Department of Environmental Conservation

Division of Hazardous Waste Remediation

Now Corporation Site

Operable Unit 2
Site Number 3-14-008
Town of Clinton
Dutchess County, New York

Record of Decision

March 1996

New York State Printed on Recycled Paper

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* MICHAEL D. ZAGATA, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Now Corp. Inactive Hazardous Waste Site
Clinton (T), Dutchess County, New York
Site No. 3-14-008
Operable Unit 2

__Statement of Purpose and Basis__

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

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Now Corp. inactive hazardous waste site and upon public input to the November, 1995, Proposed Remedial Action Plan (PRAP) presented to the public by the NYSDEC on Janurary 11, 1996. A bibliography 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 threat to public health and the environment.

__Description of Selected Remedy__

Based upon the results of the Remedial Investigation and Feasiblity Study (RI/FS) for the Now Corp. site and the criteria identified for evaluation of alternatives, the NYSDEC has selected to complete the remediation of this site with a limited soil removal and the on site treatment of these soils. The components of this remedy are as follows:

- The excavation and on site treatment of soils with over 700 ppb of trichloroethene, located near the northeast corner of the building (area A), along the drainage ditch near the northern corner of the building (area B), and the south corner of the concrete pad (area C).

- The excavation and on site treatment of the weathered bedrock with over 700 ppb of trichloroethene, located near the northeast corner of the building (area A), and along the drainage ditch near the northern corner of the building (area B).

- The on site treatment of these soils and weathered bedrock by a low temperature thermal desorption unit or a comparable technology.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) 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, is designed to comply 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 the toxicity, mobility, or volume of the wastes.

3/29/94
Date

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

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SECTION 1: SITE LOCATION AND DESCRIPTION

The Now Corporation site consists of the developed portion of a 94.5 acre parcel of property owned by Mr. Robert Fried in the Town of Clinton, Dutchess County (see Figure 1). This developed portion of the property consists of approximately 15 acres along Route 9G. It contains one industrial building and an adjacent concrete pad where a warehouse destroyed by fire in 1989, once stood. This portion of the property, "the site", is bordered by route 9G and residential homes on the north-northwest and an inactive sand and gravel pit on the south. The east and west sides are bound by overgrown fields and woods.

The site is geographically located within the upland section of the Appalachian Highlands. Valley and ridge topography is the dominant feature in this region, with the valleys being deeply incised bedrock which have been filled with thick alluvial and glacial deposits. Typical among these deposits are clays, silts, gravels and till. These deposits tend to form gently sloping floors with steep, to moderately steep ridges along the valley walls. Along these valley walls bedrock outcrops are common, whereas the depth to bedrock along the centers of the valleys may be greater than 100 feet.

The bedrock in this region is typically shale, which has undergone extensive folding and fracturing. These fractures typically dip steeply and strike to the northeast. Regionally groundwater flows toward the Hudson River. However, local flow is controlled by the fracturing.

The Now Corporation site is located on the eastern edge of a valley. The bedrock is found at the surface to approximately thirty-five feet below grade. The bedrock is a shale which is partially covered by till, sand and gravel. Groundwater flow occurs at the site along preferential fracturing on a northeast-southwest trend. These conditions are consistent with the known regional conditions.

The groundwater flow in the bedrock aquifer is the primary source of drinking water in the area.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The property was purchased by Mr. Robert Fried in August 1957. Since the early 1960s, various businesses have operated on the site including: Modern Machine and Tools (1961-1971), Virginia Chemicals, Inc. (1969-1977, bought out by Hoechst Celanese in 1981), Now Corporation (1970s and 1980s), Now Plastics (1982-1988 according to Mr. Fried), K&K Carpet, Tiffany Marble of New York, South American Development Corporation, and B&R Specialties, Inc. (current tenant).

The first investigation of the site, in 1975, consisted of the sampling of an on-site well by the Dutchess County Health Department (DCHD). The samples collected were analyzed for metals and general water chemistry parameters only. Sample results showed only manganese at levels exceeding the State Sanitary Code. This manganese is naturally present in the groundwater due to the surrounding soils.

The site was added to the registry in December, 1983, as a class 2a site due to allegations of on-site disposal of tank rinsing solutions.

A Phase I investigation was conducted in 1983 by NYSDEC. This Phase I investigation attempted to establish a Hazard Ranking Score (HRS) to better evaluate the site. A Phase II investigation was recommended to complete the HRS accurately, since the Phase I investigation did not include any groundwater, soil or air sampling.

In February, 1989, following a fire in the warehouse, samples of runoff water and water from three nearby homeowner wells were collected. The runoff water contained low levels of benzene, toluene, ethylbenzene, trichloroethene and 1,1,1-trichloroethane.

In this initial sampling no volatile organic compounds were detected in the nearby homeowner wells. However, follow up sampling in April, 1989, detected the presence of several VOCs in two residential wells. From 1989, to the present, one of these wells has consistently shown contamination with VOCs.

In October 1989, the department began sending bottled water to residences G and I (see Figure 2). In February 1990, granular activated carbon systems were installed on their water systems.

In August 1990, the NYSDEC reclassified this site to a class 2. A class 2 site presents a significant threat to public health and/or the environment. In July 1992, a work assignment was issued to perform a Remedial Investigation and Feasibility Study (RI/FS) under the State Superfund Program.

In April, 1994 a granulated activated carbon system was also installed on residence K.

SECTION 3: CURRENT STATUS

The NYSDEC, under the State Superfund Program, has conducted a Remedial Investigation/ Feasibility Study (RI/FS) to address the contamination at the site. The NYSDEC presented a Proposed Remedial Action Plan (PRAP) to the public at a January 11, 1996 meeting. The PRAP outlined the remedy the NYSDEC proposed for on site soil contamination at the Now Corporation Site. This contamination has been designated Operable Unit 2 of the site.

This operable unit was created in response to public comments on the PRAP that was originally presented to the public. That PRAP, dated February 15, 1995, dealt with both the groundwater and on site soil contamination related to the site. During the public comment period on that plan, significant concern was raised regarding the appropriateness of the recommended soil remedy. To properly reevaluate the soil remedy without delaying the remediation of the contaminated groundwater, a Record of Decision (ROD) for the groundwater contamination (Operable Unit 1) was issued in March 1995. The Remedial Design for the groundwater remedy is on-going and expected to be completed in the spring of 1996.

3.1: 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 July 1992 and April 1994, the second phase between April 1994 and January 1995. A report entitled Draft Final RI/FS Report, January 1995, has been prepared detailing the field activities and findings of the RI.

The first phase of the RI activities consisted of the following:

- Review of historical documents and aerial photographs, to determine potential disposal areas on and near the site.
- A magnetic survey was conducted in the area of alleged waste disposal. This survey was intended to determine the potential for buried drums and/or tanks which may contain waste in this area.
- A site wide soil gas survey was conducted at 145 locations. These locations were selected near and downgradient of suspected source areas to identify areas of soil and possibly groundwater contamination. See attached Figure 3.
- Six test pits were completed to investigate anomalies detected during the soil gas and magnetometer surveys. Composite soil samples were taken in conjunction with these test pits to better define any contamination present in these areas. See attached Figure 4.
- Soil borings were also installed to collect subsurface soils for chemical analysis. Please refer back to Figure 4.
- Fifteen groundwater monitoring wells were installed to determine the chemical analysis of groundwater, as well as the physical properties of on site hydrogeologic conditions.
- The sampling of several nearby homeowner wells to determine the presence and levels of groundwater contamination off-site.
- Surface water and surface soil sampling were also performed to define the condition of on-site surface soils and intermittent water.
- Surface water and sediment samples were taken from Crum Elbow Creek, to further assess the possibility of any impact on this water body by the NOW Corporation site.

After a preliminary assessment of the first phase RI results, a second phase was conducted to gather information necessary to develop remedial alternatives.

During the second phase of the RI, the following additional work was performed:

- A treatability study was performed. This study was to determine how successful a pump and treat groundwater system would be at remediating the contamination in the fractured bedrock beneath the site. This study included the implementation of a treatment utilizing granulated activated carbon on a small scale to determine its effectiveness so that the appropriate size and cost of the equipment to remediate the entire site by this method could be established. A pumping well and five observation wells on the ridge to the north of the industrial building were also installed.

- A separate treatability study was performed to determine how effective a soil vapor extraction system would be at treating the subsurface soil contamination in the parking lot area of the site.

Additionally, sixteen soil samples were taken in June 1995, to better delineate the areas of soil contamination detected in the RI investigation.

The analytical data obtained from the RI and subsequent sampling were compared to applicable Standards, Criteria, and Guidance (SCGs) in determining remedial alternatives. Groundwater, drinking water and surface water SCGs identified for the Now Corporation site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code.

Based upon the results of the remedial investigation in comparison to the SGGs and potential public health and environmental exposure routes, it was determined that in addition to the groundwater, certain on site soils also require remediation.

<u>ON SITE SOILS</u>

The remedial investigation revealed that in certain areas of the site there are soils contaminated by chlorinated compounds. Notable of these chlorinated compounds are trichloroethene (TCE) and 1,2 dichloroethene (DCE). Generally, this soil contamination is present in four areas. These areas are shown on Figure 5.

Two of these areas are located along the northern side of the present industrial building, between the building's wall and the access road. During the RI investigation there were two "hot spots" detected in this area, one located near the building's northern corner and another near the building's northeastern corner. Samples from soil boring SB-33 contained 78,000 (ppb) of TCE and 400 ppb of 1,2 dichloroethene, soil boring SB-39 contained 32,000 ppb of TCE, and SB-40 contained 40,000 ppb of TCE. All of these values exceed DHWR guidance cleanup objectives of 700 ppb for TCE and 300 ppb for 1,2 DCE. However, based on field observations, the contamination was believed to exist not only in these locations but throughout this general area and to extend into the underlying weathered bedrock. The bedrock throughout this area is very shallow and weathered, very loose and easily broken up. During the RI investigation this zone was reported to have a strong solvent odor, but could not be analyzed because of its nature.

