RECORD OF DECISION

Genzale Plating Company

Franklin Square, Town of Hempstead, Nassau County, New York

United States Environmental Protection Agency
Region II
New York, New York
September 1995

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Genzale Plating Company
Franklin Square, Town of Hempstead, Nassau County, New York

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selection of the remedial action the by the U.S. Environmental Protection Agency (EPA) for the second operable unit of the Genzale Plating Company Superfund site (Site) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601-9675, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for this Site. The attached index (Appendix III) identifies the items that comprise the Administrative Record upon which the selection of the remedial action is based.

The New York State Department of Environmental Conservation (NYSDEC) concurs with the selected remedy (see Appendix IV).

DESCRIPTION OF THE SELECTED REMEDY - NO FURTHER ACTION

This operable unit represents the second of two operable units for the Site. It addresses the fate and transport of potential groundwater contamination that has been detected downgradient of the Genzale Property. The EPA, in consultation with the NYSDEC, has determined that this downgradient groundwater contamination is limited and does not pose a significant threat to human health or the environment, and therefore remediation is not appropriate. This determination is based on the results of the Remedial Investigation for the second operable unit and the fact that the remedy for Operable Unit 1, treatment of soils and groundwater at the Genzale property, will be completed. Thus, a "No Further Action" remedy is the selected remedy for the second operable unit of the Site.

DECLARATION

In accordance with the requirements of CERCLA, as amended, and the NCP, it has been determined that no remedial action is necessary for the second operable unit to protect human health and the environment at the Site. Past, current, and future cleanup activities conducted at Genzale Plating Company property will remediate the significant contamination present at this Site, will contribute to the cleanup by natural attenuation of the downgradient groundwater, and will result in eventual compliance with Federal and State applicable or relevant standards. Groundwater monitoring of all monitoring wells and five-year reviews will be conducted as part of the long term response action for the first operable unit of Site remediation.

Jeanne M. Fox
Regional Administrator

9/29/95
Date

RECORD OF DECISION
DECISION SUMMARY

Genzale Plating Company

Franklin Square, Town of Hempstead, Nassau County, New York

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SITE NAME, LOCATION AND DESCRIPTION

The Genzale Plating Company site (Site) is located at 288 New Hyde Park Road in Franklin Square, Nassau County, New York (see Figure 1). The Site lies immediately adjacent to New Hyde Park Road and Kalb Road to the west and east, respectively (see Figure 1). The Genzale Plating Company property (property) occupies an area of approximately 27,000 square feet. The western portion of the property is occupied by a two-story building which houses the company office, plating operations, and chemical storage area. The eastern portion of the Site is undeveloped and serves as an outdoor storage yard and parking lot. Subsurface structures include four leach pits and related piping. The Genzale Plating Company has operated an electroplating business on the property since 1915.

Census data indicate that the population density in the vicinity of the Site is estimated to be on the order of 3,000 to 6,000 persons per square mile. The Site is located in a primarily residential area. Although small businesses do exist, they are generally restricted to New Hyde Park Road, both to the north and south of the Site.

Regionally, the naturally-occurring surface soils are a sandy loam which generally promote rapid infiltration of precipitation to the groundwater. Site specific soils and those of the surrounding area are, however, classified as urban soils. Greater surface runoff of precipitation is characteristic of developed areas (i.e., buildings and pavement). The ground surface in the eastern portion of the property is entirely unpaved and therefore exposed.

Directly underlying the Site is the Upper Glacial aquifer, which is designated with the federal classification II for a drinking water source. Although the aquifer in the vicinity of the property is not generally used as a potable water supply, three Jamaica Water Supply Company wells located within 1 to 1.5 miles of the Site do utilize this aquifer. Most water supply wells in the vicinity of the Site are screened within the deeper Magothy aquifer. The Magothy aquifer, underlying the glacial sediments, is the thickest hydrogeological unit on Long Island. In the vicinity of the Site, it is estimated to be approximately 350 to 400 feet thick. Although this aquifer is confined in southern Long Island, it is believed to be unconfined or under semi-confined conditions in the vicinity of the Site. In the Site area, groundwater flow is in a south-southwesterly direction.

The nearest downgradient surface water bodies to the Site are located approximately 3.2 miles southwest and 3.0 miles southeast, at Valley Stream State Park and Hempstead Lake State Park, respectively. The slope of the ground surface between the Site and these surface water bodies is less than 1 percent. The nearest wetland area is located approximately 3.0 miles to the southeast of the Site in Hempstead Lake State Park. There are no designated New York State significant habitat, agricultural land, nor historic or landmark sites directly or potentially affected by conditions at the Site. There are no endangered species or critical habitats within close proximity of the Site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The earliest record of operations at the Genzale facility dates back to 1952. At that time, processing was reported to have involved anodizing, as well as cadmium, zinc, and brass plating. In 1954, electroplating operations are on record as utilizing the following chemical compounds: copper cyanide, silver cyanide, zinc cyanide, cadmium oxide, chromic acid, nickel sulfate, sulfuric acid, nitric acid, and alkali cleaners. The relative quantities of chemicals used at the Site during this period are unknown as per the Nassau County Department of Health (NCDH), 1988.

In April 1981, the NCDH conducted an inspection of the Genzale facility. During this inspection, the NCDH noted that industrial wastewater from the plating facility was being discharged to at least three of four subsurface leaching pits located in the yard of the facility. NCDH representatives instructed Genzale personnel to discontinue discharge to the leaching pits at that time. In addition, wastewater samples were obtained from the leaching pits by NCDH and submitted for laboratory analysis for inorganic compounds only. The analytical results obtained from wastewater samples indicated heavy-metal concentrations of chromium, copper, nickel and zinc in excess of New York State Department of Environmental Conservation (NYSDEC) discharge standards.

In March 1982, the Genzale property owners contracted Gamma TEC Consulting Engineers of Commack, NY to excavate potentially contaminated materials from the leaching pits. An estimated total of 36 cubic yards of material were removed from three of the leaching pits. Because of a lack of financial resources available to the Genzale Plating Company (Company), leaching pit excavation was not completed.

Woodward-Clyde Consultants, Inc. (Woodward-Clyde) performed a site survey in April 1983, under contract to NYSDEC. Based on the results of this investigation, in June 1986 the Genzale site was added to the National Priorities List.

EPA sent a special notice letter to the Company on December 31, 1987. Based on the response to this letter, EPA determined that the Company was financially unable to conduct the investigative activities at the Site. Accordingly, EPA proceeded with the Remedial Investigation and Feasibility Study (RI/FS). A work plan for the RI/FS was completed in October 1988, however, field work could not be initiated because of problems obtaining access. In August 1989, EPA issued an Access Order to the Company so that field work could commence. As a result of the Company's failure to comply, EPA sought and was granted a court order in October 1989 which directed the Company to grant EPA access. Field work for the RI/FS began in November 1989 and was completed in February 1990.

Data collected during the field investigation were used to characterize the hydrogeological conditions in the vicinity of the Site; to evaluate the nature and extent of potential soil and groundwater contamination; to evaluate the fate and transport of such contamination; and to conduct a risk assessment associated with the existence of contaminants found at the Site. Additionally, a Feasibility Study was prepared to evaluate alternatives for cleaning up the Site.

A Record of Decision (ROD) was signed in March 1991. The selected remedy included a combination of treatment techniques to remediate soils and groundwater contaminated with volatile organic compounds (VOCs) and metals at the property. A soil vapor extraction system (SVE) has been installed at the facility to treat VOC contamination. This treatment will be followed by the excavation of soils to remove heavy metals contamination. Subsequent to the treatment of soils, a groundwater extraction and treatment system will be utilized to remove organic compounds and metals from the groundwater at the facility.

The ROD also called for a supplemental investigation to delineate more completely the extent of groundwater contamination beyond the property. This investigation was designated as the second operable unit of site remediation.

SCOPE AND ROLE OF OPERABLE UNIT

EPA has segmented the remedial work necessary to evaluate and mitigate contamination at the Site into operable units. The groundwater downgradient of the Genzale property has been designated as Operable Unit 2 (OU2) and is the subject of this Record of Decision. The OU2 investigation area extends approximately 600 feet east, 600 feet west, 500 feet north and 1,000 feet south of the Genzale property (see Figure 2).

The first operable unit (OU1) includes the treatment of on-site soils and groundwater in the immediate vicinity of the property, both of which are contaminated primarily with heavy metals and VOCs. The Remedial Design for treatment of facility soils has been completed and construction has been initiated. The design of the facility groundwater treatment system is expected to be completed by the Spring of 1996.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI and the Proposed Plan for the OU2 were released to the public on August 12, 1995. These documents were made available in both the administrative record file at the EPA Docket Room in Region II, New York and the information repository maintained at the Franklin Square Public Library. The notice of the public meeting and availability of the above-referenced documents appeared in Newsday on August 25, 1995 and August 12, 1995, respectively. A 30-day public comment period was held from August 12, 1995 to September 10, 1995.

