installed in October 1999 to replace former wells (that could no longer be found) and to expand the area of investigation. The location of these wells and two previously existing wells (GZ-03 and GZ-06) that were sampled as part of the RI are shown on Figure 3. The replacement wells were constructed in small-diameter boreholes advanced using a Geoprobe. Upon borehole completion, one-inch inside diameter Schedule 40 polyvinyl chloride monitoring wells were installed in the open borehole to the same approximate depth as the former site wells. Two temporary piezometers (used for monitoring groundwater elevation) were also installed in the locations shown on Figure 3. Both piezometers were pulled and abandoned in accordance with the RI Work Plan following the October 1999 sampling event. One deep sample (GRAB-01 from 29 to 31 feet below ground surface) was also collected adjacent to monitoring well MW-04 using a temporary Geoprobe screen point sampler. Groundwater conditions consist of a water table aquifer encountered at a depth of approximately 6 feet below ground surface. Groundwater generally flows to the northwest towards the Sheldrake River. Upgradient replacement well MW-01 was screened at 4 to 16 feet below grade. Replacement well MW-02 (installed near the source area) was screened at 3 to 16 feet below grade. Replacement wells MW-03 (installed in the contaminant source area) and MW-04 (installed along the downgradient edge of the site) were screened from 4.5 to 14.5 feet below grade. Monitoring well MW-05 was screened at 4 to 16 feet below grade, and was installed in July 2000 during the second phase of the RI to intercept any potential off-site plume. Monitoring well MW-06 was screened at 9 to 19 feet below grade, and MW-07 was screened at 10 to 20 feet below grade, and were installed in June 2003 as part of the IRM Pilot Study.

As part of the RI, in October 1999, groundwater samples were collected from the two existing overburden monitoring wells (GZ-03 and GZ-06) and four newly-installed overburden monitoring wells (MW-01 through MW-04), and one Geoprobe sample was collected in the vicinity of monitoring well MW-04. As shown in Table 1, the following VOCs were detected at concentrations exceeding Class GA groundwater standards: benzene (up to 20 ppb), 1,2-dichloroethene (total) (up to 1,600 ppb), tetrachloroethene (up to 240 ppb), trichloroethene (up to 130 ppb), Freon 113 (up to 17,000 ppb), and vinyl chloride (up to 49 ppb). The Class GA groundwater standard for these compounds is 5 ppb, with the exception of benzene and vinyl chloride whose groundwater standards are 1 ppb and 2 ppb, respectively. Except for Freon 113, the highest concentration of each of these compounds was detected in upgradient well MW-01. This suggests that the presence of Freon 113 in the underlying groundwater is related to EMCA operations, but the other VOCs appear to have migrated onto the Former EMCA site from an adjacent business or businesses. The highest concentration of Freon 113 was detected in monitoring well MW-03. Specifically, Freon 113 was detected as high as 17,000 ppb in monitoring well MW-03 during the October 1999 sampling event. When this well was re-sampled in July 2000 and July 2001, the Freon 113 concentration was relatively unchanged at 11,000 ppb and 13,000 ppb, respectively. Significantly lower concentrations of Freon 113 were detected at the downgradient monitoring wells MW-04 and MW-05, indicating that it is unlikely that the Freon 113 plume extends off-site (beyond Fayette Avenue).

Two wells (MW-01 and MW-04) were also analyzed for barium, copper, lead, silver and zinc during the October 1999 sampling event. Both filtered and unfiltered samples were collected. All metals concentrations were below Class GA groundwater standards. Total and dissolved iron and manganese analyses were performed on the July 2001 groundwater samples. Most of these samples exceeded the Class GA groundwater standards for iron and manganese.

Soil Gas

Based on the results of previous on-site sampling, it was suspected that Freon 113 could have migrated off-site, particularly through soil gas. Therefore, during the RI, six (6) soil gas screening and analytical samples were collected from a depth of 2 to 3 feet into the vadose soil zone from both on-site and off-site locations as shown on Figure 4. Soil gas concentrations were measured in the field at five (5) of these sampling locations using a calibrated flame ionization detector (FID). In addition, soil gas samples were collected for laboratory analysis from sample locations SG-03 and SG-05 during the October 1999 sampling event, and from SG-06 and SG-07 during the July 2000 sampling event. FID readings for three out of five soil gas screening locations were significantly elevated (25,000 $\mu g/m^3$ or higher). Indoor air sampling conducted by NYSDOH at the residential properties located at 614 Center Avenue and 530 Fayette Avenue, indicate that soil vapor intrusion is not occurring. However, indoor air samples collected at the on-site building by NYSDOH showed Freon 113 levels were slightly above typical background levels, indicating a potential for vapor intrusion. In addition to the soil gas samples, ambient air samples were collected for laboratory analysis near SG-04 during the October 1999 sampling event, and near SG-07 during the July 2000 sampling event. The ambient air samples exhibited only low levels of acetone (a common laboratory contaminant) and chloromethane.

Indoor Air

Due to the potential for off-site soil gas migration which could possibly affect indoor air quality in adjacent buildings, including residences, the NYSDOH collected indoor air samples from two homes near the Former EMCA site (530 Fayette Avenue and 614 Center Avenue) and within the Cablevision of Westchester facility located on the site. The concentrations of Freon 113 detected in the three buildings sampled by the NYSDOH in July 2000 were within or slightly above typical background levels. The trace concentrations detected in the indoor air did not differ from that detected in the outdoor air with the exception of the sample collected at the EMCA site, which were greater than those typically found in indoor air. The NYSDOH concluded, however, that the detected Freon concentrations did not pose a health concern.

