Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Farrand Controls Site
Town of Mt. Pleasant, Westchester County
Site Number 3-60-046

March 2002

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Farrand Controls Inactive Hazardous Disposal Waste Site
Town of Mt. Pleasant, Westchester County, New York
Site No. 3-60-046

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Farrand Controls class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Farrand Controls inactive hazardous waste site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Farrand Controls site and the criteria identified for evaluation of alternatives, the NYSDEC has selected in-situ reductive dechlorination with zero-valence iron powder. The components of the remedy are as follows:

- Injection of zero-valence iron powder into the subsurface to reduce the concentrations of contaminants in on-site groundwater to SCGs.

- Removal of subsurface soils contaminated with Freon 113 above TAGM 4046 cleanup goals in the vicinity of a catch basin east of the main facility building to reduce the volume of waste at the site and to prevent further groundwater contamination.

- Repair of a storm water drain line damaged by Monitoring Well 3.

- Establishment of a short-term groundwater monitoring program to evaluate the effectiveness of the remedy.

- Implementation of an indoor air monitoring program to verify that the remedial activities are not impacting indoor air quality within the on-site building.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

_____ _____

Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and the environment created by the presence of hazardous waste at the Farrand Controls class 2, inactive hazardous waste disposal site. As more fully described in Sections 3 and 4 of this document, historic improper disposal practices have resulted in the disposal of a number of hazardous wastes, including trichloroethene and Freon 113, at the site, some of which were released or have migrated from the site to surrounding areas, including the wetland and pond southwest of the site across Wall Street. These disposal activities have resulted in the following significant threats to the public health and/or the environment:

- Potential human exposures to site-related contaminants through the consumption of contaminated groundwater, contact with contaminated surface water, sediment and subsurface soil, and/or inhalation of contaminants that have volatilized from the soil and groundwater.

- A significant threat to the environment associated with discharge of contaminated groundwater to surface water in the wetland and pond.

In order to restore the Farrand Controls inactive hazardous waste disposal site to pre-disposal conditions to the extent feasible and authorized by law, but at a minimum to eliminate or mitigate the significant threats to the public health and the environment that the hazardous waste disposed at the site has caused, the following remedy was selected:

- Injection of zero-valence iron powder into the subsurface to reduce the concentrations of contaminants in on-site groundwater. This will eliminate further off-site migration of contaminated groundwater and the discharge of contaminated groundwater into the wetland and pond.

- Removal of subsurface soils contaminated with Freon 113 in the vicinity of a catch basin east of the main facility building to reduce the volume of waste at the site and to prevent further groundwater contamination.

- Repair of a storm water drain line damaged by Monitoring Well 3.

- Establishment of a short-term groundwater monitoring program to evaluate the effectiveness of the remedy.

- Implementation of an indoor air monitoring program to verify that the remedial activities are not impacting indoor air quality within the on-site building.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site, in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The Farrand Controls site is an active electronic component manufacturing facility located at 99 Wall Street, Valhalla, Town of Mt. Pleasant, Westchester County (see Figure 1). The six acre site consists of the portion of the Farrand Controls property that lies west and south of a rock outcrop that rises behind the main facility building. The surrounding area is generally residential and light industrial, with the Taconic State Parkway less than 1/4 mile south-southwest. A wetland and pond are located between the site and the Taconic State Parkway. A map showing significant features of the site is given in Figure 2.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Currently owned by Ruhle Companies, Inc., Farrand Controls has operated at this location since 1959. During manufacturing operations, Farrand Controls used a variety of solvents. For an unknown period of time, spent solvent wastes were collected in a basement sump. During an expansion of the facility in 1969, the basement sump was deactivated and hazardous waste liquids were released to groundwater. An exterior catch basin east of the southeast corner of the main building was also apparently used for waste disposal for an unknown period of time.

3.2: Remedial History

During an environmental assessment by the current site owner in 1993, on-site groundwater was found to be contaminated with chlorinated solvents. Over the next few years, the site owner conducted investigations and installed several groundwater monitoring wells to determine the full extent of contamination. In 1996, the owner removed the contents of the basement sump and the underlying contaminated shallow soil.

In 1995, the NYSDEC identified the site as an inactive hazardous waste disposal site and listed it in the Registry of Inactive Hazardous Waste Disposal Sites in New York as a Class 2 site. A Class 2 site is a

site where hazardous waste represents a significant threat to human health or the environment and requires action. Negotiations subsequently began with current and previous site owners to undertake a complete remedial program for the site. Although these negotiation efforts were unsuccessful, the NYSDEC is continuing with investigative activities for the site under the State Superfund Program.

SECTION 4: SITE CONTAMINATION

To evaluate the extent of contamination present at the site and to evaluate alternatives to address the significant threat to human health posed by the presence of hazardous waste, the NYSDEC has recently conducted a Remedial Investigation (RI) and Feasibility Study (FS).

4.1: 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 between January and March 1999, and the second phase was conducted between October 1999 and January 2000. A report entitled Remedial Investigation Report, September 2000, has been prepared which describes the field activities and findings of the RI in detail. This report is available to the public at the document repositories mentioned previously.

The RI included the following activities:

- Accelerated Site Characterization: Temporary groundwater well points (using a Geoprobe®) were installed and samples were analyzed at an on-site mobile laboratory to define the contaminant plume.

- Groundwater monitoring wells were installed to confirm Geoprobe® results and to obtain additional information on hydrogeologic conditions.

- Surface and subsurface soils were sampled for analyses.

- Surface water and sediment samples were collected and analyzed to characterize site impacts on the adjacent wetland and pond.

- Test pits were excavated into selected utility trenches to determine whether the bedding material is facilitating contaminant migration.

- Indoor air was sampled in the basement of the Farrand Controls Building to determine whether there are any indoor air impacts associated with shallow groundwater contamination.

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data were compared to environmental SCGs. Groundwater, drinking water and surface water SCGs identified for the Farrand Controls site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants. Guidance values for evaluating contamination in sediments are provided by the 1999 NYSDEC "Technical Guidance for Screening Contaminated Sediments." Given the use of solvents at the facility at the time of sampling, indoor air results from the Farrand Controls building basement were compared to National Institute for Occupational Safety and Health and Occupational Safety and Health Administration guidance.

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 require remediation. These are summarized below. More complete information can be found in the September 2000 Remedial Investigation Report.

In addition, a Feasibility Study Support Investigation (FSSI) was implemented following completion of the Feasibility Study to provide supplemental data upon which to prepare the PRAP. The FSSI consisted of additional test pit excavations, monitoring well installations, subsurface soil borings, and video inspection of a storm drain. In addition, laboratory treatability studies were performed to evaluate the effectiveness of either in-situ oxidation or reductive dechlorination in remediating contaminated groundwater. The results of the support investigation and the treatability studies are presented in the December 2001 Feasibility Study Support Investigation Report, which is also available in the document repositories.

Chemical concentrations are reported in parts per billion (ppb) for groundwater and surface water samples, and parts per million (ppm) for soil samples. For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

Geology:

Geology of the Farrand Controls site varies from a large bedrock outcrop over 25 feet high behind the main building to bedrock buried by unconsolidated deposits up to 60 feet thick near the wetland and pond area (see figure 3). The bedrock outcrop is an intensely folded and jointed, black and white banded gneiss. The uppermost unconsolidated deposit is 2 to 5 feet of fine sandy, silty loam soil. A fine to medium-grained sand of varying thickness containing some gravel and silt lies below the soil across most of the site. Near the wetland and pond, however, a finer-grained unit of clay, silty clay and silty sand lies between the overlying soil and underlying medium-grained sand.

During the accelerated site characterization phase of the investigation, a refusal surface was encountered at shallow depths in the vicinity of the parking lot south of the main building. Although initially interpreted as top of bedrock, it was hypothesized in the RI Report that this hard surface through which the Geoprobe® could not penetrate was the upper debris surface of a buried rock slide. However, during the FSSI, bedrock core samples identified the refusal surface as gneiss bedrock, similar to the large outcrop behind the main building.

South of the site, across the wetland and pond area and adjacent to the Taconic Parkway, bedrock was encountered in monitoring well borings beneath about 80 feet of unconsolidated gravel, sand, silt and clay deposits. This bedrock unit is serpentine, distinctly different from the gneiss seen on site. It is inferred that a major structural boundary crosses the area between Wall Street and the Taconic Parkway.

Hydrogeology:

Due to the complex geology at the site, the hydrogeology is complex as well. Shallow groundwater is encountered at about 10 feet below ground surface, and horizontal flow is toward the wetland and pond. Figure 4 shows shallow groundwater contours. Near the main building, there is a downward groundwater gradient into the deep overburden and bedrock. Closer to the wetland and pond, however, deep groundwater upwells and discharges into the wetland and pond.

Man-made factors further complicate hydrogeologic conditions at the site. Sumps in the south end of the main building basement continually collect groundwater that is pumped, treated, and discharged through a storm drain. This influences, to some degree, groundwater conditions near the building. Footer drains around the building perimeter also likely influence local groundwater flow. Additionally, it was discovered during the FSSI video inspection of a storm drain in front of the main building that Monitoring Well 3 (MW 3) pierces the drain (see figure 2). At the time of the inspection, water was observed flowing from the well into the drain. It is possible that at times water flows from the drain into the well. The storm drain discharges directly into the wetland and pond through an outfall. This well was installed during the initial 1993 environmental investigation without NYSDEC's oversight.