To better determine the extent of the contamination through this area, additional samples were taken in June, 1995. The locations and results of these samples are shown on Figure 5, along with those from the RI, and indicate that the contamination is confined to two distinct locations in this area. The first is near the northeast corner of the building and includes samples SB-33, SB-39, SB-53, SB-54 and SB-52. This area is outlined on Figure 5 and labeled area A. Sample SB-53 contained 25,000 ppb of TCE and 1,200 ppb of Cis-1,2-dichloroethene (Cis-1,2-DCE), SB-54 contained 22,000 ppb of TCE and SB-52 contained 2,200 ppb of TCE.

The second area is along the drainage ditch near the northern corner of the building. This area is labeled area B on Figure 5 and includes samples SB-40 and SB-60. Sample SB-60 contained 6,200 ppb of TCE.

All of these values exceeded DHWR guidance cleanup objectives of 700 ppb for TCE and 250 ppb for Cis-1, 2-DCE.

This additional fieldwork also included the sampling of the underlying weathered bedrock. This sampling found that the contamination was greater in the overlying surface soils than in the weathered bedrock. However, it is believed that in some places the weathered bedrock underlying areas A and B, has contamination above standards, i.e. SB-52 with 2,200 ppb of TCE.

The third area is located near the south corner of the concrete pad around soil boring SB-19. This area is labeled area C and is also shown on Figure 5. The TCE concentration in soil boring SB-19 was 32,000 ppb, which greatly exceeds the soil cleanup objective of 700 ppb. The contamination in this area was and still is believed to be localized around SB-19, as none of the adjacent borings taken during the RI investigation or in June, 1995, showed significant contamination. Furthermore, these additional samples showed that the levels in the underlying bedrock were significantly lower than those present in the overlying surface soils. The weathered shale bedrock is very clayey and would be expected to retain a significant portion of the contamination as it migrates downward. However, the weathered bedrock interface here was dessicated and has been disturbed.

The fourth area is located between the loading docks of the current industrial building and the concrete pad, and extends west into the parking lot. During the RI investigation the concentration of 1,2 DCE in Test Pit 5 was 750 ppb and xylene in soil boring SB-16 was 1,300 ppb. These levels slightly exceed the DHWR guidance levels of 300 ppb and 1200 ppb, respectively. The soils in the parking lot ranged from 0.5 to 1,200 ppb for total VOCs, with an average concentration of 310 ppb, excluding SB-16. No additional sampling was done in this area in June, 1995.

The contamination in the parking lot appears to be limited to a depth of 5 feet or less below grade, except in the area of SB-16. Soil sampling also detected the presence of benzene, ethylbenzene and toluene in this area suggesting that reported underground fuel oil tanks in this area may be leaking or were involved in overfills, leaks and spills in the past. Five tanks, in this area, are believed to have been excavated by the site owner Mr. Fried. However, the complete details of this action have not been verified.

The soil contamination appears to be limited to these four areas. The source(s) of the VOC contamination are believed to be related to the disposal of chlorinated organic compounds in limited areas and possibly disposal into sinks and drains which subsequently drained to the leachfield located under the main parking lot (area D). Another likely source of the contamination may have been the warehouse where the chemicals were stored. During the fire, chemicals were released and washed into the soil. The contamination in the soils has migrated into the groundwater found in the fractured bedrock beneath the site. It is believed that precipitation infiltrating through the overlying unsaturated and unconsolidated soils has carried the contaminants with it. This migration could also be occurring by means of the on-site septic system that is near or in direct contact with the bedrock.

Treatability Study

Based on this information, a treatability study was performed to determine the effectiveness of a soil vapor extraction system (SVE) to remove the contamination in the parking lot area (area D). This technology was not considered for remediating the soils in areas A, B and C due to their shallow depth to bedrock and fine grained nature. During the test, the levels of oxygen (O_2), carbon dioxide (CO_2) and total volatile hydrocarbons (TVH) were monitored in the vapor extraction well and several surrounding monitoring points. The O_2 concentration levels showed significant increases during the test. Subsequently, the CO_2 levels showed significant increases too. These results, combined with a steady decline in the TVH levels in the extraction well (from 94 ppm to 37 ppm) throughout the test indicate that volatization and aerobic biodegradation of the VOCs were occurring. The effective radius of the SVE system during this study was estimated to be 65 feet.

One week after the test, the system was turned on again. Additional soil gas samples were immediately taken and retaken after the system was allowed to run an additional 3.5 hours. The first sample, when the system was turned on, contained 6 ppm, and the second sample contained 42 ppm of total volatile organics. The increase is due to the influx of soil gas from less remediated soils around the wells. The results of these samples, showed that the soil gas concentrations had returned to a high level, but had not reached the concentrations that were present before the initial SVE test.

This study indicates that the use of a soil vapor extraction system in area D would be affective in removing the contaminants from these soils. However, it was determined that the marginal increase in the overall remediation of the site would not warrant the expenditure of additional efforts on this area.

3.2 Interim Remedial Measures:

An Interim Remedial Measure (IRM) is implemented when a source of contamination or an exposure pathway can be effectively addressed before completion of the RI/FS. A direct pathway of exposure was established between contaminated groundwater from the site and the impacted homeowner wells. Based on this finding, an IRM was implemented at the site.

Carbon filtration units were installed on three private wells at residences G, I and K to prevent exposure to the contaminated groundwater (See Figure 2). Bottled water has also been provided to residence G, F, B and the Route 9G Garden Center. The Garden Center only uses its well seasonally for irrigation purposes. Residence G is on a carbon filtration unit, but due to the high levels of contaminants in their well, they have experienced breakthrough on occasion. The carbon filtration unit at residence K was subsequently removed at the request of the owner. Responsibility for the carbon filtration unit at residence I was turned over to Mr. Fried in August of 1991, as this well was no longer showing contamination. Bottled water is being provided to residences B and F due to recent increases of contaminant levels in their wells.

3.3 Summary of Human Exposure Pathways:

Based on the results of the remedial investigation, an evaluation of this site's impact on human health was performed. This evaluation, referred to as the baseline risk assessment in the RI/FS report, reached the following conclusion: that noncarcinogenic (systematic) and carcinogenic health effects may impact both current and hypothetical future residents.

In the human health evaluation (HHE), the likelihood of noncarcinogenic effects is indicated by the hazard index, while the risk of carcinogenic effects is presented as a probability. A hazard index greater than one indicates that adverse noncarcinogenic effects may occur. A risk greater than the New York State Department of Health's remediation risk goal of $1x10^{-6}$ indicates that there is an unacceptable excess risk of carcinogenic effects.

For current residents, the noncarcinogenic hazard index ranges from 0.4 to 2. For hypothetical future residents, the hazard index ranges from 4 to 14. The elevated hazard indices are primarily due to the presence of arsenic, chromium, and manganese in soil, and manganese in groundwater. It should be noted, however, that the presence of these metals is not considered to be a result of hazardous waste disposal. The increased levels of manganese in groundwater can be explained by the high natural ranges of this metal in soils and variations in bedrock mineralogy in the area.

For carcinogenic effects, the risks for the current residents ranged from $5x10^{-6}$ to $2x10^{-5}$. Current exposures to the contaminated groundwater were not considered in this risk evaluation as they are presently prevented through the use of carbon filtration units. For hypothetical future residents, the risks ranged from $4x10^{-5}$ to $2x10^{-4}$.

Risks for all receptor groups exceeded the NYSDOH remediation risk goal of $1x10^{-6}$. The increased risk to these receptors is primarily due to the presence of 1,2 dichloroethene and trichloroethene in the groundwater and on site soils.

The fact that carcinogenic risk exceeds the DOH goal of $1x10^{-6}$ denotes an increased cancer risk of one in a million and indicates that remediation is warranted to protect current and future residents.

3.4 Summary of Environmental Exposure Pathways:

Adverse ecological effects as a result of exposure of biota to contaminants at the site are minimal.

SECTION 4: ENFORCEMENT STATUS

The Potential Responsible Parties (PRP) for the site include:

Robert P. Fried
Hollow Road
Straatsburg, N.Y. 12580

Hoescht/Celanese Corp.
Route 202-206
P.O. Box 2500
Sommerville, N.J. 08876-1258

The PRPs failed to implement the RI/FS at the site when requested by the NYSDEC. This work was then performed under the State Superfund Program. The PRPs were requested to implement the remedial design for the site prior to the designation of these operable units. They declined to undertake this responsibility, but they are still subject to legal actions by the State for the recovery of all of the costs the State has incurred.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR 375-1.10. These goals are established under the guideline of meeting all standards, criteria, and guidances (SCGs) for protecting human health and the environment.

The remedy selected should eliminate or mitigate all significant threats to public health and the environment presented by the hazardous waste disposed of at the site through the proper application of scientific and engineering principles.

The goals selected for this operable unit are:

- *Reduce or eliminate the volume of contaminated soil at the site, in order to reduce or eliminate any additional exposure to the public health.*

- *Eliminate the long term migration of contaminants into the groundwater.*

Groundwater remediation for the site will be based on the effectiveness of the selected groundwater pump and treat system. This system will be operated until it no longer significantly reduces the contaminant levels in the groundwater or it meets the New York State groundwater standards Although this groundwater remediation will address the primary threat to the public health and the environment, the levels of contamination in the soils warrants remediation as well. Not only are the levels high enough to be a risk to public health and the environment, but they will also act as a continuing source of contamination that would impede groundwater remediation.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Upon review of the comments received at the meeting and in correspondence during the associated comment period for the original PRAP (dated February 15, 1995), it was discovered that the off-site disposal costs for the contaminated soil was significantly under-estimated and would no longer be cost effective. Hence, the NYSDEC decided to reevaluate the remedial alternatives for the contaminated soil at the site.