Several other VOCs were also detected within or slightly above the range of typical background levels. This included the basement, first floor and outdoor air samples collected at the residential properties. With respect to these VOCs, the NYSDOH also concluded that the detected concentrations did not pose a health concern.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

An EE/CA was conducted to evaluate the alternatives for addressing the significant threats to human health and the environment. One of the alternatives evaluated involved the injection of organic substrates. This is an in-situ technology that offers a passive, low-cost approach to remediate groundwater contaminated with chlorinated hydrocarbons (including Freon 113). It consists of the introduction of soluble (lactate or molasses) or insoluble (soybean oil) substrates which degrade in the aquifer to produce hydrogen, which in turn promotes anaerobic biodegradation. During this process, chlorinated hydrocarbons and their derivatives will degrade in the presence of native dehalogenating micro-organisms. Bench scale testing results obtained from literature indicate that the pathway of reductive dechlorination is Freon 113 to Freon 123a to Freon 1113 to trifluoroethene to acetate, hydrogen fluoride and hydrogen chloride.

During May 2003 through July 2004, a combination Pilot Study/IRM was performed to evaluate the effectiveness of vegetable (soybean) oil injection as a method to stimulate anaerobic biodegradation resulting in reductive

dechlorination of Freon 113 in site groundwater as follows:

1. In June 2003, approximately 220 gallons of edible oil substrate (EOS), or vegetable oil, and 205 gallons of sodium lactate was injected into the subsurface via 12 injection points as a method to stimulate anaerobic biodegradation resulting in reductive dechlorination of Freon 113 in site groundwater. Approximately 605 gallons of chase water was also added to distribute the EOS in the aquifer.

2. In November 2004, a second injection was performed as follows:

    - Approximately 170 gallons of sodium lactate was injected through 12 injection points centered on monitoring well MW-03.

    - Approximately 275 gallons of EOS and 30 gallons of EOS was injected through 10 injection points that encompassed monitoring wells MW-02 and MW-06. In addition, 500 gallons of water were injected to distribute the EOS.

    - Approximately 70 gallons of sodium lactate was injected through 3 injection points between MW-03 and MW-07.

    - Approximately 28 gallons of sodium lactate was injected through 3 injection points around GZ-06.

Freon 113 concentrations in the source area groundwater monitoring well MW-03 declined dramatically immediately after the June 2003 vegetable oil/sodium lactate injection due to dilution and or sorption to the vegetable oil. Specifically, the Freon 113 in MW-03 dropped from a pre-injection concentration of 5,800 ppb in May 2003 to 68 ppb in July 2003. This represented an approximate 99 percent decrease during the period from May 2003 to July 2003. This rapid reduction of Freon 113 in MW-03 was attributed, in part, to sorption of the Freon 113 to the vegetable oil. By July 2004, however, Freon 113 had returned to a level (4,900 ppb) exceeding 80 percent of the pre-injection concentration. This rebound has been attributed to the desorption of the Freon 113 from the vegetable oil as the micro-organisms break down the vegetable oil in the formation. Increased biodegradation rates are expected as substrate limitations are overcome with the second injection of substrate.

The Freon 113 concentration in downgradient monitoring well MW-07 declined from 5,400 ppb in June 2003 to 110 ppb in July 2004. This shows that since the implementation of the IRM, Freon 113 concentrations in this well have declined by approximately 98 per cent. If this trend continues, it is very unlikely that any Freon 113 contamination would ever migrate off-site. Furthermore, the relatively low concentration levels and the continued downward trend in Freon 113 concentrations observed in the other downgradient monitoring wells (MW-04 and MW-05) suggests that the Former EMCA site poses little or no impacts to off-site areas.

Other VOCs that do not appear to be related to site operations have also been detected in the groundwater including tetrachloroethene, acetone, benzene, ethylbenzene and methyl ethyl ketone. The concentration levels of these compounds are low to moderate in comparison to the Freon 113 concentrations. The source of this contamination will be investigated and addressed separately from the PRAP for the Former EMCA site.

The results of the dissolved oxygen (DO) readings indicate that biodegradation is occurring in the source area since the DO levels observed in MW-03 are much lower than those observed in the other, less impacted wells. The higher methane and lower sulfate concentration levels measured in the groundwater samples collected from MW-

03 compared to the levels observed in the other wells also confirm that biodegradation is occurring in the vicinity of MW-03. Similar favorable biological conditions appear to exist in the vicinity of MW-07, but to a lesser extent.

Evaluation of other bio-parameters such as ferrous iron and oxidation reduction potential, however, seem to suggest that subsurface conditions conducive to biodegradation have diminished since the initial vegetable oil/sodium lactate injection in June 2003. Over time the trend in DO levels has been increasing suggesting that anaerobic conditions are diminishing. In an effort to maintain conditions favorable for reductive dechlorination of Freon 113 and its by-products that were established during the pilot study, additional injections of emulsified vegetable oil and/or sodium lactate were undertaken as an IRM in November 2004. The collection of groundwater samples following the November 2004 injections have not been performed yet, since microbial activity takes several months to show decreases in groundwater concentrations.

Freon 113 concentrations in groundwater have decreased in most cases since the initial IRM (See Table 1 and Figure 5), and are expected to decrease further with the second injection of emulsified vegetable oil and sodium lactate which was performed in November 2004, as mentioned above. During the November 2004 injection, vegetable oil was not injected in the immediate vicinity of MW-03 in order to prevent the adsorption of the remaining Freon 113 contamination into the freshly injected oil.

5.3: <u>Summary of Human Exposure Pathways</u>:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Appendix F of the EE/CA report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

The only completed exposure pathway identified at the site is inhalation of contaminated vapors in indoor air at the site by on-site workers. Freon 113 contaminated soil vapor was detected in the indoor air of the on-site buildings at levels that are above background concentrations.

In the absence of site remediation, the following are potential exposure pathways related to possible use or development of the site:

- Inhalation of contaminated vapors, which may migrate into the indoor air of site structures and nearby buildings from the sub-surface. Indoor air samples collected in three buildings show that the concentration of Freon detected was similar or slightly above background levels.
- Ingestion of contaminated groundwater by on-site workers or future on-site residents.