On August 31, 1995, EPA conducted a public meeting at the Franklin Square Public Library, in Franklin Square, New York, to inform local officials and interested citizens about the Superfund process, present the results of the second operable unit RI/FS and EPA's preferred "No Further Action" remedy, and respond to any questions from area residents and other attendees.

REMEDIAL INVESTIGATION SUMMARY

The RI field program for OU2 was conducted from February through December 1994. Six monitoring wells at the facility and two downgradient wells had been previously installed during the OU1 pre-remedial design investigation. The OU2 RI included the installation of nine additional wells including seven downgradient monitoring wells and two upgradient (background) wells to delineate further the extent of the site-related groundwater contamination. In addition, a Nassau County monitoring well was sampled during both RIs. Groundwater monitoring wells were drilled on-site in both the shallow Upper Glacial aquifer, at a depth of approximately forty to sixty feet, and in the deep Upper Glacial aquifer at a depth of approximately seventy to ninety feet. Downgradient and background wells were drilled in only the shallow Upper Glacial aquifer at depths of forty to fifty feet.

Three rounds of groundwater sampling were conducted as part of the OU2 investigation. Samples were analyzed for VOCs and metals in Rounds I and II and metals only in Round III. Analytical data collected were used to characterize the hydrogeological conditions in the vicinity of the Site, evaluate the nature and extent of potential site-related groundwater contamination, and conduct an assessment of risk associated with contaminants in the groundwater upgradient and downgradient of the property.

Round I sampling, conducted in March 1994, was performed with a manual bailer. As is sometimes the case, this method of sample collection resulted in samples with high levels of turbidity. As a result, data indicated high metals concentrations, which were attributed to the suspended particles associated with the turbidity, and were not considered to be representative of the metals concentrations in the aquifer. Due to the high sample turbidity, metals data from Round I were not used in the Risk Assessment or the groundwater modeling. In an effort to minimize sample turbidity, Rounds II and III (June 1994 and December 1994) samples were collected using low-flow pumps.

Analytical data (see Table 1) suggest that VOC contamination in the groundwater is limited to the groundwater at the Genzale property, which is being addressed under OUI. The primary on-site VOCs of concern include 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), and tetrachlorethane (PCE). The highest levels of these contaminants were found in the on-site shallow aquifer during Round I and were detected at the following maximum concentrations: 870 micrograms per liter (ug/l) for 1,1,1-TCA, 540 ug/l for TCE, and 180 ug/l for PCE. The maximum concentrations for these contaminants detected in on-site groundwater during Round II were significantly lower at 290 ug/l for 1,1,1-TCA, 200 ug/l for TCE, and 72 ug/l for PCE.

Volatile constituents were also present at low concentrations within the deep groundwater beneath the Site. During Round I, 1,1,1-TCA was the only VOC detected in a deep well at a concentration above its maximum contaminant level (MCL) of 5 ug/l. 1,1,1-TCA was measured at 11 ug/l in MW-2D, which is located directly downgradient of two of the leach pits where high levels of VOC contamination were measured in the soils. Other VOCs were found in the deep on-site wells at very low concentrations, all below their respective MCLs. No VOCs were detected in the deep on-site wells during the Round II investigation. In addition, the highest levels of VOCs found in the shallow wells downgradient of the Site were all below their respective New York State MCLs for drinking water of 5 ug/l.

Although sampling of the deep Upper Glacial aquifer downgradient of the Site was not conducted, the RI data for the shallow Upper Glacial aquifer suggest that significant attenuation of contaminants has occurred. Round I VOC contaminant levels measured in the on-site deep wells were approximately an order of magnitude lower than the on-site shallow well contamination, with only one VOC in one deep well having exceeded its MCL. In addition, no Round II samples from deep wells and no shallow downgradient or upgradient well samples from Round I or II exceeded the MCL for any VOC. Further, contaminant levels measured in 1994 sampling events generally decreased in comparison to the levels measured during the 1990 RI of OU1. This reduction in contamination can be attributed to the attenuation which occurs as groundwater is transported vertically (from the shallow groundwater to deep groundwater at the Site) and laterally (from the shallow groundwater at the Site to shallow groundwater downgradient of the Site) through the aquifer.

Analytical data (see Table 2) indicated that although metals were detected in the monitoring wells installed beyond the Genzale property boundary, only chromium was present above its primary MCL of 50 ug/l. Levels of chromium in excess of 50 ug/l were detected in MW-4S (73 ug/l, Round II), MW-6S (54 ug/l, Round II), MW-7S (72 ug/l, Round II), MW-8S (82 ug/l, Round II), MW-9S (130 ug/l, Round III), MW-13S (132 ug/l, Round III), and MW-14S (107 ug/l, Round III). Chromium was not found above MCLs in any filtered samples taken from any upgradient or downgradient wells. In addition, samples containing chromium in excess of the MCL were sporadic, with no individual well samples exceeding the MCL in two consecutive rounds of sampling. The levels of contamination in the off-site wells were significantly lower than the wells on the Genzale property where chromium was detected at 2,360 ug/l and 1,460 ug/l in MW-2S (Rounds II and III, respectively), 380 ug/l in MW-1S (Round II); and 206 ug/l in MW-3S (Round II).

Analysis of field, trip and deionized water blanks during the three rounds of sampling indicated detectable levels of both metals and VOCs. It can be assumed that because of the levels detected in the blanks, the levels measured in the groundwater samples, if impacted, would yield values that are biased high. Therefore, the data was considered to be appropriate for use in the preparation of a conservative assessment of risk and plume delineation.

Sampling also indicated that iron and manganese are present in some wells at levels above their respective secondary drinking water standards. However, the secondary MCLs for iron and manganese are based on aesthetic properties and are intended to prevent potential problems, such as poor taste, odor and staining of plumbing fixtures and do not specifically present a health risk.

SUMMARY OF SITE RISKS

In conjunction with the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future conditions related to the off-property groundwater. The baseline risk assessment estimates the human health and ecological risk which could result from the downgradient groundwater, if no remedial action were taken.

A four-step process was utilized for assessing human health risks resulting from the downgradient groundwater contamination to determine a reasonable maximum exposure scenario. Hazard Identification identifies the contaminants of concern in the downgradient groundwater based on several factors such as frequency of occurrence, toxicity, and concentration. Exposure Assessment estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathway (e.g., ingesting contaminated well-water) by which humans are potentially exposed. Toxicity Assessment determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization summarizes and combines outputs of the exposure and toxicity assessments to provide quantitative assessment of risks related to the downgradient groundwater.

The baseline risk assessment began with selecting contaminants of concern which would be representative of risks associated with the groundwater beyond the Genzale property boundary. These contaminants included acetone, benzene, bromoform, PCE, toluene, 1,1-dichloroethane, 1,1,1-TCA, TCE, aluminum, trivalent chromium, hexavalent chromium, manganese, nickel, lead, and zinc.

Two exposure scenarios were examined for potential future and current residents. These were inhalation of volatile organic chemicals while showering (see Table 3) and ingestion of contaminated drinking water (see Table 4) from the shallow Upper Glacial aquifer. The ingestion scenario was selected for the purposes of determining the most conservative risk characterization even though it is assumed that no residents are currently consuming the groundwater via private shallow wells. (The verity of this assumption will be confirmed during a private well survey to be performed in conjunction with the No Further Action remedy.) The populations evaluated included current nearby residents and future nearby residents. An exposure assessment was conducted to estimate the magnitude, frequency, and duration of actual and/or potential exposures to the chemicals of concern via all pathways by which humans are potentially exposed. The assumptions used in the risk assessment were very conservative which would overestimate risks for these pathways.

EPA's acceptable cancer risk range is 10^{-4} to 10^{-6} which can be interpreted to mean that an individual may have between a one in ten thousand to a one in a million increased chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions a site.

The combined risk levels for ingestion and inhalation from potential exposure to the downgradient groundwater resulted in a cancer risk level of 9.2×10^{-6}. The results of the baseline risk assessment indicate that the downgradient groundwater poses no unacceptable carcinogenic risks to human health.

To assess overall potential for noncarcinogenic effects posed by the contaminants a site, EPA has developed the hazard index (HI). The HI measures the assumed simultaneous subthreshold exposures to several chemicals which could result in an adverse health effect. An HI value of greater than one may pose a noncarcinogenic risk. A noncancer hazard index of 0.35 was calculated for the downgradient groundwater, considering both inhalation and ingestion as potential pathways.

An assessment of ecological risk considered potential exposure routes of contamination emanating from the Site to terrestrial wildlife. The only potential route of exposure to wildlife is by contaminant transport through the groundwater and discharge via groundwater into surface waters. The nearest surface water bodies to the Site are 3.2 miles southwest and 3 miles southeast at Valley Stream State Park and Hempstead Lake State Park, respectively. Based on the results of the RI, impacts to ecological receptors from contamination associated with the Site are unlikely.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- exposure parameter estimation
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis errors can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the Site, and it is highly unlikely to underestimate actual risks related to the Site.