4.1.2: Nature of Contamination

As described in the September 2000 Remedial Investigation Report, many groundwater, surface water, soil and sediment samples were collected at the site to characterize the nature and extent of contamination. The only category of contaminants that exceed their SCGs is volatile organic compounds (VOCs). The VOC contaminants of concern in the various environmental media are trichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane (also known as Freon 113), 1,1-dichloroethene, 1,1-dichloroethane, *cis*-1,2-dichloroethene, *trans*-1,2-dichloroethene and vinyl chloride. The nature of the contamination found at the site is summarized in Tables 1A, 1B and 2.

4.1.3: Extent of Contamination

Tables 1A, 1B and 2 summarize the extent of contamination for the contaminants of concern in groundwater, surface water, sediment and subsurface soils, and compares the data with the SCGs for the site. The following are the media that were investigated and a summary of the findings of the investigation.

Groundwater

Data from two hundred forty six (246) groundwater samples, obtained from both monitoring wells and temporary borings, show significant shallow and deep groundwater contamination. Figure 5, based on data obtained from the temporary borings, is representative of the overall contaminant distribution. The data indicate there are two groundwater plumes at the site. One contaminant plume extends from the south end of the main building toward the wetland and pond. There appear to be two sources for this plume: the sump located in the south end of the main building basement, and the catch basin located east of the southeast corner of the main building. Groundwater concentrations of individual VOCs range up to 53,000 ppb, above the SCG of 5 ppb. Concentrations of total targeted VOCs (trichloroethene, 1,1,1-trichloroethane, Freon 113, 1,1-dichloroethene, 1,1-dichloroethane, *cis*-1,2-dichloroethene, *trans*-1,2-dichloroethene and vinyl chloride) range up to 150,000 ppb. On site, deep overburden groundwater (just above the refusal surface) is generally more contaminated than shallow groundwater and bedrock groundwater near the main building is more contaminated than overburden groundwater.

Contaminant levels decrease significantly under the wetland and pond. Shallow overburden groundwater samples collected from Geoprobe® borings between the pond and the properties on the west side of Grand Boulevard showed very low levels of contamination, less than 30 ppb total targeted VOCs and are generally below SCGs. Deeper overburden groundwater in this area is contaminated above SGCs (up to 1477 ppb total targeted VOCs). Adjacent to the Taconic State Parkway south of the wetland and pond, shallow overburden groundwater samples collected from Geoprobe® borings indicated total targeted VOC concentrations up to 111 ppb, deep overburden groundwater total targeted VOC concentrations up to 288 ppb, and bedrock groundwater total targeted VOC concentrations up to 240 ppb.

A second plume of contaminated groundwater from an apparent up-gradient, off-site source has migrated from the north across the Farrand Controls northwestern property line. The contaminants are generally similar to the Farrand Controls plume, but slightly different in relative concentrations. This plume appears to flow to the southeast in front of the Farrand Controls main building and combines with the Farrand Controls plume as it discharges into the wetland. The NYSDEC will investigate the source of this plume separately from the Farrand Controls project.

Soil

Surface Soils: Traces of organic contaminants were detected in surface soil samples, but no concentrations exceeded SCGs.

Subsurface Soils: Subsurface soil samples obtained from borings near and beneath the main building during the RI showed the presence of targeted VOCs, but not at concentrations greater than SCGs. However, a subsurface soil sample obtained during the FSSI near the catch basin off the east corner of the main building contained concentrations of Freon 113 above the soil clean up guideline of 6 ppm at 150 ppm.

There were some metals in surface and subsurface soils (iron, nickel and zinc) that slightly exceed SCGs. These metals were seen at similar concentrations across the site and are most likely due to natural conditions.

Surface Water

Shallow and deep groundwater discharging into the wetland and pond have resulted in the contamination of surface water. From the video inspection of the storm drain that runs from the main building into the pond, it appears that a significant amount of contamination may be entering the pond directly from the Monitoring Well No. 3 area through leakage into the broken drain pipe. Surface water samples were collected upgradient (northwest) of the wetland, within the wetland and pond, and from the stream that flows out of the pond and away from the site. Contaminant levels in surface water in the immediate area of Outfall No. 2 exceed guidance values for the protection of aquatic life. Surface water contamination is limited to the pond itself, as contaminant levels in creek water draining from the pond were very low. Only 1,1,1-trichloroethene exceed the surface water SCG of 5 ppb at 24 ppb at one sampling location.

Sediment

A total of six surface water sediment samples were collected. Four surface water sediment samples were collected in the wetland and pond adjacent to the site, one was collected in the wetland upgradient and one was collected in the stream downgradient of the site. No VOCs were detected above SCGs. Seven metals exceeded Lowest Effect Levels given in NYSDEC guidance, and five exceeded Severe Effect Levels (see Table 2). The Lowest Effect Level represents a level of sediment contamination that can be tolerated by the majority of bottom-dwelling organisms, but still causes toxicity to a few species. The Severe Effect Level is the concentration at which pronounced disturbance of the sediment dwelling community can be expected. The metals seen at these elevated levels are primarily those seen in subsurface soils and are likely due to natural conditions.

Indoor Air

Indoor air samples were collected from the basement of the main facility building and analyzed for VOCs. Databases developed by the NYSDOH and the United States Environmental Protection Agency are used to compare field results with "typical" indoor and outdoor air concentrations (i.e., background concentrations). Based on this comparison, several VOCs, including TCE, Freon 113 and acetone, were detected at concentrations greater than those commonly found in buildings where no known sources of chemicals or chemical spills are present. TCE and Freon 113 were detected at concentrations approximately 10 times greater than background. Acetone, a chemical being used at the facility at the time samples were collected, was detected at approximately 100 and 700 times greater than background. Additional indoor air sampling may further determine the extent to which subsurface contamination, as compared to normal operations at the facility, is affecting indoor air quality.

4.2: Summary of Human Exposure Pathways:

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 health risks can be found in Section 6.0 of the September 2000 Remedial Investigation Report.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

There are currently no completed exposure pathways relative to the contamination at the Farrand Controls site. However, the following potential exposures exist:

- Consumption of contaminated groundwater at eight private wells that serve commercial buildings located downgradient of the site. Sampling of these wells in January 1999 and February 2002 indicated that the wells did not show site related contamination. Monitoring will be implemented to verify that these water supplies are protected throughout the remediation process.

- Inhalation of VOCs released from contaminated soil or groundwater.

- Dermal contact with contaminated groundwater, sediment or subsurface soils.

4.3: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks that may be presented by the site. The Fish and Wildlife Impact Assessment included in the September 2000 Remedial Investigation Report presents a more detailed discussion of the potential impacts from the site

to fish and wildlife resources. One pathway for environmental exposure and/or ecological risk has been identified: the discharge of contaminated groundwater to the wetland and pond area west of the main building. Ecological impact appears limited to the area around Outfall No. 2 where levels of TCE may cause chronic toxicity to aquatic life, and where a limited area of stressed vegetation was noted. This may be due to groundwater discharge from the damaged drain. Surface water sampled from the creek draining the pond showed only very low levels of VOCs.

SECTION 5: 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 PRPs for the Farrand Controls site, documented to date, include: Farrand Industries, Inc. (former owner), Farrand Realty Corp. (former owner), and Ruhle Companies, Inc. (current owner).

The NYSDEC was not able to locate the former owners of the site to implement a remedial program. After conducting several limited investigations over 4 years, the current owner did not have the financial means to complete an RI/FS as required by NYSDEC. After the remedy is selected, attempts will be made again the contact the former owners to assume responsibility for the remedy. NYSDEC also will contact the current owner for implementation of the remedy. If agreements cannot be reached with the PRPs, the NYSDEC will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred associated with the site.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all SCGs and be protective of human health and the environment. 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.

The goals selected for this site are:

- *Eliminate, to the extent practicable, off-site migration of groundwater that exceeds NYSDEC Class GA Ambient Water Quality Criteria.*

- *Eliminate, to the extent practicable, the migration of contaminated groundwater into the adjacent wetland and pond.*

- *Eliminate direct discharge of contaminated groundwater through the damaged storm water drain line drain into the wetland and pond.*

- *Eliminate, to the extent practicable, on-site contaminant source areas.*

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives and technologies for the Farrand Controls site were identified, screened and evaluated in the report entitled Feasibility Study Report, October 2000, and Feasibility Study Support Investigation Report, December 2001. (Please note that numbering of alternatives differs between the Feasibility Study Report and the PRAP.) Both of these documents are available at the document repositories mentioned previously.

The occurrence of TCE and Freon113 in indoor air in the basement of the Farrand Controls main building are likely attributable to their presence in site groundwater. The likely source is the basement sumps and drains. The concentrations of these compounds in basement indoor air will decrease with implementation of a remedial program for site groundwater. Acetone is currently a chemical commonly used at the Farrand Controls facility in their manufacturing processes. The concentration of acetone in basement indoor air was found to be orders of magnitude below the National Institute for Occupational Safety and Health, Recommended Exposure Limit.