The area is served with public water and most homes and businesses are provided with public water. Therefore, exposure to contaminated groundwater is not expected to occur.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site prior to the IRM. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

Site contamination has impacted the groundwater resource in the upper glacial aquifer. However, the upper glacial aquifer is not used as a source of drinking water in the area. In addition, groundwater contamination does not appear to be migrating off-site.

The nearest surface water body (the Sheldrake River) which is located within 300 feet of the site is not threatened by surface run off from the site since contaminant concentration levels in on-site soils are not significant, and most of the site is paved with asphalt. Therefore, a viable exposure pathway to fish and wildlife receptors is not present.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND PROPOSED REMEDY

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

Prior to the completion of the IRM described in Section 5.2, the remediation goals for this site were to eliminate or reduce to the extent practicable:

- off-site migration of groundwater that does not attain ambient groundwater standards; and

- the release of contaminants from subsurface soil into indoor air and ambient air through soil vapor.

The NYSDEC believes that the IRM would accomplish these remediation goals provided that it continues to be operated and maintained in a manner consistent with the design.

The main SCGs applicable to this project are as follows:

1. TOGS 1.1.1. - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations.
   The NFA proposal is based on the success of the IRM and the NYSDEC's determination that its continued operation would achieve or closely approach the groundwater quality standards in TOGS 1.1.1.

2. TAGM 4046 - Determination of soil cleanup objectives and cleanup levels.
   The NFA proposal is based on the results of the soil samples at the Former EMCA site which meet the soil cleanup objectives listed in TAGM 4046.

The following elements of the IRM already completed have achieved the remediation goals and satisfy SCGs for the site:

1. During May 2003 through July 2004, a combination Pilot Study/IRM was performed to evaluate the effectiveness of vegetable (soybean) oil injection as a method to stimulate anaerobic biodegradation resulting in reductive dechlorination of Freon 113 in site groundwater. Sodium lactate was also

injected based on evaluations that were conducted during the preparation of the Pilot Study Work Plan. The pilot study consisted of injecting a commercially prepared edible oil substrate and commercially prepared sodium lactate into the subsurface via 12 injection points.

2. Based in part on the March 2004 Pilot Study Report, an additional injection of emulsified vegetable oil and sodium lactate was recommended as an IRM which was performed in November 2004. The November 2004 IRM consisted of injecting commercially prepared sodium lactate only in the immediate vicinity, and downgradient of MW-03 combined with the injection of commercially prepared edible oil substrate and sodium lactate upgradient of MW-03.

Based on the results of the investigations at the site, the IRM that has been performed, and the evaluation presented here, the NYSDEC is proposing No Further Action with continued groundwater monitoring and additional vegetable oil injections, as necessary as the preferred alternative for the site. Once an operation, maintenance, and monitoring plan is in place, the NYSDEC would also reclassify the site from a Class 2 to a Class 4 on the New York Registry of Inactive Hazardous Waste Disposal Sites, which means the site is properly closed but requires continued management.

The basis for this proposal is the NYSDEC's conclusion that No Further Action with continued groundwater monitoring and additional vegetable oil injections, as necessary would be protective of human health and the environment and would satisfy all SCGs, as described above. Overall protectiveness is achieved through meeting the remediation goals listed above.

Therefore, the NYSDEC concludes that No Further Action is needed other than OM&M and the institutional and engineering controls listed below.

1. Development of a site management plan (SMP). The SMP would include the institutional controls and engineering controls to: (a) evaluate the potential for vapor intrusion to occur in any buildings developed on the site, including provision for mitigation of any impacts identified; (b) provide for the operation and maintenance of the components of the remedy; (c) monitor the groundwater and (e) identify any use restrictions on groundwater use.

2. The SMP would require the property owner to provide an Institutional Control/Engineering Control (IC/EC) certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, annually or for a period to be approved by the NYSDEC, which would certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or soil management plan.

3. Imposition of an institutional control in the form of an environmental easement that would: (a) require compliance with the approved site management plan, (b) restrict use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Westchester County Department of Health; and, (c) require the property owner to complete and submit to the NYSDEC periodic IC/EC certifications.

4. A pre-remedial design investigation would be implemented to determine if vapor intrusion is occurring in on-site buildings

and to determine the need for vapor intrusion mitigation measures. The pre-design investigation would also include the investigation of off-site soil vapor migration and the need for vapor mitigation measures at off-site buildings. If mitigation systems are necessary in on-site or off-site structures, the monitoring and maintenance of these systems would be included as a component of the SMP and thus be subject to the maintenance, monitoring and certification process required as part of the SMP.

TABLE 1
Nature and Extent of Contamination
May 1988-March 1989
Pre-RI

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND to 0.27	0.06	1 of 26
	Chloroethane	ND	1.9	0 of 26
	Chloroform	ND to 0.06	0.3	0 of 26
	1,1-Dichloroethene	ND	0.4	0 of 26
	1,2-Dichloroethene (total)	ND to 0.10	0.3	0 of 26
	Ethylbenzene	ND to 0.01	5.5	0 of 26
	Tetrachloroethene	ND to 0.58	1.4	0 of 26
	1,1,1-Trichloroethane	ND	0.76	0 of 26
	Trichloroethene	ND to 0.27	0.7	0 of 26
	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND to 1.2	6.0	0 of 26
	Vinyl Chloride	ND	0.12	0 of 26

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND to 190	50	1 of 18
	Benzene	ND to 74	1	6 of 18
	Chloroethane	ND to 55	5	4 of 18
	Chloroform	ND to 5	7	0 of 18
	1,1-Dichloroethane	ND to 5	5	0 of 18
	1,2-Dichloroethene (total)	ND to 320	5	3 of 18
	Ethylbenzene	ND to 6	5	1 of 18
	Tetrachloroethene	ND to 380	5	1 of 18
	1,1,1-Trichloroethane	ND to 15	5	3 of 18
	Trichloroethene	ND to 258	5	6 of 18
	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND to 18,208	5	14 of 18