A summary of the detailed analysis of the alternatives for Operable Unit 2 is presented below.

6.1: Description of Alternatives

The following alternatives are intended to address the contaminated soil on the site and to prevent the further migration of contaminants from the soil into the groundwater.

Present worth values for these alternatives are the same as capital costs since no annual operation and maintenance cost will be necessary. O&M cost is already included in the selected remedy for OU1, groundwater remediation.

Alternative 1: No Further Action

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

The no further action alternative for soil contamination is evaluated as a procedural requirement and as a basis for comparison to other actions. This alternative recognizes that carbon filtration units have been installed on impacted homeowner wells and groundwater will be remediated as outlined in the ROD for Operable Unit O1. It only requires continued monitoring of the groundwater. The result of no cost for this alternative assumes that the annual cost of $22,000 dollars for the groundwater monitoring would be funded by Operable Unit 01.

Alternative 2- Limited Removal and Disposal of Contaminated Areas A, B and C

Present Worth:	$	258,000
Capital Cost:	$	258,000
Annual O&M:	$	0,000
Time to Implement:		4 Months

This plan would consider the contamination to the north and east of the building as two distinct areas. The first area, area A, is located near the northeastern corner of the building. This area includes sampling locations SB-33, SB-39, SB-53, SB-54 and SB-52. This area is outlined on Figure 5. The second area, area B, is along the drainage ditch near the northern corner of the building. This area is also included on Figure 5 and includes sampling points SB-40 and SB-60. This alternative would require the top 2 feet of contaminated soil throughout these designated areas to be excavated and disposed of off site. The highly contaminated soil near the south corner of the concrete pad, area C, would be excavated as well. The soil would be excavated for a ten foot radius around sampling point SB-19, and to a depth of 2 feet.

The contaminated soil from these three areas would then be sampled and disposed of at an appropriate facility. Based on samples taken previously, it is anticipated that the excavated soil (263 cubic yards) would be disposed of off site at a permitted hazardous waste landfill.

It would be the goal of this removal to remove all of the soils that contain 700 ppb or more of trichloroethylene from the top 2 feet in areas A, B and C. Confirmatory samples would be taken to insure the effectiveness of this removal. These excavations would then be backfilled with clean soil.

Alternative 3 - Removal and Disposal of Hot Spot Areas A, B and C

Present Worth:	$	450,000
Capital Cost:	$	450,000
Annual O&M:	$	0,000
Time to Implement:		4 Months

This plan would consider the contamination to the north and east of the building as two distinct areas of contamination . The first area, area A, is located near the north eastern corner of the building. This area includes sampling locations SB-33, SB-39, SB-53, SB-54 and SB-52. This area is outlined on Figure 5. The second area, area B, is along the drainage ditch near the northern corner of the building. This area is also included on Figure 5 and includes sampling points SB-40 and SB-60. This alternative would require the contaminated soil throughout these designated areas to be excavated and disposed of off site. The areas to be excavated are those areas that contain over 700 ppb of trichloroethene. These areas are expected to be excavated to the weathered bedrock. It is estimated that the weathered bedrock is at three feet below the surface for area A and four and a half feet below the surface for area B.

The highly contaminated soil near the south corner of the concrete pad, area C, would be excavated as well. The soil would be excavated for a ten foot radius around sampling point SB-19, and is expected to proceed down to the bedrock which is located at approximately four feet below the surface.

The contaminated soil from these three areas would then be sampled and disposed of at an appropriate facility. Based on samples taken previously, it is anticipated that the excavated soil (492 cubic yards) would be disposed of off site at a permitted hazardous waste landfill.

Post excavation samples would also be taken to assess the remediation's achievement of the goal of removing all of the soils with 700 ppb or more of trichloroethene.

Alternative 4 - Removal and Disposal of Contaminated Soil and Underlying Weathered Bedrock in Areas A, B and C

Present Worth:	$ 687,000
Capital Cost:	$ 687,000
Annual O&M:	$ 0,000
Time to Implement:	4 Months

This alternative is the same as alternative 3 except that the top 2 feet of the underlying weathered bedrock would also be removed. This would assure the removal and treatment of all of the heavily contaminated soils and weathered bedrock. It is anticipated that about 752 cubic yards of contaminated soil and weathered bedrock would be disposed of at a hazardous waste disposal facility.

Post excavation samples would also be taken to assess the remediation's achievement of the goal of removing all of the soils and weathered bedrock with 700 ppb or more of trichloroethene.

Alternative 5 - Excavation and Removal of All of the soil along the northeast side of the Building and Area C

Present Worth:	$ 1,250,000
Capital Cost:	$ 1,250,000
Annual O&M:	$ 0,000
Time to Implement:	4 Months

This alternative would excavate and dispose of the soils between the access road to the north of the building and the building's north wall. These areas would be excavated to the weathered bedrock. It is estimated that the depth to bedrock ranges from 2 to 4 feet throughout this area.

The remaining soil contamination near the south corner of the concrete pad would be excavated as well. However, this contamination would be treated as an isolated area. The soil would be excavated for a ten foot radius around sampling point SB-19, and would proceed down to the bedrock. The bedrock is anticipated to be approximately four feet below the surface.

The contaminated soil from these three areas would then be sampled and disposed of at an appropriate facility. Based on samples taken previously, it is anticipated that the excavated soil (1,380 cubic yards cy) would be disposed of off site at a permitted hazardous waste landfill.

Post excavation samples would also be taken to assess the remediation's achievement of the goal of removing all of the soils with 700 ppb or more of trichloroethene.

Alternative 6 - Excavation and On Site Treatment of Contaminated Soil and Underlying Weathered Bedrock in Areas A,B and C

Present Worth:	$ 339,000
Capital Cost:	$ 339,000
Annual O&M:	$ 0,000
Time to Implement:	7 Months

This alternative would treat the soils to the north and east of the building as two distinct areas of contamination. These areas are the same as those shown on Figure 5, for alternative 4. However, these soils would be treated on site by low temperature thermal desorption or a comparable technology. These treated soils and weathered bedrock would then be returned to the excavated areas.

The remaining contaminated soil near the south corner of the concrete pad would be excavated and treated on site as well. However, this contamination would be treated as an isolated area. The soil would be excavated for a ten foot radius around sampling point SB-19, and is expected to proceed down to the bedrock. The bedrock is anticipated to be approximately four feet below the surface.

It is estimated that approximately 492 cubic yards of contaminated soil and 260 cubic yards of weathered bedrock would be excavated and treated by this alternative.

Confirmatory samples would be taken from both the bottom of the excavations and the soils passing through the treatment process to assure the effectiveness of the remedy. This effectiveness would be evaluated in comparison to the remediation's goal of eliminating all of the soils contaminated with 700 ppb or more of TCE.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR 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 contained in the Feasibility Study.

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 would meet applicable environmental laws, regulations, standards, and guidance.

The no further action alternative 1, would not comply with New York State SCGs, primarily due to the continuing exceedances for trichloroethene in on site soils. Current guidelines recommend 700 ppb as an acceptable level. Presently, there are levels up to 78,000 ppb on the site.

Alternative 2 would remove some of the TCE contamination, but would leave some of the contaminated soils untreated along the northern wall of the industrial building. These soils would not meet NYSDEC chemical specific SCGs for soils. Alternatives 3, 4, 5 and 6 would eliminate all of the soils contaminated with TCE in excess of NYSDEC SCGs.

However, only alternatives 4 and 6 would significantly affect the contamination within the weathered bedrock zone underlying these soils.

All of the alternatives would leave some soils that slightly exceed NYSDEC soil cleanup criteria for xylene and 1,2 DCE in the parking lot area.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective of these charges.

Alternative 1 would not be protective of human health and the environment. This is due to the continuing exceedances of soil guidelines for VOCs in the soils on site. These contaminants, especially TCE, are present at levels high enough to not only pose a risk to the public health and the environment, but would also act as a continuing source of groundwater contamination and impede the remediation of the groundwater to levels protective of public health and the environment. Alternatives 2, 3, 4, 5 and 6 would all reduce these risks to different extents. Alternatives 3, 4, 5 and 6 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 alternatives.

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

Alternative 1 would pose no additional adverse impacts. Construction activities for alternative 2, 3, 4, 5, and 6 all include soil excavation to different extents. This should not pose a significant risk to the community or workers as long as action-specific SCGs for these activities are adhered to. Air monitoring would be performed to ensure that dust and/or VOCs would not cause a risk to residents or workers in the on-site building. Additionally, access limitations, protective clothing, monitoring equipment and decontamination procedures would be used in accordance with the site Health and Safety Plan.

Impacts to the environment would consist of the potential for contaminated soil or runoff to reach Crum Elbow Creek. Plans for controlling soil erosion and runoff from site construction activities would be prepared as part of the remedial design activities.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the 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 2, 3, 4, 5, and 6 would all permanently remove the TCE contamination from the site soils. However, each alternative would remove a different amount of this contamination. Alternative 2 would leave some of the TCE contaminated soils in place. Alternative 3 and 5 would remove all the TCE soil contamination above TAGM clean-up levels and alternatives 4, and 6 would remove all of the TCE contaminated soil above TAGM clean-up levels and mitigate contamination in the bedrock. A remedial program that eliminates the risk posed to the environment and the public health from the surface soils, and balances the amount of sub surface contamination left in place against the groundwater remedial program is appropriate. Alternatives 4 and 6 best fit this criteria, as they would remediate all of the highly contaminated soils and weathered bedrock and would allow the groundwater remedy to focus on the contamination already present in the acquifer.

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 the wastes in the soil.

Alternatives 2, 3, 4, 5 and 6 would permanently reduce the volume and toxicity of the contamination at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel, equipment, and material is evaluated along with potential difficulties in obtaining specific operating approvals.

All of the alternatives considered for this site are implementable.

Alternative 1 would only require annual sampling to monitor the site's condition and personnel to maintain the necessary site restrictions. The materials and personnel for these tasks would be readily available.