A summary of the detailed analysis follows. As presented below, the time to implement an alternative reflects only the time required to construct the remedy, and does not include the time required to negotiate with responsible parties for implementation of the remedy, to design the remedy, or to procure contracts for design and construction.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated groundwater, surface water and subsurface soil at the site.

Alternative 1: No Action

The No Action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued groundwater monitoring only, allowing the site to remain in an unremediated state. The eight private wells that serve commercial buildings south of the site across the Taconic State Parkway would be included in the monitoring plan. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Present Worth:	$ 499,600
Capital Cost:	$ 0
Total O&M Present Worth:	$ 499,600
Annual O&M:	$ 32,500 for 30 years
Time to Implement:	Three months

Alternative 2: In-Well Air Stripping with Long-Term Groundwater Monitoring

In-well air stripping is a technology designed to treat volatile organic compound contaminants in groundwater without pumping groundwater to the surface. Under this alternative, approximately 50 groundwater recirculation wells would be installed within the on-site groundwater plume. Air would be injected through the wells directly into groundwater, raising the height of contaminated groundwater within the well. VOCs would be transferred from the contaminated groundwater within in the well into air bubbles which would then rise and be extracted at the top of the well. The contaminated vapors would be collected in a vacuum system, treated above ground and released to the atmosphere. A circulation cell would develop as contaminated water is continually drawn into the well, lifted and treated. It is estimated that the system would operate up to 15 years in order to meet groundwater standards. The overall effectiveness of in-well air stripping at the Farrand site may be limited by the shallow depth to groundwater and the existence of low-permeability units within the site overburden.

Additional groundwater monitoring wells would be installed to improve the monitoring network. A long-term groundwater monitoring program would be established to evaluate effectiveness of the remedy, including annual sampling of the eight private wells that serve commercial buildings south of the site across the Taconic State Parkway.

In addition, subsurface soil contaminated with Freon 113 above the NYSDEC Technical and Guidance Memorandum 4046 soil cleanup guideline near the catch basin east of the southeast corner of the main building would be excavated and disposed off-site. The extent of this excavation would be determined by sampling during remedial design activities. Monitoring Well No. 3 would be removed and the storm water drain line between the main site building and Outfall No. 2 would be repaired. It is expected that once the groundwater source is remediated, levels of VOCs in surface water will no longer be at detectable levels.

Present Worth:	$ 2,114,700
Capital Cost:	$ 1,448,000
Total O&M Present Worth	$ 666,700
Annual O&M:	$ 53,500 for 20 years
Time to Implement:	One year

Alternative 3: In-Situ Reductive Dechlorination using Zero-Valence Iron Powder and Short-Term Groundwater Monitoring

In this alternative, zero-valence iron (iron in its pure form) powder would be injected into the subsurface below the water table. The iron would initiate chemical reactions in which VOCs would be broken down into less harmful (non-toxic) end-products. Approximately 46 injection points would be utilized. A treatability study performed during the FSSI provided good results using site groundwater and indicate a high likelihood of success for this technology at this site. The first phase would be limited in scale to optimize design elements for the second phase. Based on data obtained during the treatability study, it is expected that groundwater standards for most of the contaminants could be reached in a few months in the treatment zone. This technology would be applicable both in the overburden and in the shallow fractured upper bedrock.

Additional groundwater monitoring wells would be installed to improve the monitoring network. Since the contaminants of concern would be permanently destroyed during this treatment process, a long-term groundwater monitoring program would not be required, instead, a five-year groundwater monitoring program would be proposed. It is estimated that the groundwater quality would reach standards after one year. The eight private wells south of the site across the Taconic State Parkway would be sampled and analyzed annually as part of the monitoring program. Furthermore, to verify the remedial activities are not impacting the indoor air quality within the on-site building, an indoor air monitoring program would be implemented.

In addition, subsurface soil contaminated with Freon 113 above the NYSDEC Technical and Guidance Memorandum 4046 soil cleanup guideline near the catch basin east of the southeast corner of the main building would be excavated and disposed off-site. The extent of this excavation would be determined by sampling during remedial design activities. Monitoring Well No. 3 would be removed and the storm water drain line between the main site building and Outfall No. 2 would be repaired. It is expected that once the groundwater source is remediated, levels of VOCs in surface water will no longer be at detectable levels.

Present Worth:	$ 2,867,200
Capital Cost:	$ 2,698,800
Total O&M Present Worth:	$ 168,400
Annual O&M:	$ 38,900 for 5 years
Time to Implement:	One year

Alternative 4: Groundwater Extraction and Treatment with Long-Term Groundwater Monitoring

In this alternative, approximately four groundwater extraction wells would be installed to pump on-site groundwater to the surface for treatment in an on-site treatment facility. Water would be treated to surface water quality standards and then discharged to the wetland. It is estimated that the wells would

pump a total of 100 to 400 gallons per minute to contain the plume and to prevent off-site migration of contaminated groundwater.

Additional groundwater monitoring wells would be installed to improve the monitoring network. A long-term groundwater monitoring program would be established to evaluate the effectiveness of the remedy, including annual sampling of the eight private wells that serve commercial buildings south of the site across the Taconic State Parkway.

In addition, subsurface soil contaminated with Freon 113 above the NYSDEC Technical and Guidance Memorandum 4046 soil cleanup guidelinenear the catch basin east of the southeast corner of the main building would be excavated and disposed off-site. The extent of this excavation would be determined by sampling during pre-design activities. Monitoring Well No. 3 would be removed and the storm water drain line between the main site building and Outfall No. 2 would be repaired. It is expected that once the groundwater source is remediated, levels of VOCs in surface water will no longer be at detectable levels.

Present Worth:	$ 7,719,600
Capital Cost:	$ 4,247,000
Total O&M Present Worth:	$ 3,472,000
Annual O&M:	$ 225,900 for 30 years
Time to Implement:	One year

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the October 2000 Feasibility Study Report. Again, please note that numbering of alternatives differs between the Feasibility Study Report and PRAP.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). *Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.*

Only Alternatives 2, 3 and 4 would meet SCGs.

2. Protection of Human Health and the Environment. *This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.*

Only Alternatives 2, 3 and 4 would be protective of human health and the environment.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. *The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives also is estimated and compared against the other alternatives.*

Alternative 1, No Action, would have no short-term adverse impacts, because there would be no construction activities. The other three alternatives include a limited source removal activity, for which a site-specific Health and Safety Plan would be easily implemented for all ground-intrusive activities to protect workers and the community; no significant short-term impacts would be expected. Alternatives 2 and 3 both require the installation of numerous injection points, either for air (Alternative 2) or iron powder (Alternative 3), and would have comparable short-term impacts. Alternative 2 would require active treatment by air injection into each well for about 15 years. Construction of a treatment facility would be required for treating the extracted vapors. Alternative 3 would have fewer short-term impacts; it is estimated that groundwater standards would be achieved after two injections of iron powder over a period of one year. Once the iron powder injections are complete, no operation and maintenance would be required other than routine monitoring. Alternative 4 would create the most extensive short-term impacts with the construction and operation of a long-term (at least 30 years) groundwater extraction and treatment facility. Intensive operation, monitoring and maintenance would be required for both Alternatives 2 and 4 to assure maximum efficiency of the remedial systems. The negative impact of long-term operation and maintenance of Alternatives 2 and 4 (15 to 30 years or more) at this active manufacturing facility would be considerable.

Alternative 3 would achieve the remedial objectives in the shortest time: the estimate is one year. Alternative 2 would take longer-- possibly fifteen years. Alternative 4 would take the longest-- estimated at least thirty years.

4. Long-term Effectiveness and Permanence. *This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.*

Alternative 1 has no long-term effectiveness; all waste would remain on site and risks would not change. Alternative 3 would offer the most long-term effectiveness because it would destroy groundwater contaminants in the shortest period of time (within a year). Alternative 2 would remove contaminants from groundwater, however, it could take up to fifteen years to reduce groundwater contamination to SCGs. Treatment of extracted vapors also would be required for the same period of time. The overall effectiveness of Alternative 2 at this site may be limited by the shallow depth to

groundwater and the existence of low-permeability units within the site overburden. Alternative 4 would have an even lower long-term effectiveness because the estimated time to reach remedial objectives would be considerably longer. Both Alternatives 2 and 4 would require intensive long-term operation and maintenance of the treatment systems.

Contaminated groundwater that has migrated beyond the wetland and pond would not be treated under any of the alternatives. For Alternatives 2, 3, and 4, once on-site groundwater is addressed, contaminant levels downgradient of the site would be expected to decrease to groundwater standards. All alternatives would include a groundwater monitoring program to evaluate effectiveness of the remedy.

5. Reduction of Toxicity, Mobility or Volume. *Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.*

Alternative 1 would not reduce the toxicity, mobility or volume of waste at the site. Alternatives 2, 3 and 4 all would reduce the volume of waste at the site through the subsurface soil source removal. Alternative 2 would reduce the mobility and volume of wastes in groundwater by driving the contaminants out of groundwater and into air that would be extracted and treated on site. Alternative 3 would reduce the mobility and volume of wastes by permanently destroying site contaminants in groundwater. Alternative 4 would reduce the volume and mobility of wastes at the site through pumping and treating groundwater on site.