TABLE 1 (Continued)
Nature and Extent of Contamination
October 1999-June 2003
Pre-IRM

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Barium	176	134[1]	1 of 1
	Copper	62.4	56.8[1]	1 of 1
	Lead	445	214[1]	1 of 1
	Silver	0.37	1.1[1]	0 of 1
	Zinc	158	167[1]	0 of 1

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND to 2,000	50	7 of 34
	Benzene	ND to 74	1	13 of 43
	Methyl ethyl ketone	ND to 46	50	0 of 27
	Chloroethane	ND to 55	5	4 of 43
	Chloroform	ND to 10	7	2 of 43
	1,1-Dichloroethene	ND to 33	5	1 of 26
	1,2-Dichloroethene (total)	ND to 1,600	5	6 of 30
	Ethylbenzene	ND to 6	5	1 of 43
	Tetrachloroethene	ND to 380	5	4 of 43
	1,1,1-Trichloroethane	ND to 15	5	2 of 43
	Trichoroethene	ND to 258	5	9 of 43
	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND to 18,208	5	30 of 43
	1,2-Dichloro-1,2,2-trifluoroethane	ND to 78	5	5 of 7
	Chlorotrifluoroethene	NA	5	0 of 0
	Vinyl Chloride	ND to 49	2	9 of 43
	Xylene (total)	ND	10	0 of 26
	Methyl tert-butyl ether	ND to 51	10	1 of 6

TABLE 1 (Continued)
Nature and Extent of Contamination
October 1999-June 2003
Pre-IRM

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Iron	437 to 27,900	300	13 of 13
	Manganese	77.6 to 6,120	300	4 of 6

SOIL GAS	Contaminants of Concern	Concentration Range Detected (ppb_v)[a]	SCG[b] (ppb_v)[a]	Number of Samples
Volatile Organic Compounds (VOCs)	Acetone	ND to 420	n/a	6
	Benzene	ND to 660	n/a	6
	Methyl ethyl ketone	ND to 37	n/a	6
	Carbon Disulfide	ND to 28	n/a	6
	Chloroform	ND to 1.2	n/a	6
	1,1-Dichloroethane	ND to 0.97	n/a	6
	Ethylbenzene	ND to 12	n/a	6
	Methylene Chloride	ND to 1	n/a	6
	Tetrachloroethene	ND to 2.2	n/a	6
	1,1,1-Trichloroethane	ND to 11	n/a	6
	Trichloroethene	ND to 0.92	n/a	6
	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND to 3,300	n/a	6
	Toluene	ND to 15	n/a	6
	Xylene (total)	ND to 92	n/a	6

TABLE 1 (Continued)
Nature and Extent of Contamination
October 1999-June 2003
Pre-IRM

INDOOR AIR	Contaminants of Concern	Concentration		NYSDOH Database[2]	
		Range Detected (µg/m^3)[a]		Indoor	Outdoor
		Indoor	Outdoor	25%-75%	25%-75%
Volatile Organic Compounds (VOCs)	Freon 12	1.6 - 12	2.2 - 2.6	<1.0 - <1.0	<1.0 - <1.0
	Chloromethane	1.0 [PL] - 1.6	1.2 - 1.3	<1.0 - 1.0	<1.0 - 1.3
	Freon 11	1.0 [PL] - 17	<1.0 - 1.0 [PL]	<1.0 - 3.3	<1.0 - <1.0
	Freon 113	1.0 [PL] - 17	1.0 [PL]	<1.0 - <1.0	<1.0 - <1.0
	1,1-Dichloroethene	1.0 [PL] - 9.4	<1.0 - 1.0 [PL]	<1.0 - <1.0	<1.0 - <1.0
	Methylene Chloride	1.0 [PL] - 70	1.0 [PL] - 4.4	<3.0 - 5.6	<1.0 - 3.7
	Hexane	1.0 [PL] - 36	1.0 [PL]	<1.0 - 3.5	<1.0 - 1.8
	Chloroform	<1.0 - 1.5	<1.0	<1.0 - 4.4	<1.0 - <3.6
	1,1,1-Trichloroethane	<1.0 - 165	<1.0 - 1.0 [PL]	2.5 - 6.7	1.0 - 2.8
	Benzene	2.1 - 12	2.6 - 2.8	<3.2 - 5.0	<1.8 - 4.9
	Toluene	2.4 - 108	5.6 - 11	6.6 - 25	1.2 - 5.6
	Tetrachloroethene	<1.5 - 1.5 [PL]	<1.5	<1.6 - 5.0	<1.6 - 3.4
	Ethylbenzene	1.0 [PL] to 28	1.0 [PL] - 1.1	<3.2 - 4.8	<1.0 - 2.5
	m/p-Xylene	1.0 [PL] - 49	1.0 [PL] - 2.1	2.2 - 9.5	<1.6 - 5.0
	o-Xylene	1.0 [PL] - 33	1.0 [PL] - 1.3	1.9 - 5.0	<1.6 - 4.7
	Styrene	<1.0 - 3.4	<1.0	<1.0 - <1.0	<1.0 - <1.0
	1,3,5-Trimethylbenzene	<1.0 - 15	1.0 [PL]	<1.0 - 5.0	<1.0 - 5.0
	1,2,4-Trimethylbenzene	<1.0 - 56	1.0 [PL]	2.2 - 7.0	<1.0 - 5.0
	1,4-Dichlorobenzene	<1.5 - 6.2	<1.5	<1.5 - 5.0	<1.5 - 3.3

TABLE 1 (Continued)
Nature and Extent of Contamination
July 2003-July 2004
Post-IRM