Alternatives 2, 3, 4, 5 and 6 would require excavations which can be performed by conventional earth moving equipment which should be readily available in this area. Some difficulty would be encountered in the excavation of soils along the northeastern corner of the industrial building due to the presence of power lines. However, the rerouting of these lines is not anticipated to be difficult.

Alternative 6 would also implement a proven technology, low temperature thermal desorption. However, the availability of this technology for this relatively small volume of soil is limited and hence, the use of a comparable technology may be necessary.

7. Cost. Capital, and operation and maintenance costs are estimated for each alternative and are 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 present worth cost of the no further action, Aternative 1, is $0. The annual cost of $22,000 for groundwater monitoring is already included in the costs for Operable Unit 1.

Alternative 2 is the least costly alternative at $258,000. This alternative is followed by Alternate 3 at $450,000, Alternative 4 at $687,000, and alternative 5 at $1,250,000. These alternatives increase in cost as the volume of soil removed from the site increases. Alternative 6 would be $339,000, which would only surpass alternatives 1 and 2 in cost.

8. **Community Assessment** - Concerns of the community regarding the PRAP were evaluated. A responsive summary describing these concerns and detailing how the

Department addressed or will address these concerns is attached as Appendix A.

The remedy contained in this Record of Decision (ROD) is identical to the remedy in the Proposed Remedial Action Plan (PRAP) presented to the public on January 11, 1996.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS and the evaluation presented in Section 6, the NYSDEC is selecting Alternative 6, as the remedy for the on site soil contamination, operable unit 2.

Alternatives 1 and 2 were undesirable as human health and the environment would not be adequately protected. Additionally, they would leave contamination in place that would hinder the remediation of the site's groundwater.

Alternatives 3, 4, 5, and 6 were all protective of human health and the environment. However, Alternative 6 is the only one that will permanently reduce the volume and toxicity of the contamination by treatment. Alternative 6 was also the most cost effective of these four remedies. These benefits outweigh the slightly longer time that will be required to implement this remedy instead of the others. Hence, Alternative 6 presents the best remedy for the site.

The estimated present worth cost to implement the selected remedy is $339,000. The cost to construct the remedy, capital cost, accounts for the entire amount as no annual operation and maintenance will be necessary. The time to implement this remedy is estimated to be 7 months.

The major elements of the selected remedy are:

- The excavation and on site treatment of soils with over 700 ppb of trichloroethene, located near the northeast corner of the building (area A), along the drainage ditch near the northern corner of the building (area B), and the south corner of the concrete pad (area C).

- The excavation and on site treatment of the weathered bedrock with over 700 ppb of trichloroethene, located near the northeast corner of the building (area A), and along the drainage ditch near the northern corner of the building (area B).

- The on site treatment of these soils and the weathered bedrock by low temperature thermal desorption or a comparable technology.

During the remedial design, the availability of a low temperature thermal desorption unit will be reassessed. Should this technology or a comparable technology prove to be unavailable, or there is a lack of competitive bids for the construction of the remedy, Alternative 4 will become the remedy. Alternative 4 is the removal and off site disposal of the soil and weathered bedrock in areas A, B and soil only in area C.

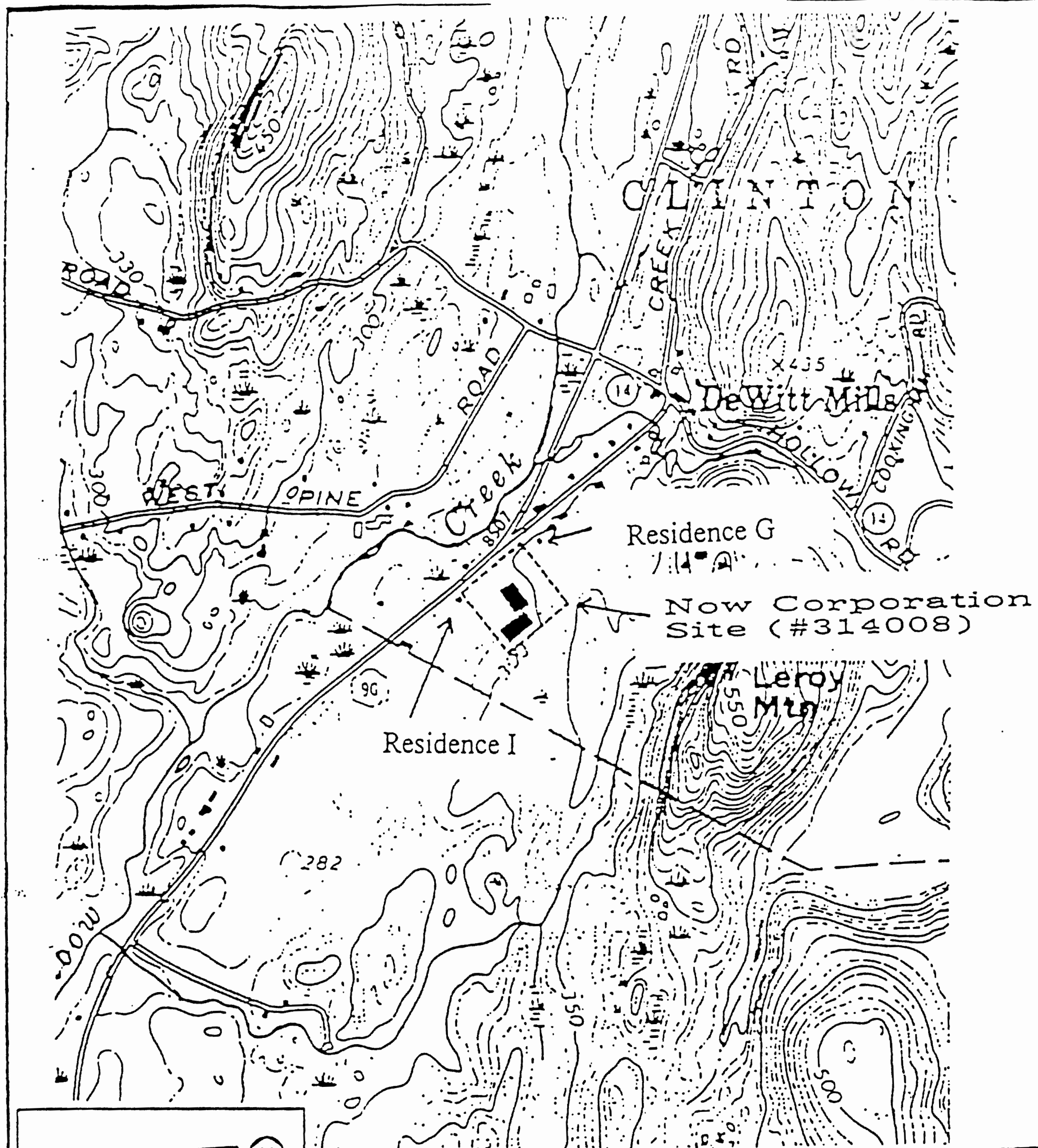
Table 1
Summary of Contaminants in Areas A, B, C, and D

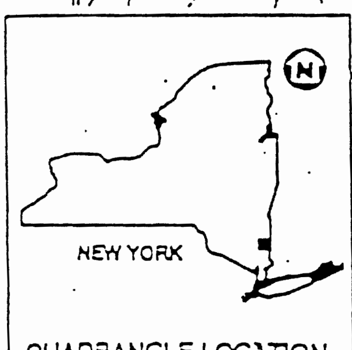
Area	Sampling Point	Sample Depth (feet)	Bedrock Depth (feet)	Contaminants of Concern (ug/kg)				
				PCE	TCE	1,1,1 TCA	1,2 DCE	Acetone
AREA A	SB-33	0.5	2	4 J	**78000 D**	11 U	130	11 U
	SB-39	2 - 0	2	80 J	**32000**	15 U	47	85
	SB-52	1.8	1.8	5 U	**2200**	35	8	5 U
	SB-53	1.2	>1.4	5 U	**25000**	5 U	**1200**	5 U
	SB-54	1.8	>2	5 U	**22000**	5 U	60	5 U
AREA B	SB-40	0 - 2	2	370 J	**40000**	1500 U	210 J	1500 U
	SB-60	1	>1	5 U	**6200**	5 U	5 U	5 U
AREA C	SB-19	2.5	4	53 U	**32000**	17 J	53 U	53 U
AREA D	SB-1	6	>6	11 U	3 J	11 U	160	58
	SB-2	6.5	>10	11 U	1 J	11 U	32	18
	SB-4	2.5	>10	11 U	10 J	11 U	11 U	11 U
	SB-9	0 - 4.5	>6	12 U	10 J	12 U	1 J	12 U
	SB-10	0 - 4.5	>6	11 U	4 J	11 U	11 U	11 U
	SB-16	8.5	>10	11 U	1 J	11 U	21	97
	SB-24	4.5	8	1 J	12	12 U	5 J	120
	TP-5	4-7	>17	11 U	130	1 J	**750 D**	55 J

NOTES:

Numbers in bold indicate an exceedance of the recommended soil cleanup objective for this compound.

J	indicates that this is an estimated value.
D	indicates that this value was obtained on a diluted analysis.
U	indicates that this chemical was not detected above the indicated level.
PCE	Tetrachloroethene, recommeded soil cleaup level is 1,400 ppb.
TCE	Trichloroethene, recommeded soil cleaup level is 700 ppb.
1,1,1 TCA	1,1,1 Trichloroethane, recommeded soil cleaup level is 800 ppb.
1,2 DCE	Total 1,2 Dichloroethene, recommeded soil cleaup level is 250 ppb for cis and 300 ppb for trans 1,2 Dichloroethene. Table exceednances are based on the isomer levels.