6. Implementability. *The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.*

Alternative 1 would be easily implemented, requiring only the development of a long-term groundwater monitoring plan. The source removal of Freon-contaminated soil from the catch basin area, and the storm water drain line pipe repair of the other three alternatives would be easily implementable. Some uncertainties exist with the implementation of Alternative 2 (in-well air stripping), for example, whether the shallow depth to groundwater would allow sufficient head space to collect contaminants driven off by the injection of air below the groundwater table (which raises the water table even more). Also, it is possible that the in-well air stripping system could be short-circuited by low-permeability units within the overburden. The treatability study for Alternative 3 (in-situ reductive dechlorination) shows this treatment technology to be effective in destroying site contaminants. One available system for this technology would inject the iron powder using pneumatic fracturing and an inert gas (nitrogen) as a carrier for the iron powder. The extraction and treatment technology of Alternative 4 also is technically feasible. Administratively, all alternatives would be implementable.

7. Cost. *Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated,*

where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision.

The estimated costs for each alternative are presented in Table 3. Alternative 1 would be the least expensive with a Total Present Worth of $ 499,600, and Alternative 2 would be next least expensive at $ 2,114,700. Alternative 3 would cost $ 2,867,200 and Alternative 4 would be the most expensive at $ 7,719,600.

8. Community Acceptance - *Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised.*

In general, the comments received at the public meeting were supportive of the selected remedy. Several questions were asked by residents trying to understand why the site requires remediation although there are no current completed human health exposure pathways. These questions and comments have been addressed in Appendix A. No written comments were received.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

Based upon the results of the RI/FS, the treatability studies and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 3 as the remedy for this site: *In-Situ Reductive Dechlorination with Zero-Valence Iron Powder, and Short-Term Groundwater Monitoring.*

This selection is based on the evaluation of the four alternatives developed for this site. With the exception of the No Action alternative (Alternative 1), each of the alternatives would comply with the threshold criteria. Although Alternatives 2, 3 and 4 all could be effective, Alternative 3 is the most desirable remedy because it will permanently destroy groundwater contaminants in-situ within the shortest period of time with the least amount of operation and maintenance and lowest impact to the community. Alternative 2 would take significantly longer than Alternative 3 and would require long-term continued operation and maintenance. There is also some uncertainty that Alternative 2 would be successful in this hydrogeologic setting. Alternative 4 would remove groundwater contaminants, but would require a commitment to long-term operation and maintenance.

The estimated present worth cost to implement the remedy is $ 2,867,200. The cost to construct the remedy is estimated to be $ 2,698,800 and the estimated average annual operation and maintenance cost is $ 38,900 for five years.

The elements of the proposed remedy are as follows:

1. Development of a remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Removal of subsurface soil contaminated with Freon 113 above the NYSDEC Technical and Guidance Memorandum 4046 soil cleanup guideline in the area of the catch basin east of the southeast corner of the main building. The extent of this excavation will be determined by sampling during remedial design activities. This contaminated soil will be disposed off site and the excavation will be backfilled with clean fill.

3. Implementation of an in-situ, subsurface reductive dechlorination procedure to treat on-site groundwater contaminated with chlorinated solvents. Zero-valence iron powder will be injected into the subsurface through injection points to destroy contaminants in-situ. The initial phase will be limited in scale to optimize design elements for the second phase. Figure 6 shows a conceptual layout of the treatment area.

4. Removal of Monitoring Well No. 3 and repair of the storm water drain line that discharges through Outfall No. 2 to the pond.

5. Implementation of a short-term groundwater monitoring program to verify effectiveness of the remedy. Features of the monitoring program will include the following:

   - # Quarterly groundwater sampling for site contaminants of concern and treatment indicator parameters will be implemented with the first phase of iron application. If groundwater contaminants of concern have not decreased to groundwater standards within one year of completion of the second phase of iron application, an evaluation for additional phase(s) of iron treatment will be required.

   - # Quarterly monitoring will continue for a minimum of five years to verify that both on-site and off-site remediation is complete. If contaminant levels should return to unacceptable levels within that time, an evaluation for additional iron application will be required.

   - # Annual monitoring of the eight private wells that serve commercial buildings south of the site across the Taconic State Parkway for a minimum of five years.

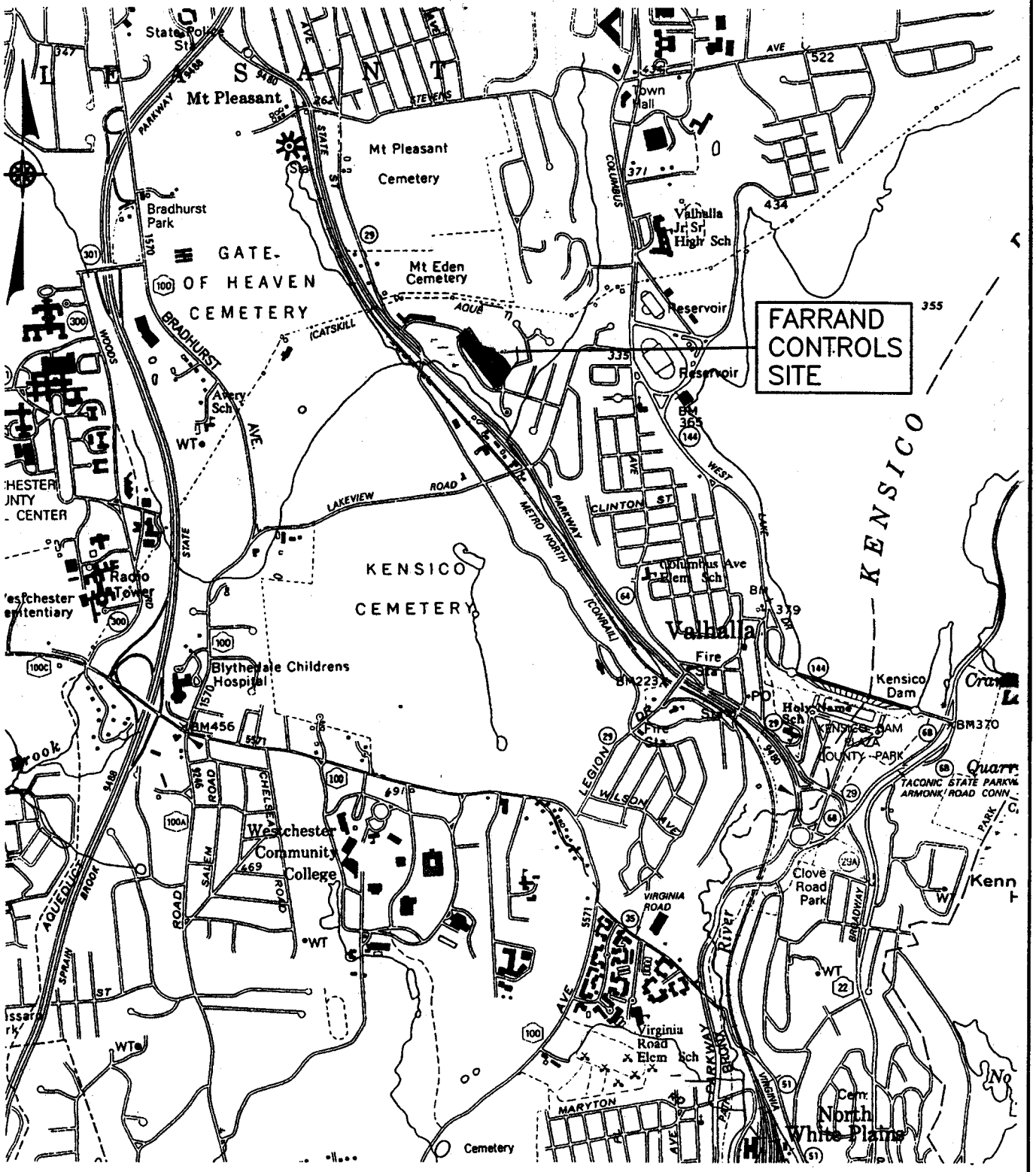
   - # If site-related contaminants are detected in the private wells at increasing concentrations, then monitoring frequency will be increased. If a private well is found to contain site-related contaminants above NYS drinking water standards, wellhead treatment will be provided.

6. Implementation of an indoor air monitoring program to verify that the remedial activities are not impacting indoor air quality within the on-site building.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Document repositories were established for public review of project related material.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- A Citizen Participation Plan was prepared in December, 1998 and placed in the document repositories.
- A fact sheet was distributed to the mailing list on January 4, 1999 to announce the beginning of the remedial investigation.
- A fact sheet was distributed to the mailing list on September 14, 2000 to announce availability of the September, 2000 Remedial Investigation Report and provide an update on status of the project.
- A fact sheet was distributed to the mailing list on February 15, 2002 to announce availability of the February, 2002 Proposed Remedial Action Plan (PRAP) and announce the March 11, 2002 public meeting.
- A public comment period was held from February 20, 2002 through March 22, 2002 to receive public input on the PRAP.
- A public meeting was held on March 11, 2002 to present the PRAP and discuss and answer questions regarding the RI/FS and the proposed remedy.
- In March 2002 a Responsiveness Summary was prepared to address the comments received during the public comment period for the PRAP. The Responsiveness Summary has been incorporated into the ROD as Appendix A and made available to the public.