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND to 120	50	3 of 25
	Benzene	ND to 14	1	3 of 26
	Methyl ethyl ketone	38 to 130	50	2 of 3
	Chloroethane	ND	5	0 of 26
	Chloroform	ND	7	0 of 26
	1,1-Dichloroethene	38 to 130	50	2 of 26
	1,2-Dichloroethene (total)	ND to 1.7	5	0 of 26
	Ethylbenzene	ND to 49	5	1 of 26
	Tetrachloroethene	ND to 4.6	5	0 of 26
	1,1,1-Trichloroethane	ND	5	0 of 26
	Trichloroethene	ND	5	0 of 26
	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND to 8,500	5	19 of 36
	1,2-Dichloro-1,2,2-trifluoroethane	ND to 3,900	5	17 of 36
	Chlorotrifluoroethene	ND to 210	5	5 of 10
	Vinyl Chloride	ND to 1.2	2	0 of 26
	Xylene (total)	ND to 11	10	1 of 26
	Methyl tert-butyl ether	NA	10	0 of 0
Inorganic Compounds	Iron	ND to 187,000	300	16 of 20
	Manganese	NA	300	0 of 0

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ppb_v = parts per billion by volume
ug/m^3 = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values; developed from NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4046, Determination of Soil Cleanup Objectives and Cleanup Levels (1994) for surface and subsurface soil; NYSDEC Technical and Operation Guidance Series (TOGS) (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater

[1] Soil SCGs for inorganics are based on concentration levels from background sample SS-02

[2] The New York State Department of Health Database (NYSDOH Database) is a summary of indoor and outdoor air sample results from control homes. The samples were collected and analyzed by the NYSDOH from 1989 through 1996.
< = "less than." The number following a "less than" sign (<) is the lowest level the laboratory test can reliably measure (the detection limit). A "<" before any number means the chemical was NOT detected in that sample.

[PL] = Present, but less than the concentration indicated.

n/a = Not applicable.

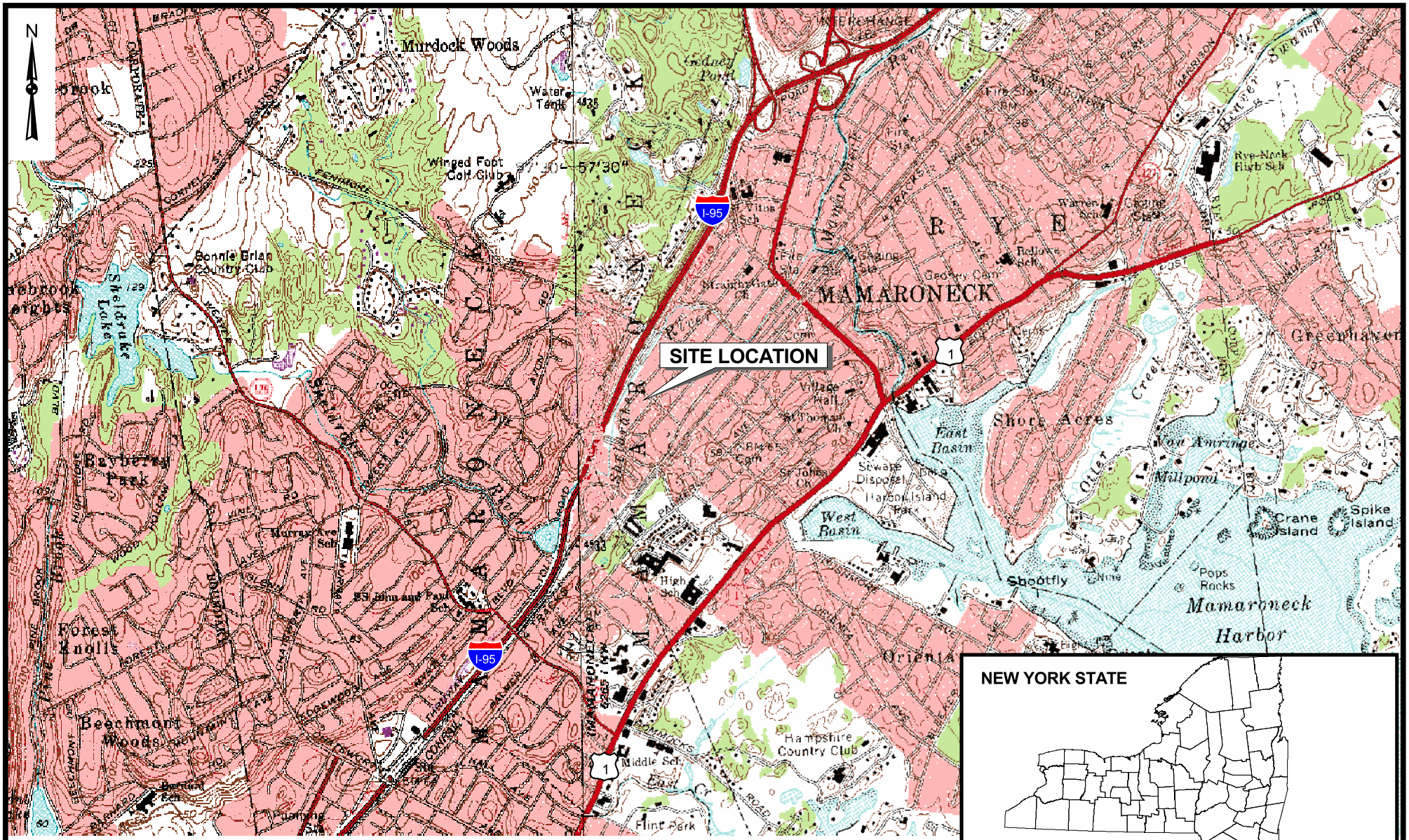
ND indicates that the compound was not detected at the method detection limit.

NA indicates that the compound was not analyzed.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Further Action with Continued Groundwater Monitoring and Additional Vegetable Injections as a Contingency	$ 47,678	$ 9,895	$ 94,848

n:\11172730.00000\db\gis\2001\prap.apr SITE LOCATION
1/11/2005



SOURCE: USGS Topographical Quadrangle Mount Vernon, New York, 1979 and Mamaroneck, New York, 1985.