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the OU1 response action selected in the OU1 ROD, may present an imminent danger to public health, welfare or the environment.

DESCRIPTION OF THE ALTERNATIVES

CERCLA requires that each selected remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

Two remedial alternatives were considered in the FS. These were:

- GW-1: No Action
- GW-2: Pumping/Filtration/Reinjection

"Time to implement" is defined as the period of time needed to implement the remedy (i.e., the amount of time needed for the construction of a treatment facility); it does not include the time required to design the remedy, procure contracts for design and construction, negotiate with responsible parties for implementation of the remedy, conduct operation and maintenance, or conduct long-term monitoring.

It should be noted that the remedial alternatives assume that the remedy for the groundwater and soils at the Genzale property is currently being implemented. The groundwater remedy calls for the removal of VOCs from the groundwater via air stripping and the removal of metals via chemical precipitation and filtration. The soil treatment remedy calls for the removal of VOCs via soil vapor extraction (SVE) and subsequent excavation and treatment for metals contamination.

Alternative GW-1: No Further Action

Capital Cost:	$ 0
Annual O & M Cost:	$ 0
Present Worth:	$ 0
Time to Implement:	N/A

The Superfund program requires that the no action alternative be considered as a baseline for comparison with other alternatives. The No Further Action alternative would rely on natural attenuation to reduce contaminants in the downgradient groundwater to below State and Federal drinking and groundwater standards. The aquifer's inherent ability to dilute and adsorb the contaminants would result in natural flushing of the aquifer. The soil and groundwater remediation which will be implemented under OU1 would minimize any additional contribution to the contaminants in the downgradient groundwater. It is anticipated, based on groundwater modeling performed during the OU1 Remedial Design, that natural attenuation of groundwater, in addition to the remediation provided under OU1, would result in the reduction of contaminants in the downgradient groundwater to levels below State and Federal drinking and groundwater standards in about 18 to 19 years depending on pumping rates and the location of the reinjection wells. The No Further Action alternative would rely on a long-term monitoring program to confirm that the contaminants of concern are attenuating. Approximately twelve monitoring wells would be utilized in order to sample the groundwater from the shallow aquifer to track contaminant migration. This monitoring would be conducted as part of the OU1 groundwater remediation, and as a result, no monitoring costs would be incurred as part of Alternative GW-1.

In addition to the monitoring program, EPA intends to conduct a private well survey to determine if any residential wells are currently in use in the vicinity of the Site.

Alternative GW-2: Pumping/Filtration/Reinjection

Capital Cost:	$ 1,634,200
Annual O & M Cost:	$ 375,500
Present Worth:	$ 5,351,100
Time to Implement:	Three years

The major features of this alternative would include groundwater collection, treatment, and reinjection.

The collection system would consist of two extraction wells installed in the downgradient portion of the plume in the Upper Glacial aquifer to a depth of approximately 70 feet. The groundwater would be pumped at a rate of approximately 100 gallons per minute (gpm) and piped to a treatment facility where metals would be removed by a dual-media (sand/anthracite) pressure filtration process. The treatment system would be designed to effectively reduce the chromium in the extracted groundwater to levels below the Federal and New York State drinking and groundwater standards. Any sludge generated during the metal-removal process would be disposed of in a RCRA Subtitle C landfill in accordance with Land Disposal Restrictions. The treated groundwater would then be returned to the aquifer through four reinjection wells. The exact location of the extraction and reinjection wells would be determined during the design phase. It can be expected, however, that because the downgradient plume is not on the Genzale property, public or private lands would need to be acquired to construct and operate the groundwater treatment system. Groundwater modeling has indicated that groundwater extraction, filtration, and reinjection would result in the reduction of contaminants in the downgradient groundwater to levels below State and Federal drinking and groundwater standards in approximately 14 years.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment; compliance with applicable or relevant and appropriate requirements (ARARs); short-term effectiveness; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume; implementability; cost; and community and state acceptance.

The evaluation criteria are described below:

▲ Overall Protection of Human Health and the Environment addresses whether or not a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

▲ Compliance with ARARs addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements and/or provide grounds for invoking a waiver.

▲ Long-term Effectiveness and Permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

▲ Reduction of Toxicity, Mobility, or Volume Through Treatment refers to the anticipated performance of the treatment technologies, with respect to these parameters, that a remedy may employ.

▲ Short-term Effectiveness addresses the period of time needed to achieve protection from any adverse impacts on human health and the environment that may be posed during the construction and implementation period of the alternative.

▲ Implementability involves the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

- ▲ Cost includes both capital and operation and maintenance costs. Cost comparisons are made on the basis of present worth values. Present worth values are equivalent to the amount of money which must be invested to implement a certain alternative at the start of construction to provide for both construction costs and O&M costs over time.

- ▲ State Acceptance indicates whether, based on its review of the RI/FS report and Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

- ▲ Community Acceptance is assessed in the attached Responsiveness Summary and refers to the public's general response to the alternatives described in the RI/FS report and the Proposed Plan.

The following section compares the relative performance of each groundwater alternative.

▲ Overall Protection of Human Health and the Environment

Modeling predicts that the groundwater extraction and treatment proposed in Alternative GW-2 would result in the reduction of downgradient chromium contamination to State and Federal groundwater and drinking water standards in 14 years. Modeling of the No Further Action alternative, which would rely on natural attenuation and the implementation of the OU1 remedy, predicts that these standards would be met in approximately 18 years.

As noted earlier, the risk assessment indicated that the levels of contaminants in the downgradient groundwater present no significant human health risk under current or future uses, if left unremediated. The contaminants would, however, continue to migrate under the No Further Action alternative until attenuated. In addition, because groundwater is not known to discharge to any surface water bodies or wetlands in the vicinity of the site, impacts to ecological receptors from the implementation of the No Further Action alternative is unlikely.

▲ Compliance with ARARs

Both alternatives would eventually comply with ARARs. Modeling predicts that the treatment of the groundwater would result in the reduction of downgradient chromium contamination to State and Federal groundwater and drinking water standards in approximately 18 years for Alternative GW-1 and 14 years for Alternative GW-2. In addition, for Alternative GW-2, any sludge generated during the metals removal process would be disposed of in a RCRA Subtitle C landfill in accordance with Land Disposal Restrictions.

▲ Long-term Effectiveness and Permanence

Both scenarios are essentially equivalent in their long-term effectiveness and permanence; they only vary in the number of years it would take to achieve Federal and State drinking water and groundwater standards in the aquifer, that is, approximately 14 years for Alternative GW-1 and approximately 18 years for Alternative GW-2.

Alternative GW-2 would result in greater long-term exposure to workers who would come into contact with the contaminated sludges from the treatment system. However, proper health and safety procedures would be implemented to prevent or minimize exposure to these materials. No treatment sludge would be generated, if the No Further Action scenario were implemented.

▲ Reduction in Toxicity, Mobility, or Volume Through Treatment

Under both alternatives, the downgradient chromium contamination eventually decreases to levels below State and Federal drinking water and groundwater standards, thereby ultimately reducing the volume and toxicity of the contamination. Only Alternative GW-2, however, employs treatment to achieve such reduction. Extraction and treatment of the downgradient chromium contamination (Alternative GW-2) to levels below Federal and State drinking water and groundwater standards are estimated to take 14 years, while natural attenuation is estimated to take approximately 18 years under Alternative GW-1. Therefore, Alternative GW-2 would provide the benefits of reduction of volume and toxicity of the downgradient chromium contamination in a slightly shorter time frame. By capturing a significant portion of the off-site groundwater contamination, Alternative GW-2 would result in the greater reduction in mobility of the chromium contamination, whereas Alternative GW-1 would allow for migration of the contamination. This migration, however, will be associated with decreasing levels of the contaminant as a result of the effects of natural attenuation and on-site treatment of soils and groundwater.

▲ Short-term Effectiveness

The implementation of Alternative GW-1 would result in no additional risk to the community or Site workers, because no major construction activities would be conducted.

The implementation of Alternative GW-2 (i.e., extraction and reinjection wells, piping, etc.) would have minor negative impacts on residents in the study area. These impacts would be associated with the disruption of traffic, excavation on public and private land, and noise and fugitive dust emissions. Appropriate measures, however, would be implemented to minimize these impacts. In addition, any potential health and safety risks to on-site workers during the construction phase of Alternative GW-2 would be minimized by strict adherence to all applicable occupational health and safety procedures and standards.

▲ Implementability

The technology proposed for Alternative GW-2 is proven and reliable in attaining cleanup goals, however, Alternative GW-2 would be significantly more complicated to implement than Alternative GW-1, the No Further Action alternative. The design of the groundwater extraction system would take approximately 1.5 years to complete. Another 1.5 years would be required to complete construction of that system. In addition, public or private land would have to be acquired in order to place the extraction and/or reinjection wells, and access and/or easements would be required prior to the installation of the piping and pumps needed to convey treated and untreated groundwater to and from the groundwater treatment system. This could potentially result in some delays associated with the implementation of Alternative GW-2.