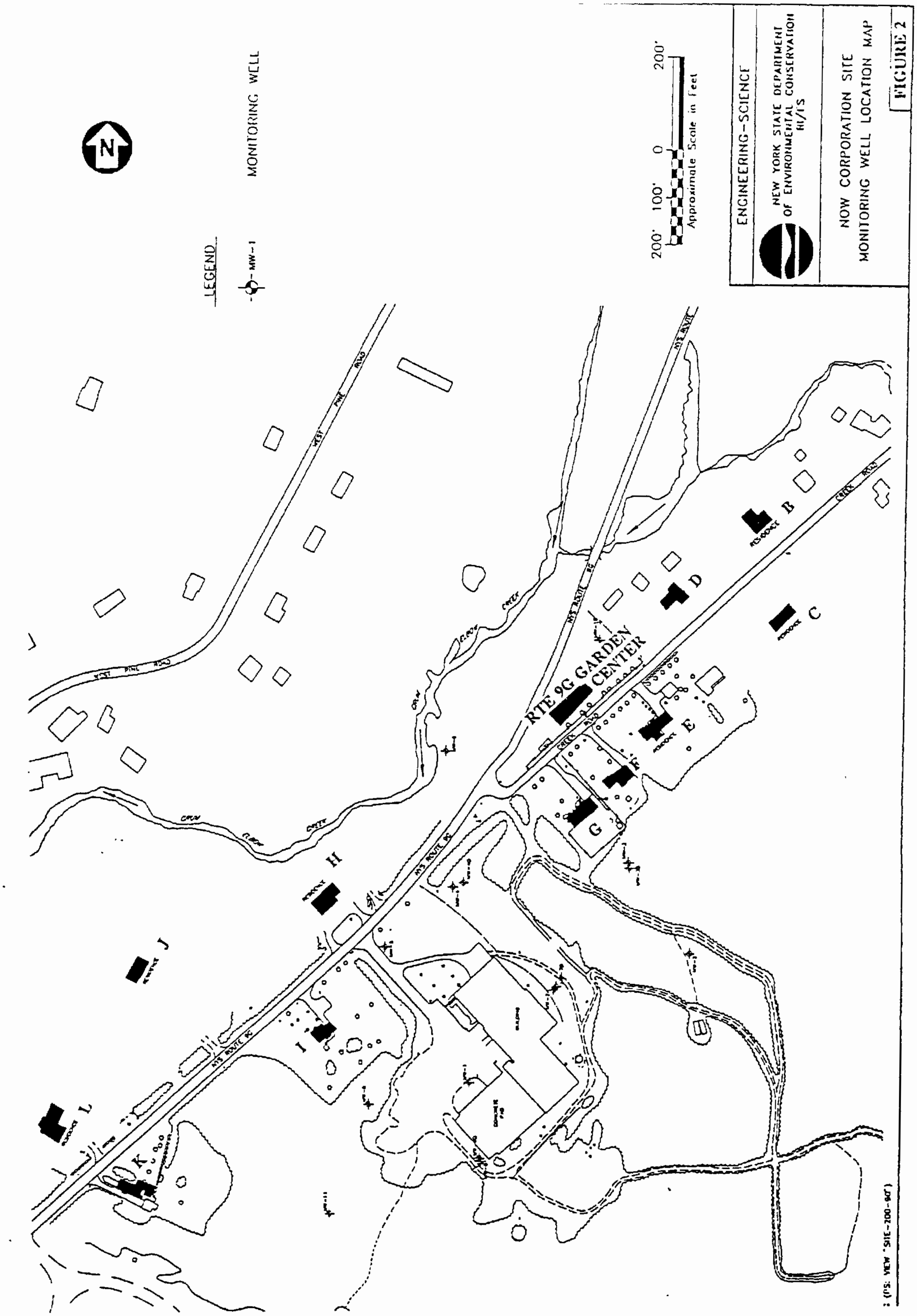
QUADRANGLE LOCATION

LATITUDE: 41°51'00"
LONGITUDE: 73°52'45"

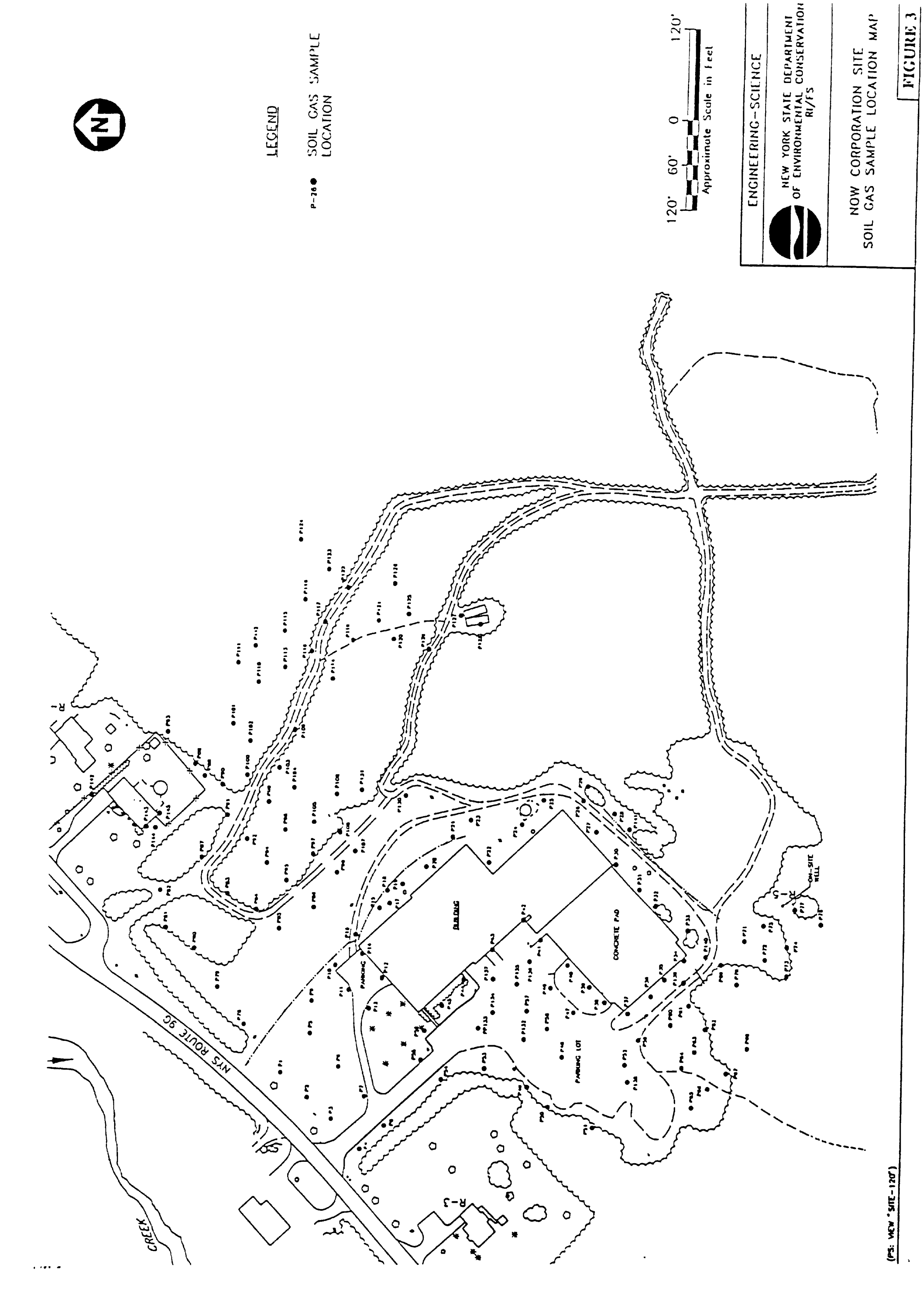
ENGINEERING-SCIENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
RI/FS INVESTIGATION

FIGURE 1
SITE LOCATION MAP
NOW CORPORATION SITE



LEGEND
MW-1
MONITORING WELL
200'
100'
0
200'
Approximate Scale in Feet
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NOW CORPORATION SITE
MONITORING WELL LOCATION MAP
FIGURE 2
RTE 9G GARDEN CENTER
B
C
D
E
F
G
H
I
J
K
L


LEGEND
P-26 ● SOIL GAS SAMPLE LOCATION
120' 60' 0 120'
Approximate Scale in Feet
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION RI/FS
NOW CORPORATION SITE SOIL GAS SAMPLE LOCATION MAP
FIGURE 3
NYS ROUTE 9G
CREEK
BUILDING
CONCRETE PAD
PARKING LOT
PARKING
ON-SITE WELL
R-3
R-5