URS

FORMER EMCA SITE
LOCATION MAP

FIGURE 1

N:\11172730.00000\DB\GIS\2001\report00.apr SITE PLAN WITH WELLS
12/2/2004

N

SHELDRAKE RIVER

ETRE Associates (Truck Repair),
BMP Leasing, ELQ Industries

Container Testing

Container Testing

Orchids of Hawaii

Baumgold Industrial

J. Pocker (Art Framing)

Printing Company

FAYETTE AVENUE

MW-05

Residence

Residence

Auto Repair

GZ-08

GZ-04

MW-04

MW-07

MW-03

GZ-09

GZ-02

MW-02

MW-06

GZ-01

GZ-05

J. Pocker (Art Framing)

GZ-03

GZ-06

OGDEN AVENUE

Residence

Suburban Carting Corp.
(Welding and Inspection Facility)

Ceramic Company

Cablevision of Westchester (former EMCA Site)

Royal Environmental Services

New Way Air Conditioning and Heating

Meta Glo - Furniture Restoration, Repairs and Stripping

GZ-07

MW-01

Residence

Residence

Residence

Suburban Carting Corp. - Garbage hauling Facility, several USTs onsite

Westchester Squash

Tempranillo Wines

Star Auto Collision and Coating

CENTER AVENUE

Automotive Repair

Happiness Laundry - Dry Cleaning

Fischer Bearing Company

Culin & Cololla - Architectural Millwork

Happiness Laundry - Dry Cleaning

WAVERLY AVENUE

Mason Auto Repair

Residence

CONCORD AVENUE

Legend

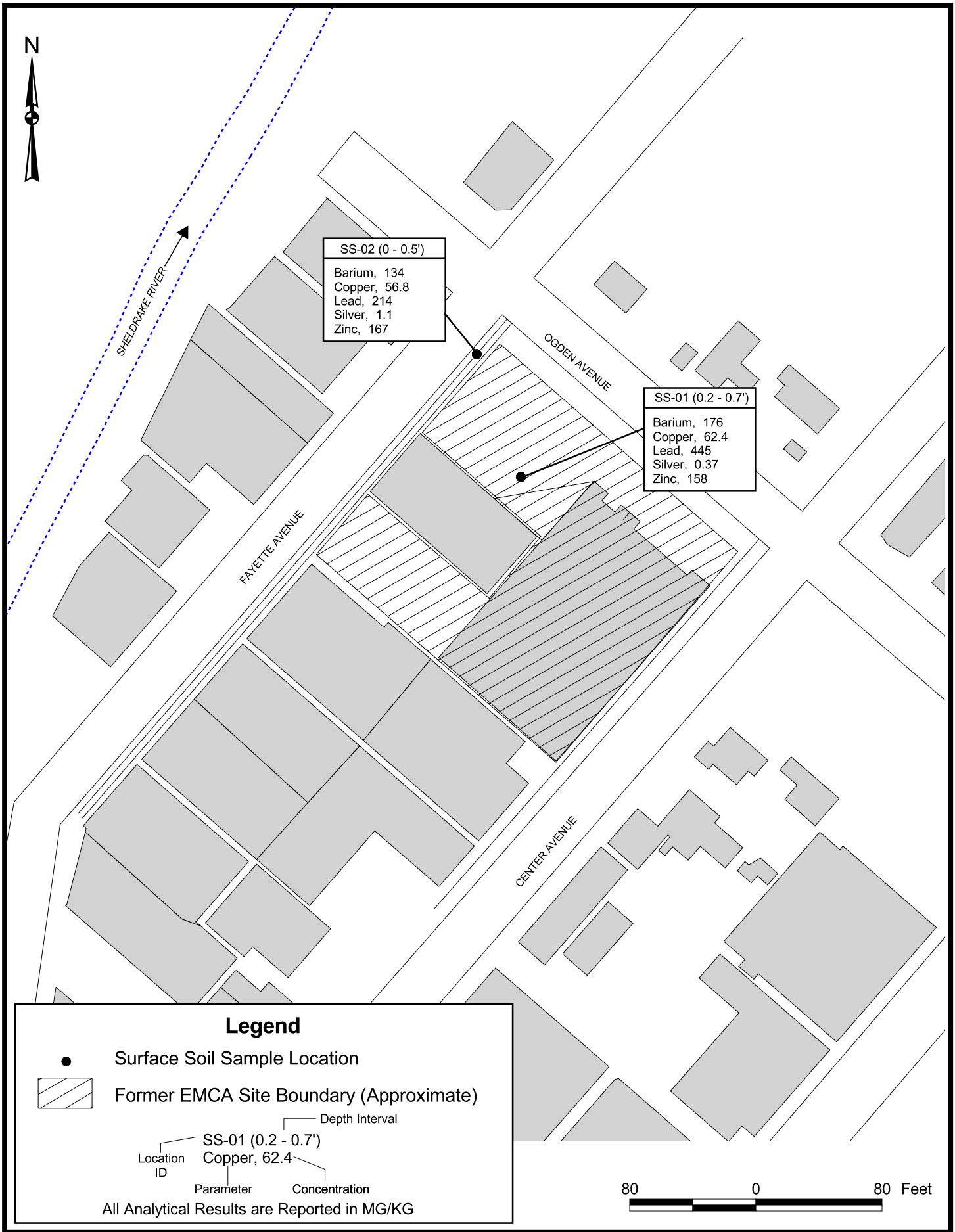
- Monitoring Well
- Former EMCA Site Boundary (Approximate)