▲ Cost

According to the present worth cost estimates for the alternatives evaluated, Alternative GW-2 ($5,351,100) would be significantly more costly to implement than Alternative GW-1. The annual cost of operating and maintaining the groundwater extraction/treatment system is estimated to be $375,500.

Although Alternative 1 would include long-term monitoring of the groundwater, there are no costs associated with this alternative as the groundwater monitoring wells are already in place and the monitoring would be conducted as part of the OU1 groundwater remediation.

▲ Community Acceptance

In general, the community concurs with the selected remedy. Responses to comments raised during the comment period are included in the attached Responsiveness Summary.

▲ State Acceptance

NYSDEC concurs with the selected remedy.

SUMMARY OF SELECTED REMEDY

EPA and DEC have determined that Alternative GW-1, No Further Action, is the appropriate remedy for the second operable unit of site remediation. Based on the findings of the OU2 RI performed at the Site, downgradient groundwater contamination was determined to be very limited in extent and not to pose any significant risk to human health and the environment.

Additionally, remedial actions called for in the OU1 ROD, specifically the source treatment via soil vapor extraction and excavation and off-site disposal of contaminated soils followed by the groundwater remediation, will result in further reduction of contaminant concentrations in the downgradient groundwater.

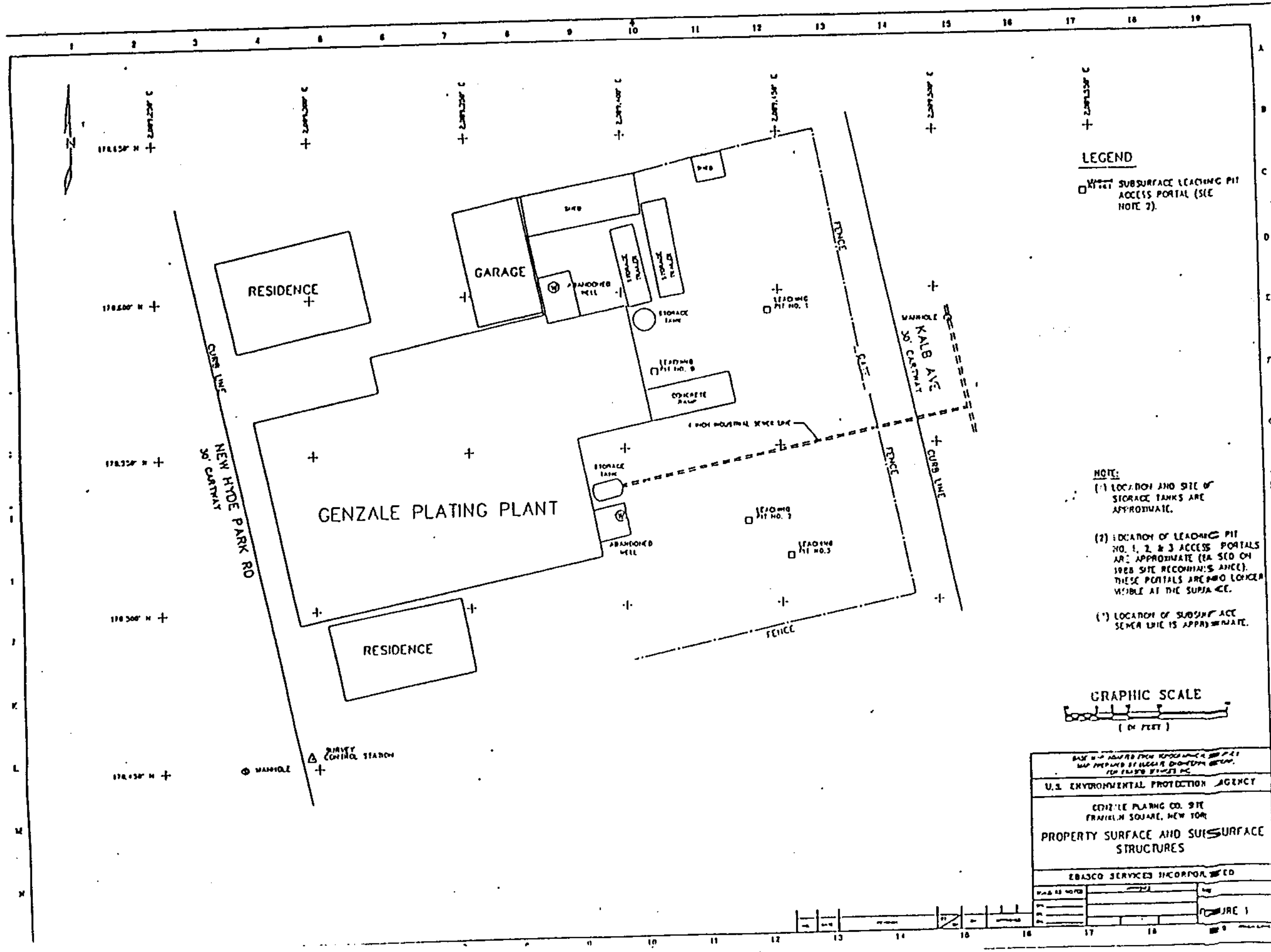
Modelling has predicted that the time necessary to achieve MCLs in the downgradient groundwater is only slightly less for Alternative GW-2 (14 years with pumping and treating) than for Alternative GW-1 (18 years with no active remediation). Hence, there would be little benefit derived and a significant cost incurred by selecting Alternative GW-2 over Alternative GW-1.

DOCUMENTATION OF SIGNIFICANT CHANGES

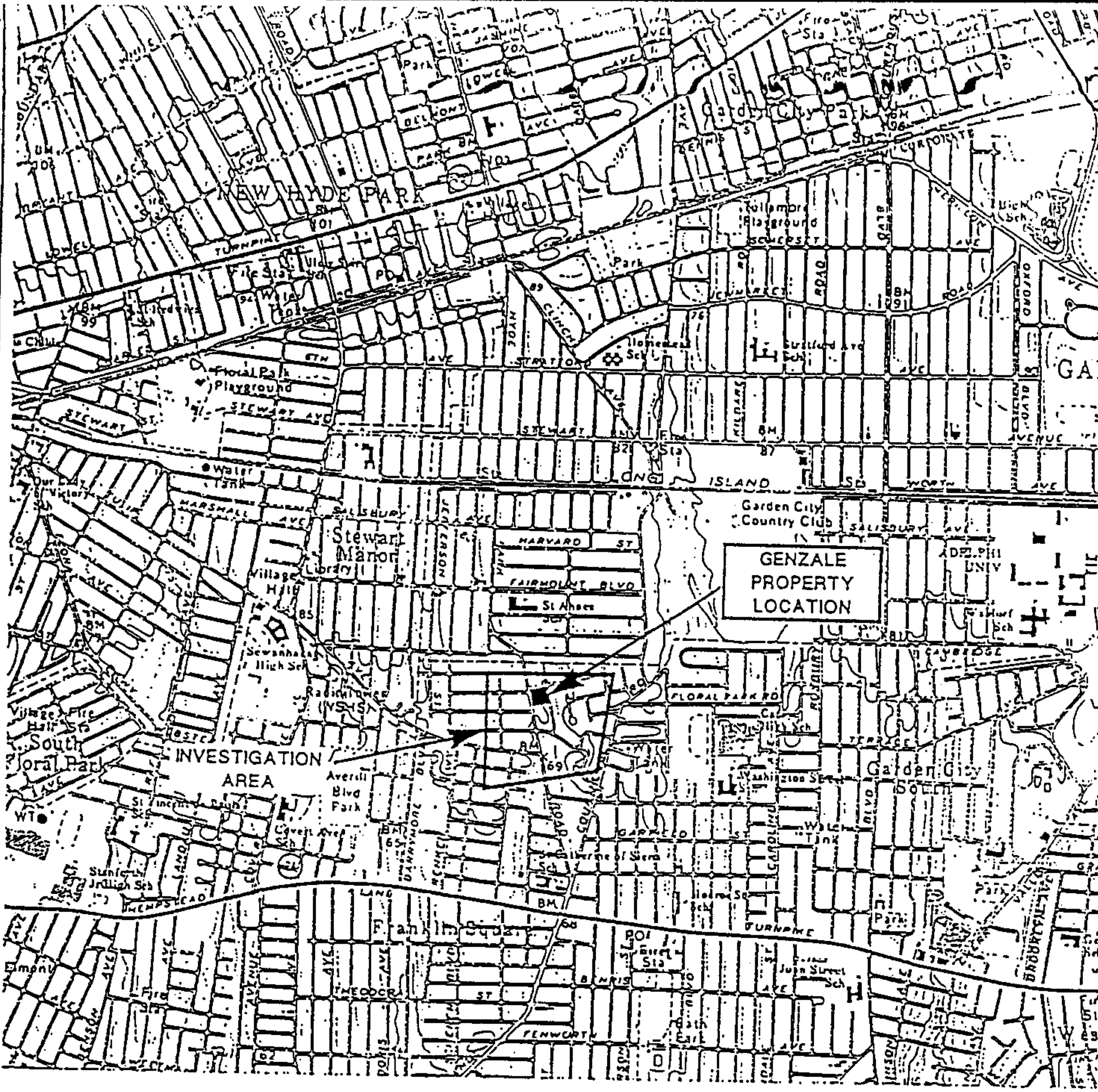
There are no significant changes from the preferred alternative, as presented in the Proposed Plan.