SOURCE: USGS WHITE PLAINS, QUADRANGLES

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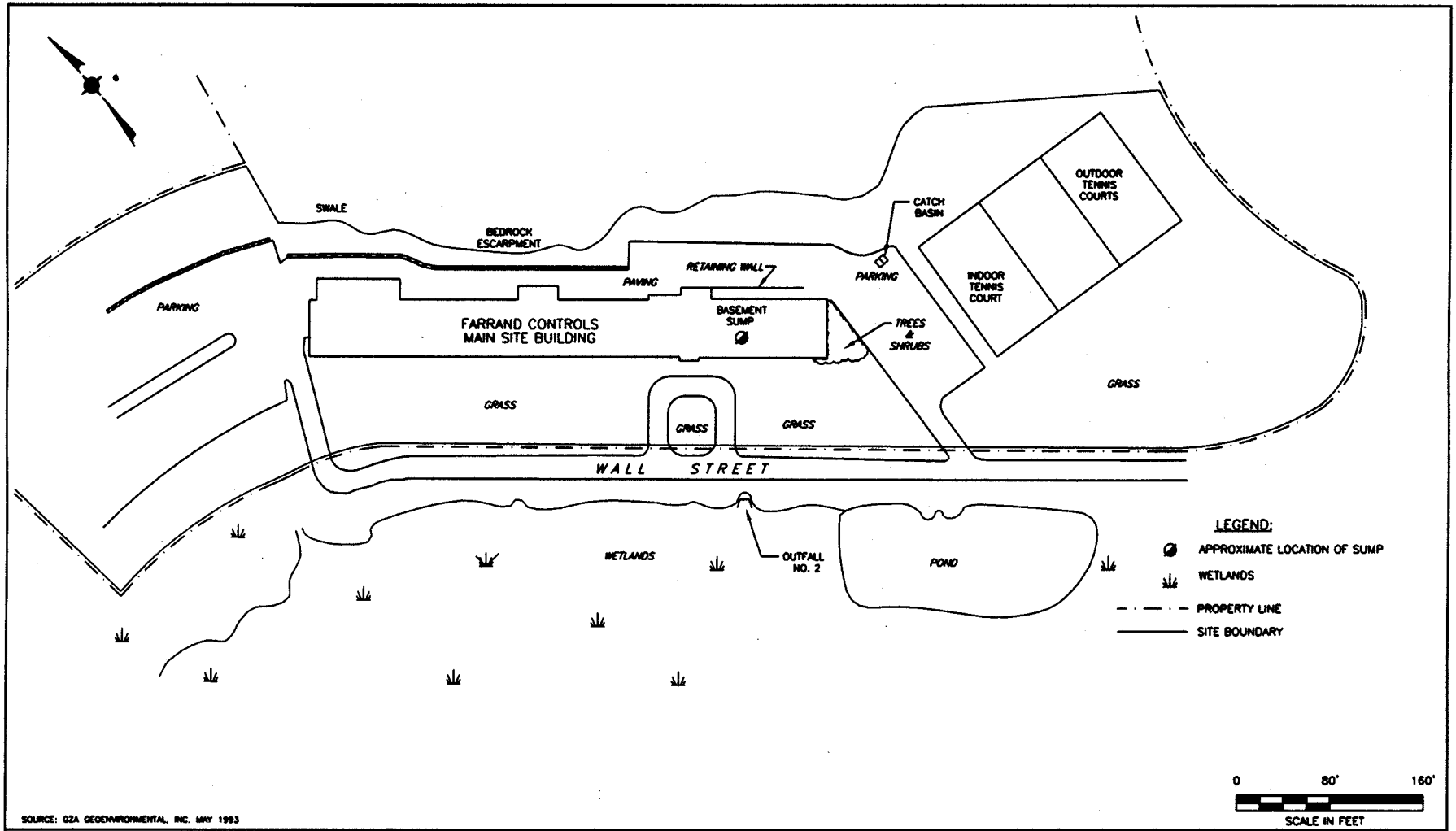
FARRAND CONTROLS SITE
VALHALLA, NEW YORK

SITE LOCATION MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 1



FARRAND CONTROLS SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Dvirka and Bartilucci
Consulting Engineers
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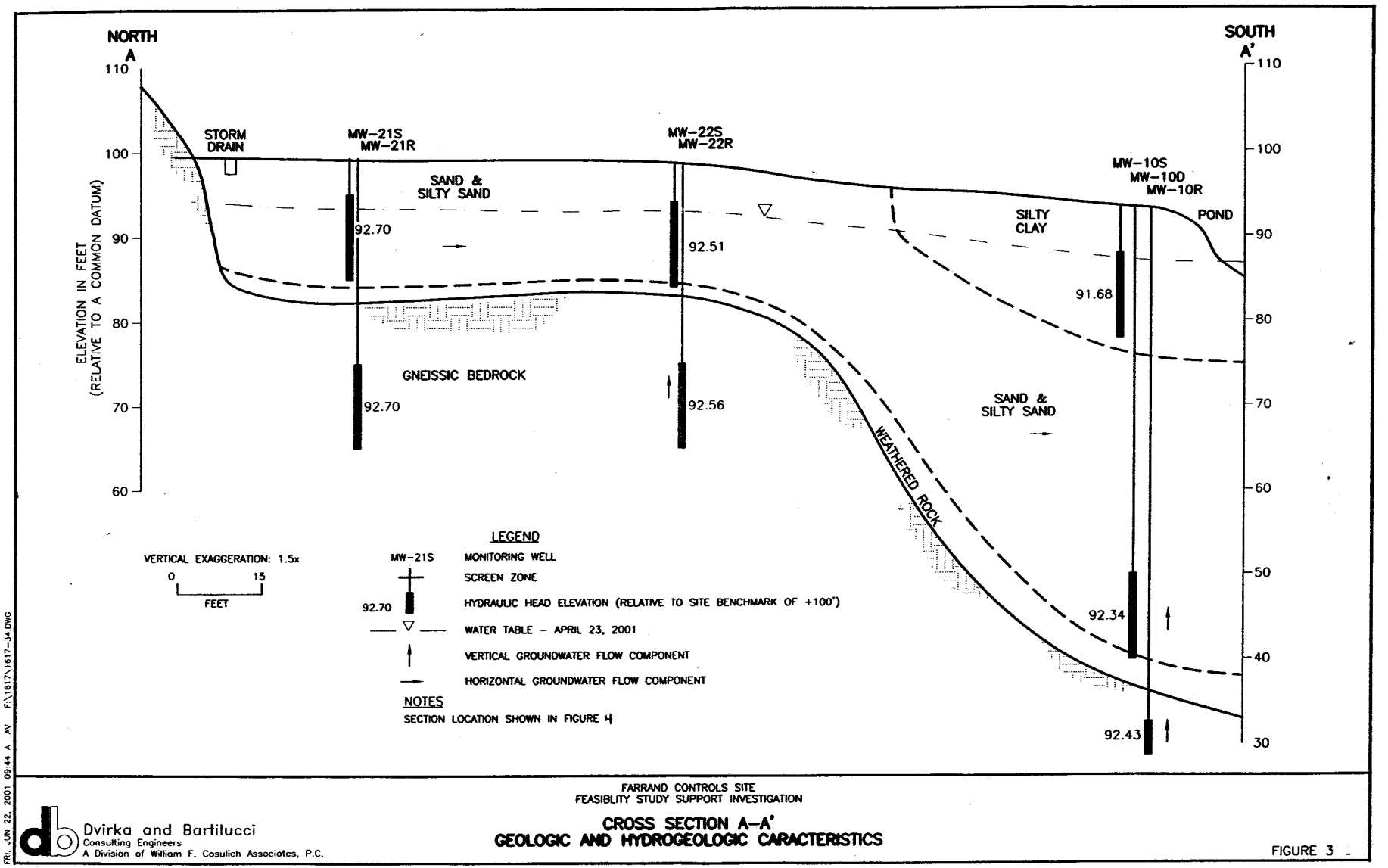
SITE PLAN