100 0 100 Feet

URS

FORMER EMCA SITE
PLAN WITH WELLS

FIGURE 1-2

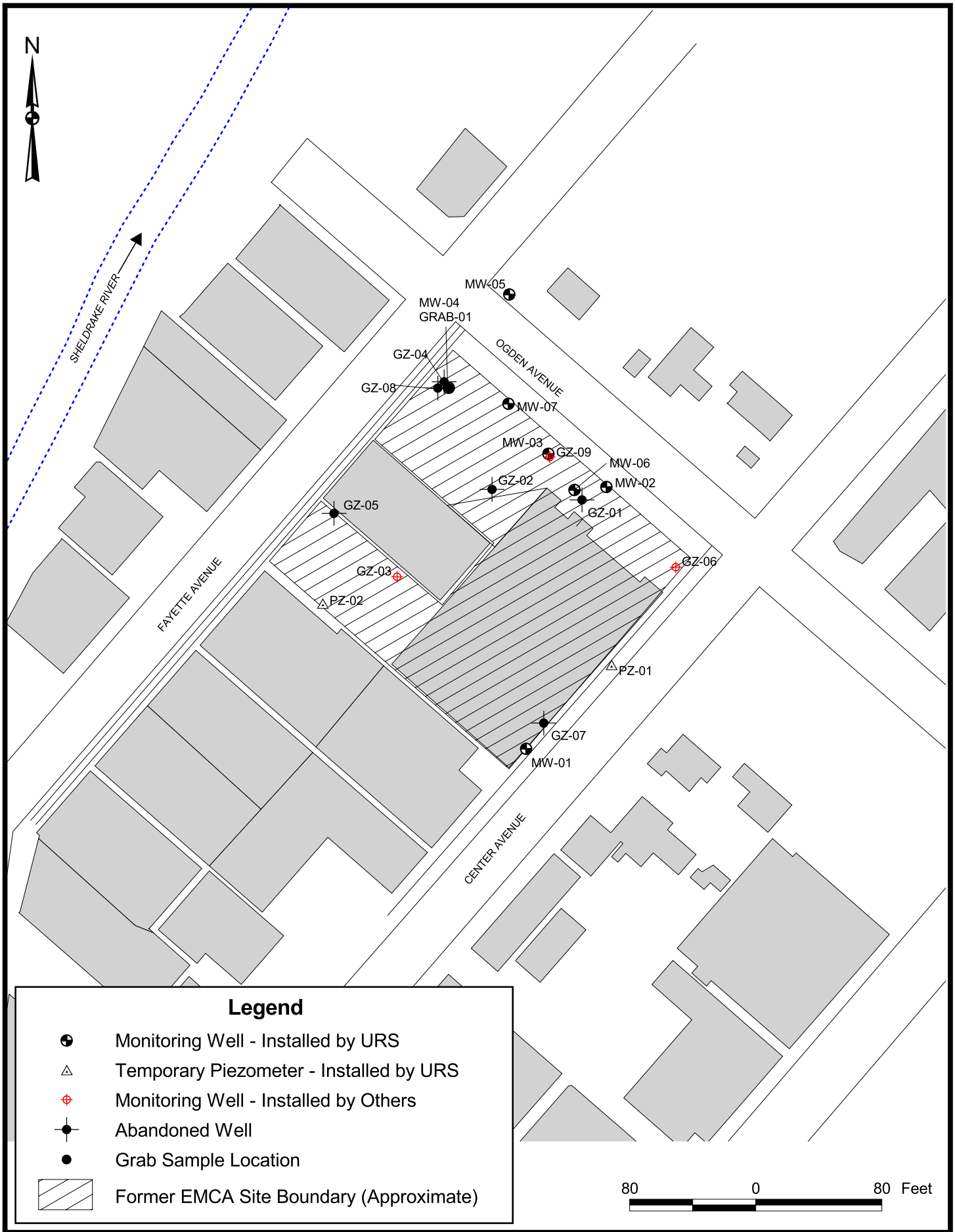


URS

FORMER EMCA SITE
RI SURFACE SOIL ANALYTICAL RESULTS
(OCTOBER 1999)