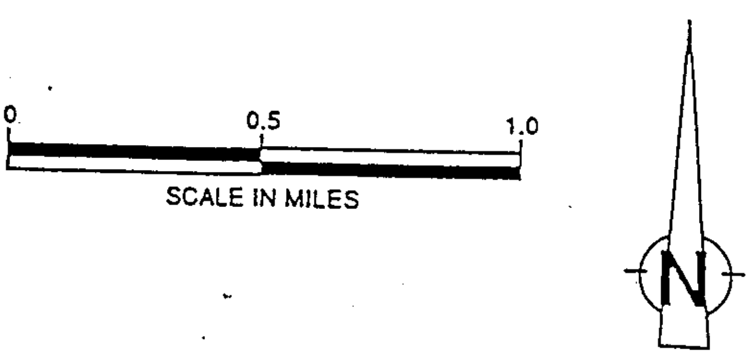
APPENDIX I

FIGURES



LEGEND
SUBSURFACE LEACHING PIT ACCESS PORTAL (SEE NOTE 2).
NOTE:
(1) LOCATION AND SIZE OF STORAGE TANKS ARE APPROXIMATE.
(2) LOCATION OF LEACHING PIT NO. 1, 2, & 3 ACCESS PORTALS ARE APPROXIMATE. THESE PORTALS ARE NO LONGER VISIBLE AT THE SURFACE.
(3) LOCATION OF SUBSURFACE SEWER LINE IS APPROXIMATE.
GRAPHIC SCALE
(IN FEET)
GENZALE PLATING PLANT
RESIDENCE
RESIDENCE
GARAGE
SHED
SHED
STORAGE TANK
STORAGE TANK
ABANDONED WELL
ABANDONED WELL
CONCRETE RAMP
LEACHING PIT NO. 1
LEACHING PIT NO. 2
LEACHING PIT NO. 3
FENCE
FENCE
FENCE
GATE
CURB LINE
CURB LINE
KALB AVE
30' CARTWAY
NEW HYDE PARK RD
30' CARTWAY
MANHOLE
MANHOLE
SURVEY CONTROL STATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
FRANKLIN SQUARE, NEW YORK
PROPERTY SURFACE AND SUBSURFACE STRUCTURES
EBASCO SERVICES INCORPORATED





BASE MAP: USGS (1969), Lynbrook Quadrangle

U.S. ENVIRONMENTAL PROTECTION AGENCY

REMEDIAL INVESTIGATION REPORT
GENZALE PLATING COMPANY

FIGURE 2
OU-2 INVESTIGATION AREA

EBASCO SERVICES INCORPORATED

APPENDIX II

TABLES

TABLE 1

SUMMARY OF VOLATILE ORGANIC GROUNDWATER ANALYTICAL RESULTS
GENZALE PLATING OU-2

ANALYTE	BENCHMARK LEVEL FOR COMPARISON	ON-SITE WELLS				OFF-SITE WELLS		BACKGROUND WELLS	
		ROUND I		ROUND II		ROUND I	ROUND II	ROUND I	ROUND II
		SHALLOW	DEEP	SHALLOW	DEEP	SHALLOW	SHALLOW	SHALLOW	SHALLOW
hloromethane	5	--	--	ND-1$_J$	--	--	ND-1	--	--
lethylene chloride	5	ND-0.8$_J$	ND-0.1$_J$	--	--	--	--	--	--
,1-Dichloroethene	5	ND-4	--	--	--	--	--	--	--
,1-Dichloroethane	5	ND-4	--	--	--	--	--	--	--
is-1,2-Dichloroethene	5	ND-9	ND-3	--	--	--	--	--	--
rans-1,2-Dichloroethane	5	ND-0.1$_J$	ND-0.2$_J$	--	--	--	--	--	--
Chloroform	7	ND-0.3$_J$	ND-0.2$_J$	--	--	--	--	--	--
-Butanone	50	--	--	--	--	ND-4$_J$	--	--	--
,1,1-Trichloroethane	5	22$_J$-870	ND-11	ND-290$_J$	--	ND-2$_J$	ND-2	--	--
Trichloroethene	5	12-540	ND-4	ND-200$_J$	--	ND-0.6$_J$	--	--	--
Tetrachloroethene	5	4-180	0.04$_J$-0.7$_J$	ND-72$_J$	--	ND-1$_J$	ND-1$_J$	0.1$_J$-0.3$_J$	--
Toluene	5	--	--	--	--	ND-0.9$_J$	--	--	--
Total Volatiles	100	38.07-1608.2	0.08-18.89	1-562	--	ND-5.2	ND-2	0.1$_J$-0.3$_J$	--
Volatile TICs	NC	12$_{JN}$-180$_{JN}$	ND-2.1$_{JN}$	3$_{JN}$-90$_{JN}$	R	ND-50.4$_{JN}$	ND-307$_{JN}$	--	173$_{JN}$-241$_{JN}$

NOTES:

1. All analyte results are shown in ug/l (ppb).
2. Benchmark levels for comparison are taken from Drinking Water Maximum Contaminant Levels (MCLs), USEPA Drinking Water Regulations and Health Advisories [Office of Water, December 1993]; New York State MCLs, New York State Department of Health (NYSDOH), [Bureau of Public Water Supply, Chapter 1 - State Sanitary Code (as of February 1992)]; or New York State Ambient Water Quality Standards and Guidance Values, New York State Department of Environmental Conservation (NYSDEC), [Division of Water, October 1993]. The lowest, most conservative value of the three sets of criteria was chosen for comparative analysis.
3. Monitoring wells are divided as follows:
   - On-site wells (shallow) = MW1S, MW2S and MW3S.
   - On-site wells (deep) = MW1D, MW2D and MW3D.
   - Off-site wells = MW4S, MW5S, MW6S, MW7S, MW8S, MW9S, MW10S, MW13S, MW14S, and NCDPW-9984.
   - Background wells = MW11S and MW12S.
4. Boldface entries equal or exceed their respective benchmark level in at least the maximum amount per concentration range.
5. Qualifiers are:
   - ND or - = Not detected at analytical method detection limits.
   - J = Estimated value.
   - R = Rejected value.
   - N = Presumptively present.
   - NC = No criteria available.
6. Volatile organics were not sampled for during the Round III sampling event.

TABLE 2

SUMMARY OF METALS (FILTERED AND UNFILTERED) GROUNDWATER ANALYTICAL RESULTS FOR ON-SITE WELLS
GENZALE PLATING OU-2

ANALYTE		BENCHMARK LEVEL FOR COMPARISON	ON-SITE WELLS					
			ROUND I		ROUND II		ROUND III	
			SHALLOW	DEEP	SHALLOW	DEEP	SHALLOW	DEEP
Aluminum	Unfiltered	50-200	3140-9860	236-1150,	128-203	181-751	--	--
	Filtered	50-200	ND-30.3,	--	ND-133	ND-127	ND-232	--
Arsenic	Unfiltered	25	ND-7.7,	--	--	--	--	--
	Filtered	25	--	--	--	--	--	--
Barium	Unfiltered	1000	68.2-184	32.8-52.1,	ND-64.1	33.7-54.8	--	--
	Filtered	1000	21.3,-64.4	27.9-39.1,	ND-79.5	33.3-46.5	--	--
Beryllium	Unfiltered	3	--	--	--	--	--	--
	Filtered	3	--	--	--	--	--	--
Cadmium	Unfiltered	5	ND-25.2	ND-8.4	ND-10,	--	--	--
	Filtered	5	ND-6.9	--	ND-5.3,	--	ND-5	--
Calcium	Unfiltered	NC	20,300,-26,200	9700-13,700	20,600-29,400	9900-16,000	14,000-19,000	9000-13,000
	Filtered	NC	18,400,-25,100	8770-13,700	22,600-29,400	9480-15,900	14,000-20,000	10,000-14,000
Chromium	Unfiltered	50	3200-8700	74.0,-334	201-2630	15.9-76.1	12-1460	ND-92
	Filtered	50	11.5,-1450	18.3,-25.5,	27.0-2560	ND-22.6	ND-1480	ND-21
Cobalt	Unfiltered	NC	21.9,-23.2	ND-10.6	ND-13.2	--	--	--
	Filtered	NC	ND-5.8	ND-5.9	ND-15.1	--	--	--
Copper	Unfiltered	200	70.9-3270	18.6,-51.7	ND-360	ND-65.1	ND-224	ND-48
	Filtered	200	ND-301,	ND-7.2	ND-341	ND-47.1	ND-233	--
Iron	Unfiltered	300	25,800-38,800,	1250-4820,	2190	1860	--	ND-430,
	Filtered	300	ND-33.1,	30.3,-245	ND-213	ND-417	--	--
Lead	Unfiltered	15	30.4-446	10.9,-18.0	--	--	--	--
	Filtered	15	-	--	--	--	--	--

TABLE 2 (cont.)