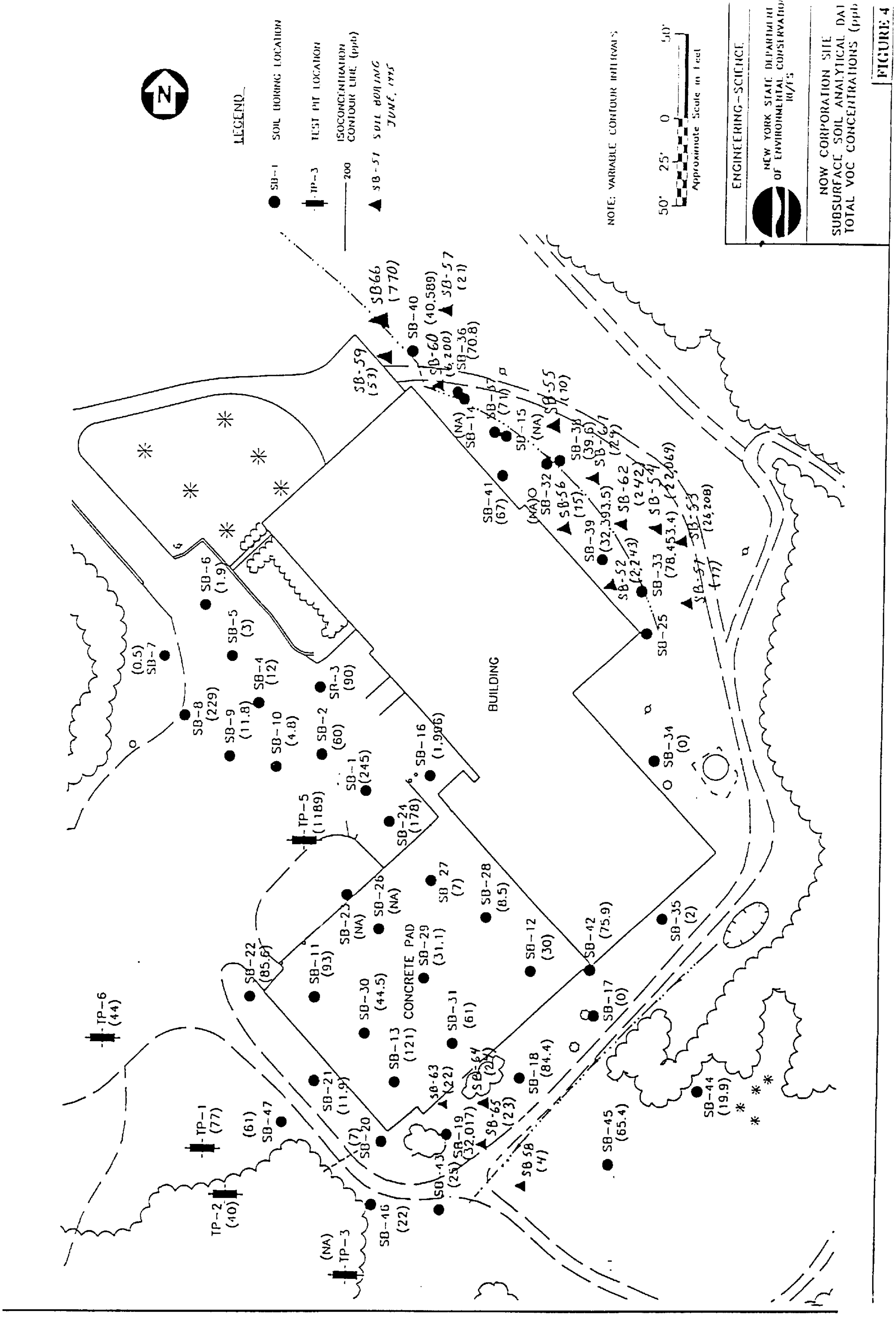
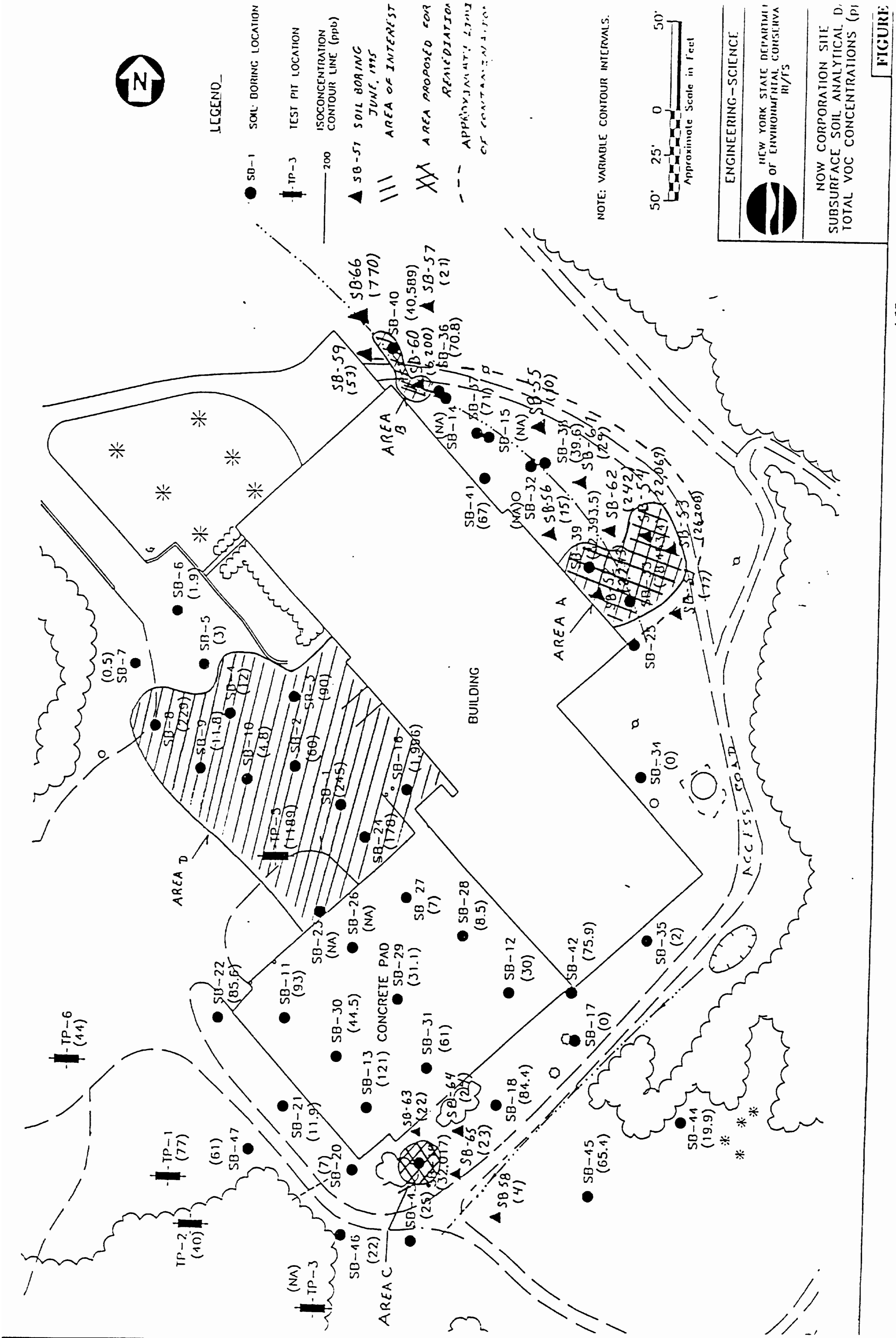


FIGURE 4
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NOW CORPORATION SITE
SUBSURFACE SOIL ANALYTICAL DATA
TOTAL VOC CONCENTRATIONS (ppb)
LEGEND
SB-1 SOIL BORING LOCATION
TP-3 TEST PIT LOCATION
200 ISOCONCENTRATION CONTOUR LINE (ppb)
SB-51 SOIL BORING JUNE, 1995
NOTE: VARIABLE CONTOUR INTERVALS
50' 25' 0 50'
Approximate Scale in Feet
BUILDING
CONCRETE PAD
SB-1 (245)
SB-2 (60)
SB-3 (90)
SB-4 (12)
SB-5 (3)
SB-6 (1.9)
SB-7 (0.5)
SB-8 (229)
SB-9 (11.8)
SB-10 (4.8)
SB-11 (93)
SB-12 (30)
SB-13 (121)
SB-16 (1,996)
SB-17 (0)
SB-18 (84.4)
SB-19 (32,017)
SB-20 (7)
SB-21 (11.9)
SB-22 (85.6)
SB-23 (NA)
SB-24 (178)
SB-26 (NA)
SB-27 (7)
SB-28 (8.5)
SB-29 (31.1)
SB-30 (44.5)
SB-31 (61)
SB-34 (0)
SB-35 (2)
SB-36 (70.8)
SB-40 (40,589)
SB-41 (67)
SB-42 (75.9)
SB-43 (25)
SB-44 (19.9)
SB-45 (65.4)
SB-46 (22)
SB-47 (61)
SB-57 (21)
SB-59 (53)
SB-60 (6,200)
SB-63 (22)
SB-65 (23)
SB 58 (4)
SB66 (770)
TP-1 (77)
TP-2 (40)
TP-3 (NA)
TP-5 (1189)
TP-6 (44)


LEGEND
SB-1 SOIL BORING LOCATION
TP-3 TEST PIT LOCATION
200 ISOCONCENTRATION CONTOUR LINE (ppb)
SB-51 SOIL BORING JUNE, 1995
AREA OF INTEREST
AREA PROPOSED FOR REMEDIATION
NOTE: VARIABLE CONTOUR INTERVALS.
50' 25' 0 50'
Approximate Scale in Feet
ENGINEERING-SCIENCE
BUILDING
CONCRETE PAD
AREA A
AREA B
AREA C
AREA D
ACCESS ROAD
NOW CORPORATION SITE
SUBSURFACE SOIL ANALYTICAL D
TOTAL VOC CONCENTRATIONS (p
FIGURE

Appendix A

Responsiveness Summary
Now Corp. Site
Operable Unit 2
3-14-008

This document summarizes the comments and questions received by the New York State Department of Environmental Conservation (NYSDEC) regarding the Proposed Remedial Action Plan (PRAP) for operable unit 2 of the subject site. A public comment period was held between December 10, 1995 and January 19, 1996 to receive comments on the proposal. A public meeting was also held on January 11, 1996 in the Clinton Town Hall to present the results of the investigation and to present the PRAP.

This Responsiveness Summary is comprised of verbal comments and questions obtained during the comment period. Written comments were received from Mr. Raymond Oberly, Supervisor, Town of Clinton and Mr. Robert S. McEwan, Jr., of Nixon, Hargrave, Devans and Doyle, Albany, NY.

The following comments and questions are taken directly or paraphrased from the meeting and from written comments received during the comment period. Comments on the soil remedy that were received during the comment period for operable unit one that are still applicable or relevant have also been included in this responsiveness summary.

1C. What is a Class 2 site?

R. Inactive hazardous waste disposal sites are classified according to the threat to public health or the environment that each site represents. This classification system establishes a process that helps determine the order in which sites will be remediated. The classes are listed below with a brief description of the criteria for each.