FIGURE 2

n:\11172730.00000\db\gis\2001\prap.apr SURFACE SOIL ANALYTICAL RESULTS
1/11/2005

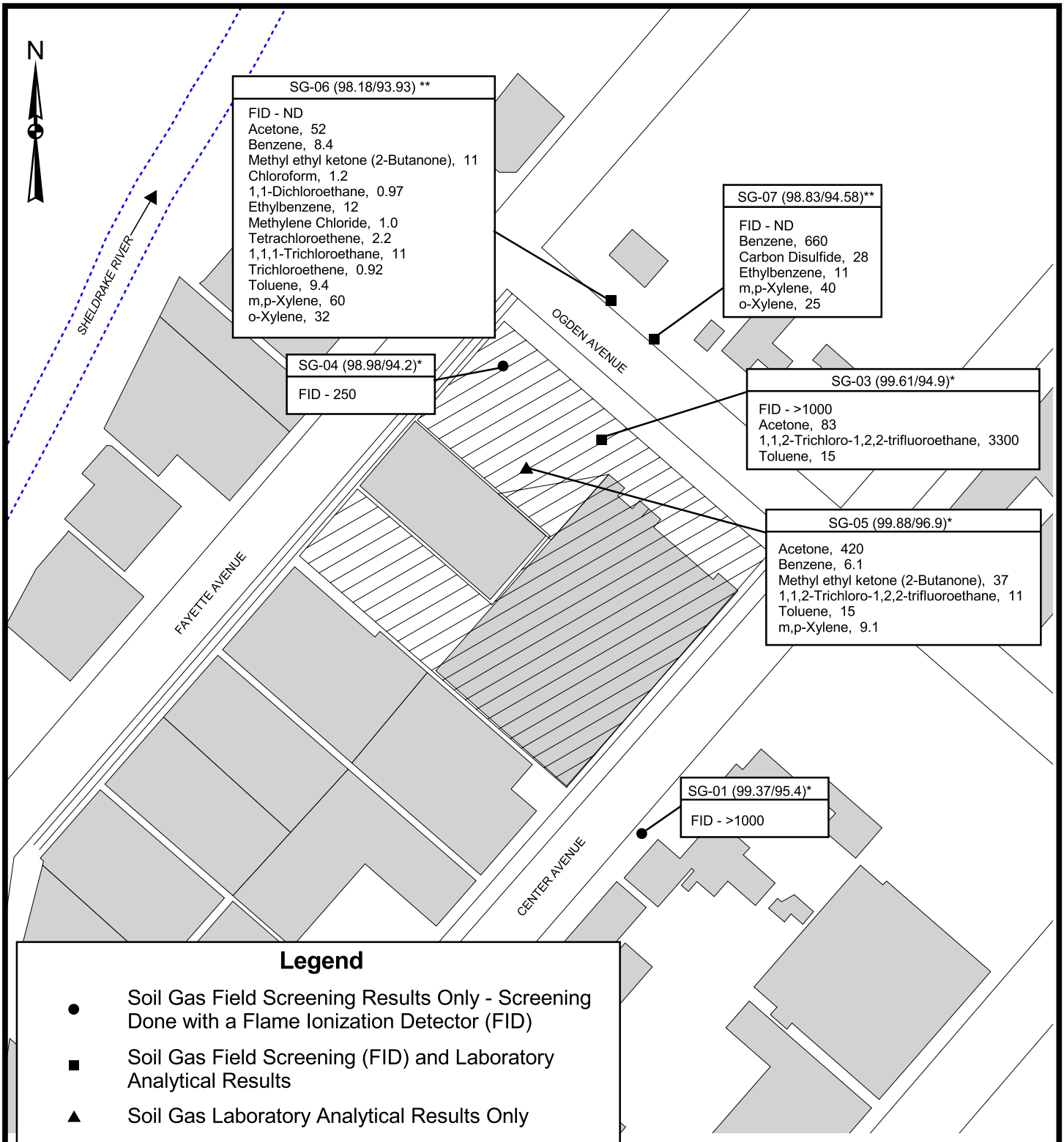


N:\11172730.00000\DB\GIS\2001\prap.apr MONITORING WELL LOCATIONS
1/12/2005

URS

FORMER EMCA SITE
MONITORING WELL/SAMPLING LOCATIONS

FIGURE 3



Legend

- ● Soil Gas Field Screening Results Only - Screening Done with a Flame Ionization Detector (FID)
- ■ Soil Gas Field Screening (FID) and Laboratory Analytical Results
- ▲ Soil Gas Laboratory Analytical Results Only
- Former EMCA Site Boundary (Approximate)

SG-05 (99.88/96.9)
Benzene, 6.1

Location ID — Ground Surface Elevation — Parameter — Concentration — Sample Elevation (Mid-point)

ND - Not Detected
* - October 1999 Results
** - July 2000 Results

All Laboratory Analytical Results are Reported in PPBV.

FID Field Screening Results (FID) are Reported in PPM.

80 0 80 Feet

URS

FORMER EMCA SITE
RI SOIL GAS FIELD SCREENING AND LABORATORY ANALYTICAL RESULTS (OCTOBER 1999 AND JULY 2000)

FIGURE 4

n:\11172730.00000\db\gis\2001\prap.apr SOIL GAS ANALYTICAL RESULTS
1/11/2005

N

GZ-04	05/88	03/89
1,1,2-Trichloro-1,2,2-trifluoroethane	5863	3300

GRAB-01	10/99
1,1,2-Trichloro-1,2,2-trifluoroethane	ND

MW-04	10/99	07/00	07/01	05/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	11	ND	ND	ND	ND	0.70

GZ-08	05/88
1,1,2-Trichloro-1,2,2-trifluoroethane	696

GZ-02	05/88	03/89
1,1,2-Trichloro-1,2,2-trifluoroethane	110	74

GZ-05	05/88	03/89
1,1,2-Trichloro-1,2,2-trifluoroethane	1	ND

GZ-03	05/88	03/89	10/99
1,1,2-Trichloro-1,2,2-trifluoroethane	340	470	ND

MW-05	07/00	07/01	05/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	7	ND	ND	ND	0.50

MW-07	06/03	07/03	09/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	5400	8500	6100	370	110

MW-03	10/99	07/00	07/01	05/03	07/03	09/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	17000	11000	13000	5800	68	26	150	4900

GZ-09	05/88	03/89
1,1,2-Trichloro-1,2,2-trifluoroethane	18208	1900

MW-02	10/99	07/00	07/01	05/03	07/03	09/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	740	1700	2400	880	1000	54	12	21

MW-06	06/03	07/03	09/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	220	180	97	250	140

GZ-06	05/88	03/89	10/99	07/00	07/01	05/03	07/03	09/03	12/03	07/04
1,1,2-Trichloro-1,2,2-trifluoroethane	1274	200	49	900	250	100	230	74	ND	100

GZ-01	05/88	03/89
1,1,2-Trichloro-1,2,2-trifluoroethane	8030	4100

GZ-07	05/88	03/89
1,1,2-Trichloro-1,2,2-trifluoroethane	32	4

MW-01	10/99	07/00	07/01
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	ND

OGDEN AVENUE

FAYETTE AVENUE

CENTER AVENUE

SHELDRAKE RIVER

Legend

- Existing Monitoring Well Location
- Previous Monitoring Well Location
- Concentration Exceeds NYSDEC TOGS (1.1.1) Class GA Standards
- Former EMCA Site Boundary (Approximate)
- Generalized Groundwater Flow Direction

GZ-03 05/88 (Sample Date)
1,1,2-Trichloro-1,2,2-trifluoroethane, 340
Location ID; Parameter; Concentration

ND - Not Detected

All Analytical Results are Reported in UG/L

60 0 60 Feet

FORMER EMCA SITE
SUMMARY OF FREON 113 DETECTIONS IN GROUNDWATER

URS

FIGURE 5

n:\11172730.00000\db\gis2001\prap.apr SUMMARY OF FREON 113 DETECTIONS (2)
1/11/2005