SUMMARY OF METALS (FILTERED AND UNFILTERED) GROUNDWATER ANALYTICAL RESULTS FOR ON-SITE WELLS
GENZALE PLATING OU-2

ANALYTE		BENCHMARK LEVEL FOR COMPARISON	ON-SITE WELLS					
			ROUND I		ROUND II		ROUND III	
			SHALLOW	DEEP	SHALLOW	DEEP	SHALLOW	DEEP
Magnesium	Unfiltered	35,000	6160,8100	2370-3400	5230-6490	2400-4020	--	--
	Filtered	35,000	4670,-6000	2140-3340	5230-6600	2230-3930	--	--
Manganese	Unfiltered	50	512,-750	33.6-118	32.3,-51.3	8.8-15.7	ND-29	ND-23
	Filtered	50	17.1,-42.3	19.0,-73.8	25.9,-51.5	2.4-10.2	ND-30	ND-22
Nickel	Unfiltered	WD	76.5-5540	40.4,-2540	ND-5600	ND-29.7	ND-2360	ND-101
	Filtered	WD	13.7-3090	20.5,-1980	ND-5590	ND-31.7	ND-2470	ND-94
Potassium	Unfiltered	NC	530-3500,	ND-3650,	ND-4800	2970-3270	--	--
	Filtered	NC	2110,-2770	1490-3850,	ND-2780	2880-3040	--	--
Selenium	Unfiltered	10	--	--	--	--	--	--
	Filtered	10	--	--	--	--	--	--
Silver	Unfiltered	50	ND-26.0,	ND-9.4,	--	--	--	--
	Filtered	50	--	--	--	--	--	--
Sodium	Unfiltered	20,000	25,100,-48,900	12,700,-22,700	27,800,-61,000	20,200,-26,800,	33,000-39,000	21,000-30,000
	Filtered	20,000	22,800,-44,500	14,100,-20,700	31,500-61,000	20,500-26,200	34,000-42,000	22,000-31,000
Thallium	Unfiltered	2	--	--	--	--	--	--
	Filtered	2	--	ND-2.8,	--	--	--	--
Vanadium	Unfiltered	NC	ND-42.6,	ND-2.9,	--	--	--	--
	Filtered	NC	--	--	ND-4.8	--	--	--
Zinc	Unfiltered	300	91.2,-2250	30.0,-82.8	ND-467,	R	ND-307	--
	Filtered	300	12.6-376,	13.6,-41.4,	49-520	R	ND-334	--

TABLE 2 (cont.)

TABLE

SUMMARY OF METALS (FILTERED AND UNFILTERED) GROUNDWATER ANALYTICAL RESULTS FOR ON-SITE WELLS
GENZALE PLATING OU-2

NOTES:

1. All analyte results are shown in ug/l (ppb).
2. Benchmark levels for comparison are taken from Drinking Water Maximum Contaminant Levels (MCLs), USEPA Drinking Water Regulations and Health Advisories [Office of Water, December 1993]; New York State MCLs, New York State Department of Health (NYSDOH), [Bureau of Public Water Supply, Chapter 1 - State Sanitary Code (as of February 1992)]; or New York State Ambient Water Quality Standards and Guidance Values, New York State Department of Environmental Conservation (NYSDEC), [Division of Water, October 1993]. The lowest, most conservative value of the three sets of criteria was chosen for comparative analysis.
3. Monitoring wells are divided as follows:
   - On-site wells (shallow) = MW1S, MW2S and MW3S.
   - On-site wells (deep) = MW1D, MW2D and MW3D.
   - Off-site wells = MW4S, MW5S, MW6S, MW7S, MW8S, MW9S, MW10S, MW13S, MW14S, and NCDPW-9984.
   - Background wells = MW11S and MW12S.
4. Boldface entries equal or exceed their respective benchmark level in at least the maximum amount per concentration range.
5. Qualifiers are:
   - ND or - = Not detected at analytical method detection limits.
   - J = Estimated value.
   - R = Rejected value.
   - NC = No criteria available.
   - WD = MCL was withdrawn by EPA.

TABLE 2 (cont.)

TABLE

SUMMARY OF METALS (FILTERED AND UNFILTERED) GROUNDWATER ANALYTICAL RESULTS FOR OFF-SITE AND BACKGROUND WELLS
GENZALE PLATING OU-2

ANALYTE		BENCHMARK LEVEL FOR COMPARISÓN	OFF-SITE WELLS			BACKGROUND WELLS		
			ROUND I	ROUND II	ROUND III	ROUND I	ROUND II	ROUND III
			SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW
Aluminum	Unfiltered	50-200	627,-15,800,	ND-3700	ND-924	428-1390,	--	--
	Filtered	50-200	ND-308	--	--	ND-20.0,	--	--
Arsenic	Unfiltered	25	ND-19.7,	--	--	--	--	--
	Filtered	25	ND-3.2	--	--	--	--	--
Barium	Unfiltered	1000	38.2,-296	--	--	20.8,-25.9	--	--
	Filtered	1000	17.3-94.3	--	--	9.5,-22.6	--	--
Beryllium	Unfiltered	3	ND-2.0	--	--	--	--	--
	Filtered	3	--	--	--	--	--	--
Cadmium	Unfiltered	5	ND-8.9	--	--	--	--	--
	Filtered	5	ND-3.3	--	--	ND-3.8	--	--
Calcium	Unfiltered	NC	13,900-43,400	14,000-35,000	10,000-41,000	16,300-18,600,	13,000-19,000	13,000-20,000
	Filtered	NC	12,700-39,800	14,000-35,000	11,000-44,000	14,600-18,700	13,000-19,000	14,000-22,000
Chromium	Unfiltered	50	26.7,-805	ND-82,	ND-132	100-150,	ND-22,	ND-21
	Filtered	50	--	--	ND-34	--	--	--
Cobalt	Unfiltered	NC	ND-34.0,	--	--	2.8,-6.1	--	--
	Filtered	NC	ND-5.6	--	--	ND-5.1	--	--
Copper	Unfiltered	200	18.7-69.2	ND-29	--	8.2,-11.7	--	--
	Filtered	200	ND-13.3	--	--	--	--	--
Iron	Unfiltered	300	1950,-75,200,	ND-7840	ND-4000,	1750-4270,	ND-247	--
	Filtered	300	ND-98.2	ND-158	ND-210	18.5-31.9,	--	--
Lead	Unfiltered	15	9.1-68.0	ND-5.6	ND-7	ND-3.6,	--	--
	Filtered	15	--	--	--	--	--	--

TABLE 2 (cont.)

SUMMARY OF METALS (FILTERED AND UNFILTERED) GROUNDWATER ANALYTICAL RESULTS
FOR OFF-SITE AND BACKGROUND WELLS
GENZALE PLATING OU2

ANALYTE		BENCHMARK LEVEL FOR COMPARISON	OFF-SITE WELLS			BACKGROUND WELLS		
			ROUND I	ROUND II	ROUND III	ROUND I	ROUND II	ROUND III
			SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW
Magnesium	Unfiltered	35,000	2510,-13,000	ND-10,000	ND-10,000	2050-3680,	--	--
	Filtered	35,000	1870-10,400	ND-10,000	ND-11,000	1830-3540,	--	--
Manganese	Unfiltered	50	95.6,-2280	ND-423	ND-147	47.7-87.6,	--	--
	Filtered	50	15.0-384	ND-507	ND-148	9.0,-12.7	--	--
Nickel	Unfiltered	WD	34.4,-297	ND-161	ND-117	8.1,-69.2	--	--
	Filtered	WD	ND-112	ND-73	ND-69	--	--	--
Potassium	Unfiltered	NC	ND-5800,	--	--	710-1880,	--	--
	Filtered	NC	1780-4210	--	--	1630-3030	--	--
Selenium	Unfiltered	10	ND-2.3,	--	--	ND-2.2,	--	--
	Filtered	10	--	--	--	--	--	--
Silver	Unfiltered	50	ND-12.0,	--	--	ND-14.0,	--	--
	Filtered	50	--	--	--	--	--	--
Sodium	Unfiltered	20,000	9050-50,000	8000-39,000	10,000-39,000	14,800-16,300,	9000-11,000	12,000-18,000
	Filtered	20,000	7970-48,300	9000-44,000	11,000-43,000	13,100-14,700,	10,000-11,000	12,000-21,000
Thallium	Unfiltered	2	ND-1.6	--	--	--	--	--
	Filtered	2	--	--	--	--	--	--
Vanadium	Unfiltered	NC	12.4-59.6,	--	--	ND-4.7,	--	--
	Filtered	NC	--	--	--	--	--	--
Zinc	Unfiltered	300	36.1,-133	ND-35	ND-27	13.9,	--	--
	Filtered	300	5.3,-34.6,	ND-84	ND-21	2.8,-13.6	ND-30	--

TABLE 2 (cont.)