FIGURE 2



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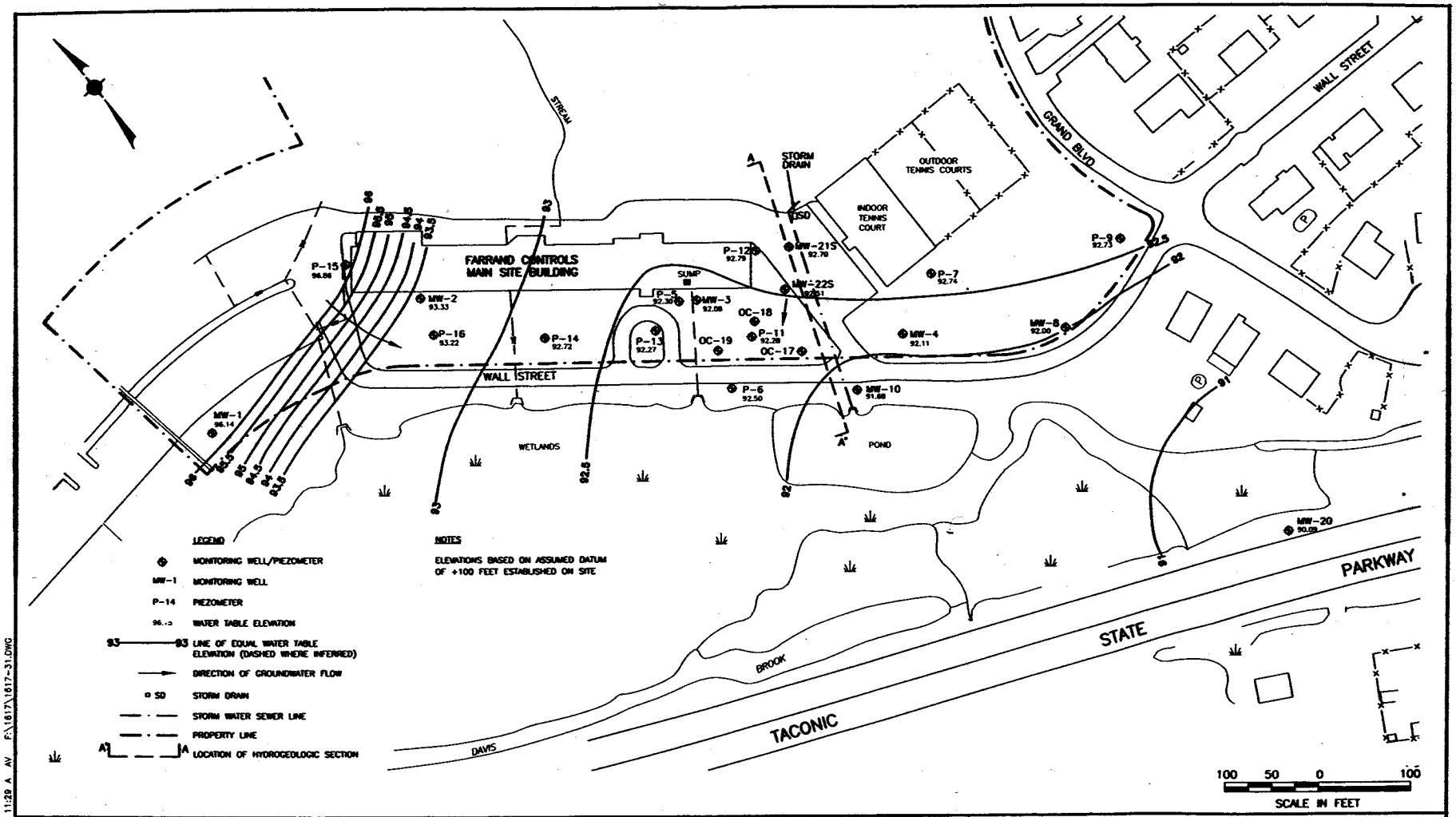
FARRAND CONTROLS SITE
FEASIBLITY STUDY SUPPORT INVESTIGATION

CROSS SECTION A-A'
GEOLOGIC AND HYDROGEOLOGIC CARACTERISTICS

FIGURE 3



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FARRAND CONTROLS SITE
FEASIBILITY STUDY SUPPORT INVESTIGATION

WATER TABLE CONTOUR MAP
APRIL 23, 2001

FIGURE 4

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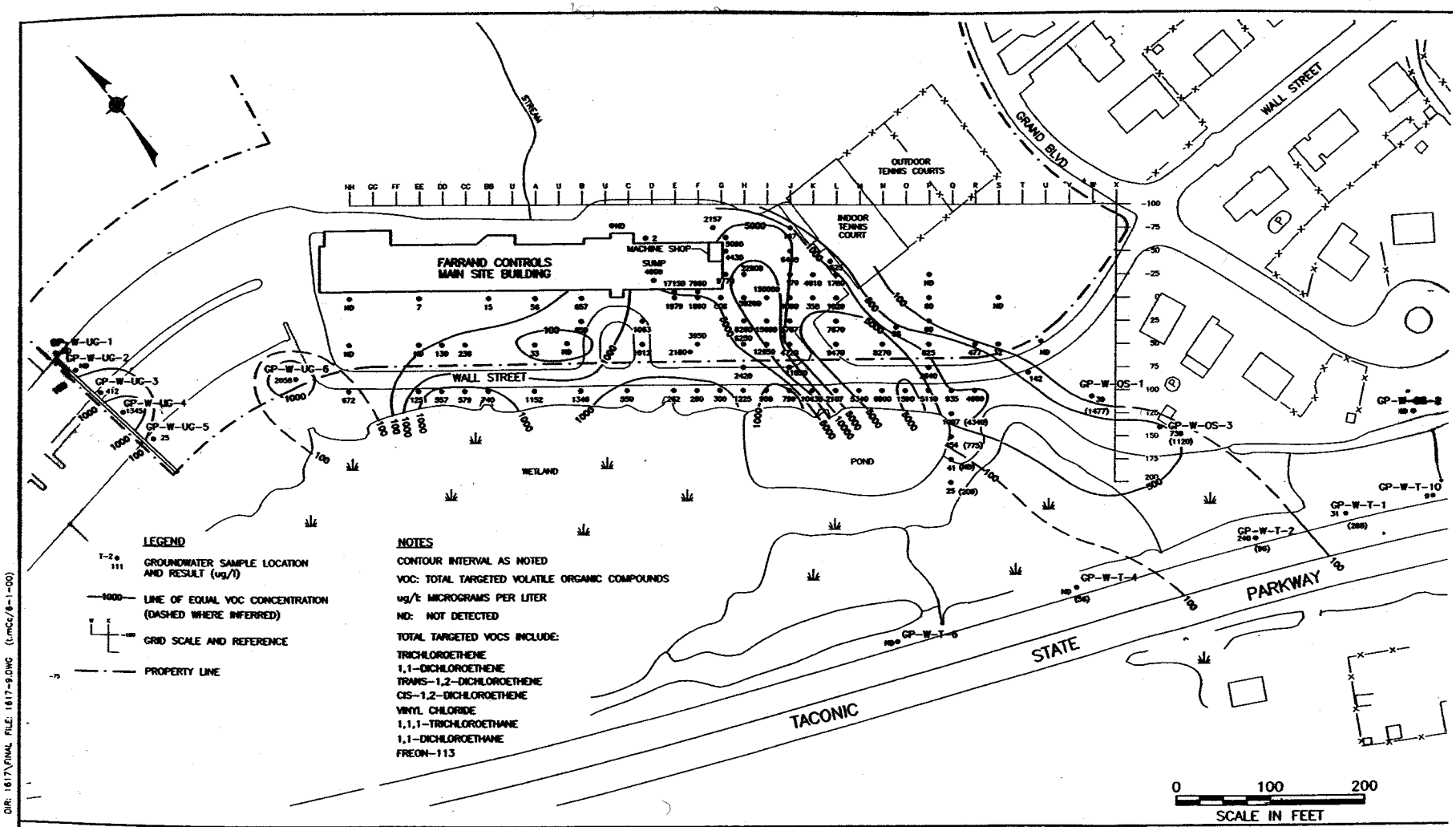

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FARRAND CONTROLS SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