Class 1. Are sites that are causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or the environment --- immediate action required.

Class 2. Are sites that pose a significant threat to the public health and/or the environment. Timely action is required.

Class 2a. This is a temporary classification for sites that have inadequate and/or insufficient data for inclusion in any of the other classifications.

Class 3. Does not present a significant threat to the environment or public health --- action may be deferred.

Class 4. Site properly closed -- requires continued management.

Class 5. Site properly closed, no evidence of present or potential adverse impact -- no further action required.

2C. The three underground storage tanks at the site, what was in them?

R. We believe the tanks were used for gasoline and fuel oil, but we are not certain. Our sampling results were consistent with gasoline and fuel oil spillage.

3C. Should the Town be able to issue a special permit for the site since it is a hazardous waste site?

R. That is a decision up to the local government authorities. The Department of Environmental Conservation would not become involved unless it would interfere with the implementation of the remedy for the site or it would greatly exacerbate the contamination at the site.

4C. The Zoning Enforcement Officer (ZEO), building inspector, planning board and zoning board advisor (ZBA) have been instructed to solicit the NYSDEC's comment on any proposed new activity or activity change at the site.

R. The Department must approve any change in use of the site that can affect the remediation of the site. It is the responsibility of the local town and zoning board to decide appropriate activities near or at a hazardous waste site. However, the Department appreciates the Town's concern for the proper management of the site and will be happy to provide technical support and information with respect to any activities that would affect the contamination at the site or the remediation of the site.

5C. All operations (by the property owner) at the site should be stopped. He is using the Department of Environmental Conservation and is taking advantage of the Town through the Department's presence.

R. The Department of Environmental Conservation does not have the legal authority to stop normal business operations at the site. We can only do that if the operations would interfere with the implementation of the remedy or the operations would greatly exacerbate the contamination at the site. However, the Town has the authority to regulate normal business activity at the site. The

Department of Environmental Conservation can verify any information or any claims made by the land owner to the Town that would influence their determination of appropriate activities for the site.

6C. It appears that the regulatory notice for a significant change in use at the site was not given by the Department.

R. The Department has not authorized any change in use at the site. During the public meeting, several activities by the tenants and/or owners of the site were discussed. None of these activities were in the areas of soil contamination but are associated with other portions of the property. These activities also do not appear to present a hindrance to the remediation of the site.

7C. Who is using the recently delivered tank at the site?

R. The tank on the top of the hill to the north of the building was used in conjunction with the recent pump test on the recovery wells.

8C. The machines that were on the hill today (January 11, 1996), what were they doing? Where they pumping the recovery wells?

R. Yes, the machines were there in support of a pump test that was being performed on the recovery wells.

9C. The Department should explore whether the potentially responsible parties (PRPs) for the site would be eligible for participation in the voluntary cleanup program

R. At this time, eligibility of PRPs to participate in the voluntary cleanup program for class 2 sites is unresolved.

10C. Can Hoescht-Celanese be considered a PRP, even though releases of hazardous waste occurred at the site after their predecessor (Virginia Chemicals) departed from the site.

R. Even though additional releases of chemicals occurred after Virginia Chemicals' tenure at the site, as the successor to Virginia Chemicals, Hoechst-Celanese is responsible for any contamination at the site that resulted from the actions of Virginia Chemicals. This would include Virginia Chemicals' agents and subcontractors who participated in the operation of the facility. During Virginia Chemicals' tenure at the site sporadic dumping of chemical cleaning tank solutions occurred. This is why the site was listed as a hazardous waste site.

11C. A comparable technology is not defined in the second PRAP.

R. It is difficult to define a comparable technology to low temperature thermal desorption due to various technical differences between the various treatment processes available, some of which are very fine in nature. Comparable technology in this PRAP was meant to mean a technology that would employ the same operating principles to remove the volatile organic contamination from the soil.

12C. Some of the comments on the previous PRAP were not responded to in the Record of Decision for operable unit 1, nor were they included in this PRAP.

R. Comments concerning the soil remedy proposed in the previous PRAP were not all directly addressed by the ROD for Operable Unit 1 since the soil portion of the remedy was removed from that ROD. During the review of the comments for the previous PRAP, it was discovered that the cost of off site disposal was significantly underestimated. Hence, the NYSDEC decided to reevaluate the proposed remedy for the contaminated soils at the site. The soil portion of the site was designated as Operable Unit 2 in order to allow for a full reevaluation of all soil remedy alternatives. The March 1995 ROD was for Operable Unit 1, contaminated groundwater, and hence, comments concerning the contaminated soil were deferred until OU2. All of the comments received on the previous PRAP regarding soil contamination and remediation were considered in this reevaluation and the selection of the revised soil remedy. Comments that are still valid have been included in this Responsiveness Summary.

13C. I would like to have the adjacent landowners afforded an opportunity to see the locations targeted for remediation after they are marked by the DEC.

R. The NYSDEC would consider an open tour of the site provided access is granted by the property owner. The Department also will photograph and flag the targeted areas. The adjacent landowners and local government officials can contact the DEC project manager directly to discuss this further.

14C. How many cubic yards of soil and how many cubic yards of bedrock will be removed from each area?

R. Approximately 294 yd^3 of soil and 218 yd^3 of bedrock will be removed from area A, 93 yd^3 of soil and 42 yd^3 of bedrock will be removed from area B, and 105 yd^3 of soil and no bedrock will be removed from area C.

15C. What is the depth to bedrock in the areas of soil contamination?

R. The depth to bedrock in area A is approximately 3 feet, in area B it is approximately 4.5 feet, and in area C it is approximately 4 feet.

16C. Why was a horizontally configured, pneumatically fractured soil vapor extraction system not considered for areas A, B and C.

R. A soil vapor extraction system utilizing pneumatic fracturing of the soils was considered but was screened out in the detailed analysis of remedial alternatives due to several potential problems with this technology that could not be confidentially answered without additional field testing. It was assumed that the pneumatic fracturing included the introduction of some material, such as sand, to maintain the fracture openings as the native soils would not have enough strength to maintain the openings. However, short circuiting of these fractures was a significant concern due to the shallow nature of the soils (as little as 2 feet) and the presence of numerous preferential pathways from abandoned borings, soil gas points, underground utilities and foundation walls. The introduction of vertical fractures was also a concern as this would enhance vertical migration of the contaminants. The installation of the vapor extraction wells was also a problem. Installation by trenching was undesirable as this would volatilize a significant amount of the contamination into the atmosphere. Additionally, it was unclear how this technology would work on the weathered bedrock layer. Several other problems were also anticipated, but are not discussed here for the sake of brevity.

17C. In the PRAP there is no discussion of whether there is a need, based on health risks, to remediate the site soils considering the implementation of a groundwater remedy at the site.

R. The PRAP is only intended to highlight the Remedial Investigation and Feasibility Study (RI/FS) report and summarize the Proposed Remedial Action Plan. The RI/FS report considered public health risk based on soil and groundwater separately and found that the soil by itself presented a risk in excess of health risk guidelines. The risk assessment to current resident receptors was based on ingestion and dermal contact with surface soils and would not be significantly reduced by the groundwater remedy.

18C. There also is no discussion in the PRAP on whether the groundwater remediation will have an impact upon the type of soil remediation that is selected.

R. The groundwater remediation is not expected to significantly affect the contamination in the site soils above the groundwater table. Additionally, if the source of contamination in the site soils is not remediated, the contaminated soils will continue to impact the groundwater and actually prolong the groundwater remedy.

19C. The RI/FS report does not recommend the excavation of bedrock.

R. The RI/FS report recommended alternative called for the excavation of an estimated 2,400 yd^3 of soil and possibly the underlying weathered bedrock as it would be cost effective to remove this layer if it was contaminated with the trichloroethene (TCE) exceeding soil criteria. It is also noted that the extent of VOCs closer to and in the top layers of weathered bedrock was unknown at that time. The recommended alternative also planned to reinject the treated groundwater along the building to further aid the groundwater remedy by flushing out the VOC contamination in the shallow bedrock underlying these soils.

20C. The second PRAP calls for excavation of weathered bedrock from at least two locations at the site where contamination above standards is only suspected.

R. Sample SB-52 (refer to Table 1) is from the weathered bedrock in Area A. This sample contains 2,200 ppb of Trichloroethene, which is above the soil cleanup criteria of 700 ppb. Other data in the RI/FS report and collected during June 1995, indicate that contamination in the weathered bedrock is also found in Area B. The full extent of the contamination in the weathered bedrock will be determined during the remediation of these areas.

21C. Have there been any other Records of Decision that included excavation of weathered bedrock as a remedial selection?

R. There have been no other Record of Decisions that call for the excavation of weathered bedrock, however, the remedial program at each site is designed to address the unique conditions of each site.

22C. There can be no certainty that removal of weathered bedrock will improve the health risk for potential human receptors. A cost benefit analysis should be undertaken to determine if excavation and treatment or disposal of bedrock provides sufficient return for the proposed expenditures.

R. The removal of any source areas, even small areas, will have significant benefit for the remediation of the site and in improving the health risk to the public. The additional cost of the treatment or disposal for this material was considered in the selection of the alternatives. Furthermore, remediation of this source area will increase the efficiency of the groundwater treatment.

23C. Will there be any blasting associated with the removal of the bedrock?

R. No, the bedrock that will be removed is weathered and can be removed with the typical excavation equipment we will have on site to remove the contaminated soil.

24C. We question whether the site clean up goals should be for an industrial\ commercial use.

R. Although the site is presently being used as an industrial site, the potential for the site to be used in a residential scenario in the future is likely. As such, residential cleanup goals are appropriate for this site.

25C. Since thermal desorption would permanently reduce the volume and toxicity of the contamination, its use should be evaluated for treatment of the excavated soils in alternatives 2 and 3.