SUMMARY OF METALS (FILTERED AND UNFILTERED) GROUNDWATER ANALYTICAL RESULTS
FOR OFF-SITE AND BACKGROUND WELLS
GENZALE PLATING OU2

NOTES:

1. All analyte results are shown in ug/l (ppb).
2. Benchmark levels for comparison are taken from Drinking Water Maximum Contaminant Levels (MCLs), USEPA Drinking Water Regulations and Health Advisories [Office of Water, December 1993]; New York State MCLs, New York State Department of Health (NYSDOH), [Bureau of Public Water Supply, Chapter I - State Sanitary Code (as of February 1992)]; or New York State Ambient Water Quality Standards and Guidance Values, New York State Department of Environmental Conservation (NYSDEC), [Division of Water, October 1993]. The lowest, most conservative value of the three sets of criteria was chosen for comparative analysis.
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   - On-site wells (deep) = MW1D, MW2D and MW3D.
   - Off-site wells = MW4S, MW5S, MW6S, MW7S, MW8S, MW9S, MW10S, MW13S, MW14S, and NCDPW-9984.
   - Background wells = MW11S and MW12S.
4. Boldface entries equal or exceed their respective benchmark level in at least the maximum amount per concentration range.
5. Qualifiers are:
   - ND or - = Not detected at analytical method detection limits.
   - J = Estimated value.
   - R = Rejected value.
   - NC = No criteria available.
   - WD = MCL was withdrawn by EPA.

TABLE 3

RESIDENTIAL SHOWER SCENARIO

EXPOSURE PARAMETERS:	CANCER	NONCANCER
Exposure Duration (Years)	30	30
Exposure Frequency (Days/Y)	350	350
Inhalation Rate (M3/HR)	0.6	0.6
Time of Shower (HR)	0.2	0.2
Time After Shower (HR)	0.33	0.33
Water Flow Rate (L/HR)	750	750
Bathroom Volume (M3)	12	12
Averaging Time (D)	25550	10950
Body Weight (KG)	50	50

TOTAL CANCER RISK:9.32E-07
TOTAL HI:7.32E-02

					CANCER			NONCANCER		
COMPOUND	GW CONC (MG/L)	VOL. FRX (UNITLESS)	C(aMAX)	AIR CONC. (MG/M3)	DOSE (MG/KG/D)	SLOPE FACTOR	CANCER RISK	DOSE (MG/KG/D)	INHALATION REF. DOSE	HAZARD QUOTIENT
Acetone	5.97E-04	0.5	0.00373125	0.0030272	7.91E-06		0.00E+00	1.85E-05		
Benzene	6.33E-04	0.5	0.0003953438	0.0032075	8.38E-06	2.90E-02	2.43E-07	1.96E-05	1.71E-03	1.14E-02
Bromomethane	1.27E-03	0.5	0.0079375	0.0064399	1.68E-05		0.00E+00	3.93E-05	1.43E-03	2.75E-02
Bromoform	6.33E-04	0.5	0.003953125	0.0032073	8.38E-06	3.85E-03	3.23E-08	1.96E-05		
Carbon Tetrachloride	6.33E-04	0.5	0.0039553438	0.0032075	8.38E-06	5.25E-02	4.40E-07	1.96E-05	5.71E-04	3.43E-02
Chloromethane	1.41E-04	0.5	0.0088	0.0071396	1.87E-05	6.30E-03	1.18E-07	4.35E-05		
1,1-Dichloroethene	6.33E-04	0.5	4.9020E-08	3.98E-08	1.04E-10	1.80E-01	1.87E-11			
Methylene Chloride	1.27E-03	0.5	0.00790625	0.0064145	1.68E-05	1.64E-03	2.75E-08	3.91E-05	8.57E-01	4.56E-05
Tetrachloroethene	7.89E-94	0.5	0.00493125	0.0040008	1.05E-05	2.03E-03	2.12E-08	2.44E-05		
Trichloroethene	6.30E-04	0.5	0.0039375	0.0031946	8.35E-06	6.00E-03	5.01E-08	1.95E-05		
TOTAL							9.3193E-07			0.073207744

TABLE 4

RESIDENTIAL GROUNDWATER INGESTION SCENARIO

	EXPOSURE PARAMETERS: CANCER	HAZARD INDEX	
Exposure Duration (Years)	30	30	TOTAL CANCER RISK:8.3E-06
Exposure Frequency (Days/Y)	350	350	TOTAL HI:0.27226
Ingestion Rate (L/D)	AGE-DEP	2	
Conversion Factor (MG/UG)	0.001	0.001	
Days Per Year	365	365	
Years	70	30	
Body Weight	AGE-DEP	70	
Avg Time-Carcinogens (D)	25550		
Watering Factor (L-Y/KG-D)	1.09		

COMPOUND	CONCENTRATION (UG/L)	SLOPE FACTOR	CANCER RISK	ORAL REF. DOSE	HAZARD QUOT.
Acetone	0.599		0	1.00E-01	0.000164
Benzene	0.6325	2.90E-02	2.7E-07		
Bromomethane	1.27		0	1.40E-03	0.024853
Bromoform	0.63	7.90E-03	7.4E-08	200.E-02	0.000863
Carbon Tetrachloride	0.6325	1.30E-01	1.2E-06	7.00E-04	0.024755
Chloromethane	1.408	1.30E-2	2.7E-07		
1,1-Dichloroethene	0.6325	6.00E-01	5.7E-06	9.00E-03	0.001925
Methylene Chloride	1.26	7.50E-03	1.4E-07	6.00E-02	0.000575
Tetrachloroethene	0.789	5.20E-02	6.1E-07	1.00E-02	0.002162
Trichloroethene	0.6314		0	6.00E-03	0.002883
Aluminum	593.75		0	1.00E+00	0.016267
Chromium III	87.244		0	1.00E+00	0.00239
Chromium VI	15.39		0	5.00E-03	0.084329
Manganese	140.64		0	1.40E-01	0.027523
Nickel	59.91		0	2.00E-02	0.082068
Zinc	16.44		0	3.00E-01	0.001501
TOTAL			8.3E-06		0.27226

APPENDIX III

ADMINISTRATIVE RECORD INDEX

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

GENZALE PLATING SUPERFUND SITE

INTRODUCTION

A responsiveness summary is required by the Superfund legislation. It provides a summary of citizens' comments and concerns received during the public comment period, and the United States Environmental Protection Agency's (EPA's) and the New York State Department of Environmental Conservation's (NYSDEC's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA's and NYSDEC's final decision for selection of a remedial alternative for Operable Unit 2 at the Genzale Plating site (Site).

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

Community involvement at the Site has been moderate. EPA has served as the lead Agency for community relations and remedial activities at the Site. The remedial investigation and feasibility study (RI/FS) reports and the Proposed Plan for Operable Unit 2 of the Site were released to the public for comment on August 12, 1995. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, New York City, and in the information repository at the Franklin Square Public Library, 19 Lincoln Road, Franklin Square, New York. The notice of availability for the above-referenced documents was published in Newsday on August 11, 1995. The public comment period on these documents was held from August 12, 1995 to September 10, 1995.

On August 31, 1995, EPA conducted a public meeting at the Franklin Square Public Library in Franklin Square, New York to discuss remedial alternatives for the second operable unit of site remediation, namely, groundwater downgradient of the Property. In addition, EPA presented its preferred remedial alternative and provided an opportunity for the interested parties to present oral comments and questions to EPA. The announcement of this meeting was published in Newsday on August 25, 1995.

Attached to the Responsiveness Summary are the following Appendices:

Appendix A- Proposed Plan

Appendix B- Public Notice

Appendix C- August 31, 1995 Public Meeting Attendance Sheets

SUMMARY OF COMMENTS AND RESPONSES

Comments expressed at the public meeting have been categorized as follows:

A. Costs

B. Remediation

C. Public Water Supply

D. Public Health Studies

E. Miscellaneous

A summary of the comments and EPA's responses to the comments is provided below. No written comments were received during the comment period.

A. COSTS

Comment #1
How is the decision to take no action on the downgradient groundwater related to the cuts in EPA's budget?