TOTAL TARGETED VOC CONCENTRATIONS IN DEEP OVERBURDEN GROUNDWATER AT THE TOP OF REFUSAL SURFACE AND INTERMEDIATE DEPTH

Dvirka and Bartilucci
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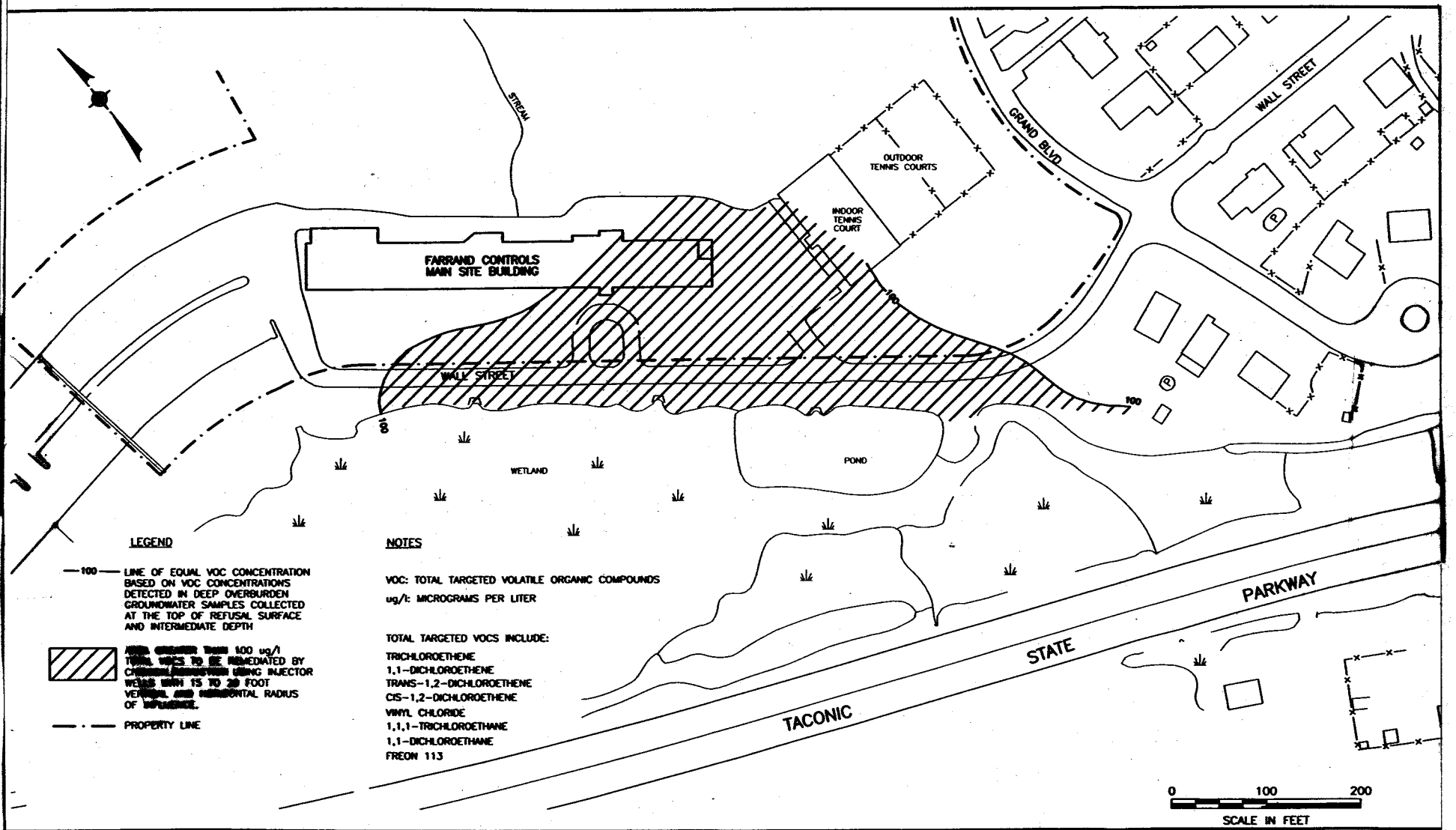
FIGURE 5



FARRAND CONTROLS SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

APPROXIMATE LOCATION OF CHEMICAL REDUCTION REMEDIATION ZONE

FIGURE 6

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Table 1A

Nature and Extent of Contamination
Groundwater and Surface Water

Medium of Concern	Category	Contaminant of Concern	Concentration Range (ppb)	Frequency of Exceeding SCGs	SCG (ppb)
Groundwater	**Volatile Organic Compounds (VOCs)**	Vinyl Chloride	ND** - 280	34 of 246	2
		Freon 113	ND - 48,000	136 of 246	5
		1,1-DCE*	ND - 13,000	112 of 246	5
		trans-1,2-DCE	ND - 520	6 of 192	5
		1,1-DCA*	ND - 4,000	107 of 246	5
		cis-1,2-DCE	ND - 920	73 of 217	5
		1,1,1-TCA*	ND - 13,000	149 of 246	5
		TCE*	ND - 53,000	173 of 246	5
		total 1,2-DCE	ND - 200	9 of 29	5 ea.
Surface Water	**Volatile Organic Compounds (VOCs)**	TCE	ND - 370	2 of 22	40

* DCE = Dichloroethene
DCA = Dichloroethane
TCE = Dichloroethene
TCA = Trichloroethane

** ND = Non-Detect

Groundwater and surface water analytical results compared to NYSDEC Ambient Water Quality Standards and Guidance Values, Technical and Operational Guidance Series 1.1.1

Table 1B

Nature and Extent of Contamination
Subsurface Soils

Medium of Concern	Category	Contaminant of Concern	Concentration Range (ppm)	Frequency of Exceeding SCG	SCG (ppm)
Subsurface Soils	**Volatile Organic Compounds (VOCs)**	Freon 113	ND - 150	1 of 41	6

NYSDEC Technical and Guidance Memorandum 4046 was used for soil cleanup guidelines

** ND = Non-Detect

Table 2

Nature and Extent of Contamination
Sediment

Medium of Concern	Category	Contaminant of Concern	Concentration Range (ppm)	Frequency of Exceeding SCGs-LEL	SCG (ppm) LEL*	SCG (ppm) SEL**
Sediment	**Metals**	Arsenic	ND*** - 10.3	3 of 6	6	33
		Cadmium	ND - 2.5	2 of 6	0.6	9
		Copper	37.1 - 295	6 of 6	16	110
		Iron	12,000 - 54,100	4 of 6	20,000	40,000
		Manganese	144 - 3,030	5 of 6	460	1,100
		Nickel	13.7 - 54	5 of 6	16	50
		Zinc	103 - 406	2 of 6	120	270

Sediment analytical results compared to 1999 "NYSDEC Technical Guidance for Screening Contaminated Sediments"

* LEL: Lowest Effect Level: A level of sediment contamination that can be tolerated by the majority of benthic organisms, but still causes toxicity to a few species.

** SEL: Severe Effect Level: The concentration at which pronounced disturbance of the sediment dwelling community can be expected.

*** ND = Non-Detect

Table 3

Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Present Worth O&M	Total Present Worth
Alternative 1: No Action	$ 0	$ 32,500 for 30 yrs	$ 499,600	$ 499,600
Alternative 2: In-Well Air Stripping	$ 1,448,000	$53,500 for 20 yrs	$ 666,700	$ 2,114,700
Alternative 3: In-Situ Reductive Dechlorination	$ 2,698,800	$38,900 for 5 yrs	$ 168,400	$ 2,867,200
Alternative 4: Groundwater Extraction and Treatment	$ 4,247,000	$225,900 for 30 yrs	$ 3,472,000	$7,719,600

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Farrand Controls
Proposed Remedial Action Plan
Town of Mt. Pleasant, Westchester County
Site No. 3-60-046

The Proposed Remedial Action Plan (PRAP) for the Farrand Controls site was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 15, 2002. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the Farrand Controls site. The preferred remedy is in-situ reductive dechlorination with zero-valence iron powder, removal of Freon contaminated subsurface soils and repair of a storm water drain line damaged by Monitoring Well 3.

The release of the PRAP was announced via a February 15, 2002 notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on March 11, 2002 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 22, 2002.

This Responsiveness Summary responds to all questions and comments raised at the March 11, 2002 public meeting. No written comments were received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1:

Were any tests performed on the stressed vegetation in the wetland to determine if the contaminants were in the vegetation? What is the cause of the stressed vegetation?

RESPONSE 1:

The NYSDEC has not identified the exact cause of the stressed vegetation near outfall no. 2. It is possible that the elevated levels of site contaminants in water flowing out of the storm drain is the cause. There could be any number of causes not related to hazardous waste disposal (for example, road salt, lightning strike, etc.). It is normally beyond the scope of the NYSDEC remedial program to conduct scientific studies on biota at inactive hazardous waste sites. The

majority of this wetland area is vibrant and thriving, indicating that this stressed area may be due to a localized condition, and the expense of undertaking scientific studies cannot be justified.

COMMENT 2:

Are utilities' backfill conducting contaminated water away from the site?

RESPONSE 2:

The utilities' backfill material were investigated and determined not to be an off-site migration pathway.

COMMENT 3:

What are the site impacts on the Catskill Aqueduct?

RESPONSE 3:

The Catskill Aqueduct, located approximately 300 feet north of the site, carries water from the Kensico Reservoir through a rock tunnel south to New York City. The pressure head and the volume of water flow would preclude infiltration of any surrounding bedrock groundwater into the aqueduct. Additionally, the aqueduct is located upgradient of the site. The site does not impact the quality of the water in the Catskill Aqueduct.

COMMENT 4:

What is the time frame for contamination in the pond to be reduced?

RESPONSE 4:

Repair of the outfall storm drain will immediately stop direct discharge of contaminated groundwater into the pond, and surface water contaminant levels will start to decrease as existing contaminants volatilize and degrade naturally. When the iron injection treatment of site groundwater has been completed, it is expected that groundwater contaminants will be reduced to groundwater standards within a few months. This will eliminate the migration of contaminated groundwater into the pond, and contaminant levels in the pond will continue to decrease to surface water standards, likely within a year.

COMMENT 5:

Has there been any groundwater sampling in the neighborhood surrounding the site?

RESPONSE 5:

Several Geoprobe® samples of groundwater were obtained downgradient of the site, behind homes on the Grand Boulevard cul-de-sac. Levels of the 8 total targeted compounds (see ROD section 4.1.2 for a list of these compounds) range from non-detect to 27 ppb. The groundwater standard for 7 of these compounds is 5 ppb each, the 8th (vinyl chloride) is 2 ppb. These are very low detections and do not represent a human health or environmental threat.

COMMENT 6:

Are there any contaminants in the clay in the vicinity of the homes? Were samples taken? Would there be any volatilization from contaminants in clay deposits?

RESPONSE 6:

Subsurface soil in the vicinity of the homes was not sampled. The low levels of contaminants in groundwater do not indicate that subsurface soil in the area would be contaminated. Volatilization of the low levels of contaminants in groundwater in this area would not be a concern.

COMMENT 7:

Is the sump closed?