Response #1
EPA's preference for a No Further Action remedy is not related to budget cuts. The preference for No Further Action on the downgradient groundwater is based on a careful evaluation of all available data. The predominant factor in the decision-making process was the determination in the risk assessment that the groundwater downgradient of the Site, if left untreated, presented no unacceptable level of risk to human health. This assessment made the conservative assumption that the shallow groundwater was being utilized as a potable residential water supply. It should be noted that EPA does not believe that the shallow Upper Glacial aquifer is used for drinking water by any private source. Further, groundwater modeling has predicted that the groundwater, if left untreated, will reach cleanup levels through the process of natural attenuation in approximately 18 years. This time period is only slightly longer than the predicted cleanup time frame of 14 years, if the downgradient groundwater were to be treated as described in Alternative 2. EPA believes that taking no action on the downgradient groundwater is prudent, in this case, because natural processes will have the effect of reducing contaminant levels to acceptable levels in nearly the same time as an active groundwater remediation.

Comment #2
Will funds for the Operable Unit 1 (OU1) cleanup be affected by the cuts in the EPA's budget?

Response # 2
There are currently funds available to complete the design for the groundwater remedy. However, the effect of the recently proposed cuts to EPA's budget on the implementation of the remedy cannot be fully determined at this time. EPA is currently in the process of evaluating potential impacts of the proposed budget cuts on Superfund sites across the country. Sites will be prioritized based upon risks, with the worst sites receiving the highest priority for remedial action funding. There is a strong possibility that if the cuts are as severe as currently proposed, the schedule for implementation of the remedy at the Genzale facility will be delayed.

Comment #3
What are the costs associated with a No Further Action alternative?

Response #3
There are essentially no additional costs related to the implementation of a No Further Action alternative. The costs related to groundwater monitoring, five-year reviews, and public awareness will be handled under the implementation of OU1.

Comment #4
What are the costs associated with the OU1 cleanup?

Response #4
The design cost estimate for the soil vapor extraction system and soil excavation is $6,183,300. The cost estimate for the implementation of the OU1 groundwater treatment system is $3,909,200.

Comment #5
What were the costs associated with the RI/FS for OU2?

Response #5
The approximate costs for the Remedial Investigation and Feasibility Study were $456,000 and $45,000, respectively.

<u>B. REMEDIATION</u>

Comment #1
Where will the excavated soils from the on-site cleanup be

disposed?

Response #1
The disposal facility for excavated soils has not yet been determined. A facility that has been permitted under and is in compliance with the requirements of the Resource Conservation and Recovery Act (RCRA), the law that regulates the management of hazardous wastes, will be chosen.

C. PUBLIC WATER SUPPLY

Comment #1
Does the fact that a Jamaica Water Supply well (JWS-5155) has been fitted with an air-stripper have anything to do with the contamination at the site?

Response #1
It is extremely unlikely that the contamination found in the JWS-5155 is related to the contamination at the Site. The contaminants found in the supply well are VOCs. Although similar contaminants have been found in the groundwater at the Site, very low levels of VOCs have been found in the downgradient groundwater. These contaminants generally decrease in concentration with increased distance from the source. The levels of volatile organic compounds (VOCs) found in the groundwater in the nearest downgradient well which is approximately 450 feet from the Genzale property, are below maximum contaminant levels (MCLs). It is unlikely that the levels of VOCs which exceed MCLs at the supply well could be related to the Site, because the supply well is approximately 6,800 feet south-south west of the Site. In addition, JWS-5155 is not directly downgradient of the facility, but side-gradient of the facility. This means that groundwater does not flow directly towards JWS-5155, but somewhat parallel to it. To further assess if the local public supply wells were, or could be, impacted by the Site, the capture zones (the areas of influence) for the public supply wells were calculated (see Appendix F in the Remedial Investigation). This mathematical analysis indicated that the area of groundwater influenced by JWS-5155 does not intercept the contamination related to the Genzale facility.

Comment #2
Have the Franklin Square Public supply wells which are closest to the Site been impacted by the site-related contamination?

Response #2
The public well cluster located closest to the Site is operated by the Franklin Square Water District. These wells, numbered

FSWD-3603 and FSWD-3604, are located approximately a quarter mile south-southeast of the Site and draw water from a depth of approximately five hundred feet. It is very unlikely that contamination from the Site could affect these wells which are side-gradient and at a depth significantly deeper than the contamination seen in sampling results regarding the Site. It is also noted that this well cluster is sampled quarterly for VOCs and is currently fitted with a granular activated carbon filter to remove VOC contaminants.

Comment #3
Can a local supply company be forced to use the Magothy aquifer as opposed to the Upper Glacial aquifer?

Response #3
No. Local water supply companies can only be required to meet certain standards for water quality. If these standards are met, whether by treatment of the groundwater or use of an uncontaminated deeper source, the well is considered to be in compliance with drinking water regulations.

Comment #4
How is the source of contamination of a contaminated supply well addressed?

Response #4
In some cases, contaminated public drinking water supply wells are referred to the New York State Department of Environmental Conservation to determine if further investigation is necessary to pinpoint a source of the contamination. Low levels of contaminants in the shallow Upper Glacial aquifer are pervasive throughout Long Island, and determining a source is often very difficult. For this reason, the water supply companies on Long Island typically choose to tap the Magothy, a much deeper aquifer, as a source of drinking water.

Comment #5
Are there any regulations in Nassau County that require testing of private (e.g., residential) water supply wells?

Response #5
There are currently no regulations that would require an owner of an existing private well in Nassau County to have the well tested. The Nassau County Department of Health and the EPA do, however, strongly recommend that any private wells be tested on an annual basis. Further, the stated purpose of Nassau County Health Ordinance Article 4 is to prohibit the installation of private water system wells in those areas served by a public

water system. Since Nassau County has such a well established public water supply and distribution system, there are very few private wells in existence. Although EPA has received anecdotal information that some homeowners in Nassau County utilize old residential wells to wash cars, water lawns, fill swimming pools, etc., the Nassau County Department of Health has no record of any residential wells in Franklin Square. In such a case, although it does not strictly prohibit the use of previously existing private wells, the Nassau County Department of Health strongly urges owners to use private wells for non-potable uses only. The EPA will perform a survey of residents in the vicinity of the Site to determine if there are any private wells in use.

D. PUBLIC HEALTH STUDIES

Comment #1
Has the EPA performed an assessment of health impacts for the properties neighboring the Site in order to determine if residents have had negative health impacts?

Response #1
Risk assessments were performed for both operable units. These assessments did not evaluate the potential or actual impacts from past exposure to Site conditions. The risk assessments determined that the Site poses no unacceptable level of risk to off-site residents. In addition, a Public Health Assessment was performed by the New York State Department of Health (NYSDOH) in cooperation with the Agency for Toxic Substances and Disease Registry, and was distributed to the public in January 1993. The NYSDOH is currently updating the Public Health Assessment and the community will be provided with the updated health assessment by February 1996. The available data do not indicate that humans are being, or have been exposed to levels of contaminants that would be expected to cause adverse health effects. The NYSDOH would consider conducting a public health study if the information at a particular site indicated that exposure to a chemical had occurred at a level that would be expected to cause health effects. At this time, NYSDOH has determined through the evaluation of the environmental data available, that performing a health study in the vicinity of the Genzale Plating site is not warranted. The public may obtain copies of the Health Assessment or request additional information through NYSDOH's Environmental Health Hotline at (800)-458-1158.

E. MISCELLANEOUS

Comment #1
Is the information regarding Superfund sites and associated contamination available to local community planning boards so that homes are not built immediately adjacent to industrial

properties, as was the case at this Site?

Comment #2
Information regarding all Superfund sites is readily available to local governments and the general public. State law requires that all county clerk offices have available for public review, copies of the New York State Hazardous Site Registry. As part of its community relations program, EPA ensures that local governments and citizens proximate to the site are included on its site mailing list to ensure that the nearby residents are kept informed of site activities. Lists of Federal and State Superfund sites, as well as sites being considered for inclusion on the National Priorities List (NPL) of Superfund sites, are available through EPA NYSDEC. Typically, local planning boards would not currently allow for mixed residential/manufacturing zoning in a neighborhood such as Franklin Square. However, the Genzale Plating Company has been in existence at its current location since 1915, preceding most of the homes in the immediate vicinity. In addition, these homes were constructed prior to EPA's knowledge of the detrimental impacts of the improper disposal of hazardous waste. Currently, in order to avoid such mixed zoning in New York State, Environmental Impact Statements (EISs) are issued by the State or local government prior to major construction projects such as housing developments. One aspect of an EIS is a survey of nearby properties to determine current or past practices that may have resulted in contamination of the property. If any properties are found to be contaminated, or potentially contaminated, further investigation including soils and groundwater analysis may be performed. Any potential impacts are mitigated prior to initiation of construction. Additionally, financial institutions frequently require that some level of an environmental audit be conducted to determine if subject properties have been or could be impacted by past or current operations at neighboring industrial properties.

RESPONSIVENESS SUMMARY
APPENDIX A
PROPOSED PLAN