RESPONSE 7:

The sump was deactivated in 1969, cleaned in 1993 and removed in 1996, when highly contaminated underlying soil also was removed (see section 3.2 of the ROD).

COMMENT 8:

Who is paying for this and why isn't the owner paying for it? Why should taxpayers spend money on this? The history of the facility ownership should be included in the report. What paperwork does the company submit to show it cannot pay for this? Has money been allocated for this project?

RESPONSE 8:

Under Departmental regulations, the Department may expend Hazardous Waste Remedial Fund ("State Superfund") monies to pay for the investigation and remediation of hazardous wastes sites under certain circumstances, including but not limited to, (i) when a person responsible for a site cannot be located and (ii) when a person responsible refuses to enter into an order and that person has demonstrated to the Department satisfaction that it is unable to

pay for the investigation/remediation. To date, all efforts to contact the principals of the former owners failed. The current owner, Ruhle Companies, indicated that it was unable to fund the remedial investigation/feasibility study and it provided financial information including federal income tax returns. Once the ROD is completed and estimated remedial costs are known, the Department will enter into negotiations with Ruhle Companies for either an Order on Consent to implement the selected remedial alternative or for a cash settlement for the remedial program based upon the Ruhle Companies' ability to pay. In the event that Ruhle companies seek a cash settlement, it will have to provide current financial information including federal tax returns for the Department's review.

When State Superfund money was budgeted for the Farrand Controls project, only money for the RI/FS was encumbered. Funds for design and construction were not encumbered at that time because no estimates of the cost of the remedy could be determined in advance of the investigation. If the current owner cannot completely fund the remedy, State Superfund money would become available when the NYS legislature has reauthorized the Governor's Superfund refinancing and reform package.

COMMENT 9:

How did the chemicals get into the catch basin?

RESPONSE 9:

The NYSDEC does not know when or how the Freon 113 was disposed in the vicinity of the catch basin.

COMMENT 10:

What is the source for the contaminants entering the property from an upgradient source? This should be investigated soon.

RESPONSE 10:

The NYSDEC will investigate the upgradient source of this plume of contaminated groundwater when funds become available with reauthorization of the State Superfund refinancing and reform package.

COMMENT 11:

What can you do about mosquitoes in the wetland/pond?

RESPONSE 11:

The inactive hazardous waste program does not address mosquito infestations. The mosquitoes are a part of the natural wetland ecosystem.

COMMENT 12:

How often have you done this remedy and what is the success of completed projects? Are these current projects and how successful are they? Will iron rust during treatment be a concern?

RESPONSE 12:

Although the NYSDEC has experience with applications of zero-valent iron using other means, no remedial projects have utilized injection of iron powder. This is a relatively new technology, in use since approximately 1995. Case studies by vendors show it to be very effective. The iron will not rust when injected below the groundwater table.

COMMENT 13:

How successful is groundwater pump and treat?

RESPONSE 13:

In the early years of the Superfund program, groundwater pump and treat remedies were very common. However, in recent years, studies have shown that these remedies have not been as successful as originally anticipated. They often require operation for many more years than originally estimated, and at a much greater cost. Selection of pump and treat remedies has decreased steadily in recent years due to the development of newer, successful innovative technologies.

COMMENT 14:

What is the likely time frame for initiation of the remedy?

RESPONSE 14:

After the Record of Decision is signed, the NYSDEC attorneys will contact the PRPs for implementation of the remedy. Negotiations with the PRPs could take anywhere from 3 to 6 months, or the site could be referred back to the NYS Superfund for design and construction. It is possible that design could be completed for construction to begin in 2003.

COMMENT 15:

Why clean up the site if there is no human health danger?

RESPONSE 15:

The levels of volatile organic compound contamination in site groundwater and the Freon 113-contaminated subsurface soil exceed NYS Standards, Criteria and Guidelines. Although there are no current completed exposure pathways, the elevated levels of contaminants in groundwater pose a potential threat for future exposures. Likewise, if someone were to excavate into the area of Freon 113-contaminated soil near the catch basin, exposures to potentially harmful levels of contaminants could occur.

COMMENT 16:

Please let the community know when the excavation will be started.

RESPONSE 16:

Once design of the remedial activities is completed and construction is scheduled, a fact sheet will be distributed to residents on the project mailing list to let the community know when construction is expected to begin.

Comments received at the public meeting related to health concerns; responses provided by NYSDOH:

COMMENT 17:

What are the effects of contaminants on workers in the building? The indoor air quality in the Farrand Controls building should be evaluated as soon as possible to address worker exposures.

RESPONSE 17:

Given that Farrand Controls is an active electronic component manufacturing facility, it is difficult to adequately assess human exposures, and consequent risks (if any), to vapors associated with chemicals no longer used in facility operations. An indoor air monitoring program will be implemented in the Farrand Controls building to verify that the remedy is not impacting indoor air quality. The New York State Department of Health will use the data collected to evaluate human exposures to volatile organic compounds (VOC) that are no longer being used or stored at the facility. The protection of workers against many hazards on the job, including the exposure to vapors associated with chemicals used during normal operations, is

addressed by the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH).

The request that the indoor air monitoring program be initiated "as soon as possible" is noted.

COMMENT 18:

Will there be any public health impacts associated with the injection of iron into the ground?

RESPONSE 18:

There are no completed exposure pathways at this site. Therefore, no public health impacts associated with the injection of iron powder into the subsurface are expected.

COMMENT 19:

What is the impact of metals in pond sediment on public health during the present drought?

RESPONSE 19:

There are no completed exposure pathways at this site. Therefore, no public health impacts associated with metals found in pond sediments (either exposed or beneath surface water) are expected.

COMMENT 20:

What are the health effects of water flooding the neighborhood? What is the risk of children playing in the flood water?

RESPONSE 20:

Based on the groundwater data collected in the vicinity of the neighborhood, VOCs are not present at levels that represent a public health concern—either through direct contact with contaminated groundwater or through inhalation of VOCs that may be volatilizing out of the contaminated groundwater. Furthermore, flooding events are associated with a large influx of water into the environment. This input of water is expected to dilute the contaminant concentrations in the groundwater to even lower levels. Therefore, no public health impacts associated with flooding groundwater in the neighborhood are expected.

COMMENT 21:

How do exposures and risks for residents compare to those for commercial/industrial workers?

RESPONSE 21:

In general, health risks are a function of two parameters: toxicity of a specific chemical, and exposure to the chemical. "Toxicity" is the degree to which a chemical is harmful and the health effects that result. "Exposure" is how someone comes into contact with the chemical. The amount of exposure is dependent upon four factors: route (i.e., the way in which you are exposed), dose (i.e., how much), duration (i.e., how long), and frequency (i.e., how often). To make a direct comparison between commercial/industrial exposures and residential exposures (and ultimately risks), each of these factors and parameters needs to be considered on a chemical-specific, case-by-case basis.

COMMENT 22:

Would indoor air monitoring in the neighboring homes be warranted?

RESPONSE 22:

Concentrations of VOCs in the groundwater in the vicinity of the homes are not at levels that represent a public health concern. Given the groundwater data collected, concentrations of VOCs in subsurface vapors (resulting from the volatilization of VOCs from the groundwater) are expected to be negligible. Therefore, indoor air monitoring in neighboring homes is not warranted.

COMMENT 23:

Does contaminated groundwater rising to the surface pose a threat to human contact with soil?

RESPONSE 23:

Contaminated groundwater rising to the soil surface is not expected to present a public health concern. This is supported by the presence of only trace amounts of VOCs in surface soil samples (0 to 2 inches depth below grade) collected at the site in areas of the most significant on-site groundwater contamination. Furthermore, the contaminants of concern at this site are volatile. As such, they naturally migrate into the air upon exposure, rather than remain attached to surface soils.

COMMENT 24:

What will the impacts of contaminated soil excavation be on air in the community?

RESPONSE 24:

No impacts are expected during on-site excavation activities, since a Community Air Monitoring Plan (CAMP) will be implemented during all ground-intrusive work. A CAMP requires real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. Action levels will be specified in the CAMP that require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities do not spread contamination off-site through the air.

COMMENT 25:

What are the population groups that have the potential to be exposed to site-related contaminants?

RESPONSE 25:

Users of the private wells located downgradient of the site may be exposed to site-related contaminants if their wells were to become contaminated. Workers in the Farrand Controls building may be exposed if VOCs are released from the contaminated groundwater or soil and subsequently infiltrate into the building. There is a potential for on-site utility workers and trespassers in the wetland area to come into direct contact with contaminated groundwater, subsurface soils and sediments.

APPENDIX B

Administrative Record

Administrative Record
Farrand Controls Site
3-60-046

Record of Decision

Remedial Investigation and Feasibility Study Work Plan, prepared by Dvirka and Bartilucci for NYSDEC, December 1998.

Citizen Participation Plan, prepared by NYSDEC, December 1998

Remedial Investigation Report, prepared by Dvirka and Bartilucci for NYSDEC, September 2000.

Feasibility Study Support Investigation Report and Treatability Studies Report, prepared by Dvirka and Bartilucci for NYSDEC, December 2001.

Proposed Remedial Action Plan, Farrand Controls, prepared by NYSDEC, February 2002.