R. Alternative 2 called for the excavation and off site disposal of the top 2 feet of soil in Area A, B and C. Alternative 3 called for the excavation and off site disposal of the soils to the top of the weathered bedrock in Areas A, B and C. Please refer back to pages 9 and 10 of this ROD for a detailed description of these alternatives.

The inclusion of thermal desorption in alternative 2 would not have changed the alternative's failure to adequately protect human health and the environment due to the contamination that would remain in the underlying soils and bedrock. The treatment of the soils under alternative 3 by low temperature thermal desorption was considered in the preliminary analysis of the alternatives. However, this alternative was not carried into the detailed analysis, Only those that undergo the detailed analysis are included in the PRAP, as this alternative was very similar to alternative 6. The inclusion of treating the weathered bedrock in alternative 6 is expected to provide a significant benefit at a very small increase in cost. The excavation equipment and treatment system would already be on site, as such, the additional cost for excavation and treatment would be small.

26C. Why was Alternative 4 selected as the remedy in the event that thermal desorption or a comparable technology was unavailable.

R. Alternative 4 is selected as a contingency remedy, in the event that an adequate number of bids are not be received for the remediation of soil using thermal desorption. Alternative 4 was determined to be the next best cost-effective remedial program for the site in this event.

27C. Consideration should have been given to other proven treatment methods before resorting to off site disposal.

R. Consideration was given to other treatment methods, both in the RI/FS and the development of the PRAP. The rationale for the selection of Alternative 6, excavation of contaminated soils and on site treatment is also detailed in both documents.

28C. Will the excavations of contaminated soil be left open?

R. No, the excavations will be backfilled with the treated soils and clean soil.

29C. I also presume, since the soils are contaminated, that pains would be taken to assure a minimum of dust and that the soils would be carefully contained.

R. Throughout the remedial process, care will be taken to properly containerize any contaminated soils. Additionally, measures such as proper decontamination procedures, fugitive dust control and monitoring, and standard health and safety monitoring will be performed at the site. Corrective actions, such as the wetting down or covering of soils to reduce dust, will be implemented as necessary.

30C. How does the cost for treatment by low temperature thermal desorption compare to the cost for the excavation and off site disposal of the soils?

R. It is approximately twice as expensive to remove and dispose of the soils as to treat them onsite by low temperature thermal desorption. The high cost of offsite disposal is largely due to the regulatory restrictions that these soils would have to meet for off site disposal. Due to the high levels of contaminants present in these soils, these regulations would require treatment before disposal.

31C. What is the size and distance of the soil area to be excavated along the north side of the building? How far up the hill does this excavation go?

R. All of the areas to be excavated are between the building and the dirt access road that goes around the building and the concrete pad. The excavations along the north side of the building will stop at the access road which is at the base of the hill.

32C. At the next meeting, will we know who will do the soil excavating?

R. The excavating work will be done by a contractor or his subcontractor who will be competitively procured. If this information is available by our next public meeting, it will be provided during the meeting.

33C. What kind of trucks will take away the soil?

R. The proposed remedy will not take any of the soil off of the site. To move the soils around on the site, a backhoe with a front end loader is expected to be sufficient.

34C. How will the necessary equipment access the site, will they use any residential roads?

R. It is expected that all of the equipment will enter and leave the site from Route 9G by the main entrance to the Route 9G Industrial Center.

35C. What good will it do to treat just a little of the soil at the site?

R. By removing the contamination source in the soil, we can prevent any more contamination from migrating into the bedrock aquifer. Even a minor amount of contamination in the soil can contaminate the groundwater and once this contamination is in the bedrock aquifer it becomes much more difficult to remove.

36C. When will the remedy be implemented?

R. This remedial program will be included as a task for the State standby consultant who is already at work on the remedial program for the groundwater at the site. It is expected that the design aspect of this remedy would be finished during the early spring so that the actual construction of the remedy can begin in the late spring of 1996.

37C. How does the contamination get down into the wells?

R. As precipitation, i.e. rainwater, runs through the soils it dissolves and carries enough of the contamination in the soils to contaminate the groundwater beneath the site. The wells receive their water from the groundwater beneath the site.

38C. How can such small areas of soil cause so much groundwater contamination?

R. The contamination in the soil primarily moves in a downward direction with the water infiltrating though the soil.. This downward migration then impacts the groundwater beneath the contaminated soil. Once the groundwater is contaminated, it migrates to and contaminates a larger area.

39C. Would on site treatment of soils affect the residents? What method was considered, would it be smelly or noisy?

R. The on-site treatment method considered was thermal desorption. This method involves the heating of the soil to high temperatures. At these temperatures, the contamination readily volatizes off of the soil particles. These vapors are then collected and treated. Measures would be taken to assure the complete collection of these vapors. As such, there should be no odors. Additional measures would also be taken to minimize any other impacts, such as noise to the surrounding community.

40C. Treating the volatile organic contamination so close to people's homes could expose them to the fumes from the compounds. What kind of testing would be done to protect the residents from these fumes?

41C. All of the alternatives, including the selected remedy, considered the closeness of the adjoining homes. Each of the alternatives included various measures to prevent any exposures to these residents from occurring. The exact details of these measures and any associated testing will be worked out during the remedial design, but they would likely include air monitoring in and around the work zone area.

42C. Will the residents be notified if the levels get too high?

R. Yes, the Department of Environmental Conservation would notify the residents if a problem occurs.

43C. What about the time lapse if we need to get equipment to remediate the problem?

R. During the remediation we will have contingency plans in place and the necessary equipment available for immediate use to address these problems. It is our intention to resolve any problems that occur before they pose an exposure risk to the local residents. After the remedial design is complete, we will hold another public meeting to discuss the health and safety measures we will undertake and our contingency plans.

44C. When NOW plastics operates, I smell a very strong odor.

R. Any odor complaints should be reported to the Department of Environmental Conservation Region 3 office in New Paltz. Their telephone number is (914)256-3000 or the Dutchess County Health Department of Health should be contacted at (914) 486-3400.

45C. Which will be done first, the soil remedy or the groundwater remedy?

R. Work on the groundwater remedy design and construction is already under way. Once the ROD for the soil remedy is issued, work on the soil design will begin. It is expected that the groundwater remedy will be operating before the soil remedy construction begins and the soil remedial program will be completed first.

46C. At the first public meeting the Department showed a map of the plume and impacted wells that basically ended at the Route 9G Garden Center. How is it that Residence B's well , which is not in this plume area, is now seeing increasing levels of contamination?

R. Although we have a good understanding of the extent of groundwater contamination, it is extremely difficult to precisely map a contaminant plume in a fractured bedrock aquifer as we have no real way of predicting the groundwater flow through each fracture. Additionally, volatile organic contamination is a fairly common problem and the contamination in this well may or may not be related to the site. The most practical approach we can take at this time is to continue this residence supply her with bottled water and to continue to monitor the residential wells in the area.

47C. If the groundwater remedy begins first, wouldn't the pumping draw more contamination into the groundwater?

R. No, the primary way the contamination moves down into the groundwater is with precipitation. The pumping will not affect this.

48C. We received lots of snow this winter, will this affect the amount of contamination that migrates into the groundwater?

R. This additional water will cause some of the contamination to migrate into the groundwater. However, this should not affect the overall remedial program.

49C. What wells are going to be pumped as part of the groundwater remedial program.

R. Three recovery wells have been installed as part of the groundwater remedy. One is to the south of the concrete pad, one is right next to the northeast corner of the building and the third one is on top of the hill just to the north of the building.

50C. Will these wells be like those big noisy pumps used on oil wells?

R. No, these pumps will be similar to the pumps that many homeowners have in the basements of their homes.

51C. During the remediation, what will happen if the residential wells go dry?

R. This was a consideration during the remedial design, and that is largely why we will be reinfiltrating a portion of the treated water. We will be monitoring the water elevations in the monitoring wells at the site, so that we can detect any larger than expected drawdown. We are confident that we will not cause any wells to dry up. However, if this does happen please notify immediately as we have prepared several options, such as reducing the pumping rate, to address this potential problem.

52C. What is the average depth of the wells at the site?

R. The well depths range from 20 to 100 feet below the ground surface.

53C. How will the pumped water be treated?

R. The details of the groundwater treatment system are still being worked out. The system will likely be an air stripper tower with carbon polishing for the vapors. This system volatizes the compounds out of the water and then traps them onto a carbon filter.

54C. Has this system been used at other sites?

R. Yes, it has been used at other sites and has been found to be more effective than simply passing the water through a carbon filter.

55C. Once the carbon filter is saturated with contaminants, what is the proper disposal method?

R. The filter will likely have to be disposed of as hazardous waste. Although the filter and contaminants are very similar to the ones on several of the local homeowner wells, this filter will not fall under the household exemption for hazardous waste.

56C. Can a field representative for the standby consultant who is designing this system be present at the next public meeting?

R. Yes, a design engineer will be present at the next public meeting.

57C. How long will the site be monitored?

R. There will be no need to monitor the soil since remedial program will remove all of the soil contamination to the extent practical. The groundwater remedy is expected to operate for a period of seven to ten years, after which monitoring would occur. The length of this monitoring period would be directly related to the groundwater contaminant levels that will remain after the remedy stops.

58C. Will you also be monitoring Crum Elbow Creek?

R. We will be monitoring the water discharged into Crum Elbow Creek. The treated water will meet all necessary discharge permit requirements and appropriate standards, criteria and guidelines.

59C. Why is some water being piped to Crum Elbow Creek and not reinfiltrated to the groundwater.

R. Some of the groundwater that will be extracted and treated will be reinfiltrated back into the groundwater table to limit the amount the groundwater will be drawn down by the remedy. However, it would be extremely difficult to reinfiltrate all of this water back into the groundwater table. Therefore, most of it will be discharged into Crum Elbow Creek after it is treated.

60C. How will the water that is to be discharged to Crum Elbow Creek get from the site to the creek?

R. The details of that will be determined in the remedial design for Operable Unit 1. It is very likely that an underground pipe will be used.

61C. Will this pipe go through the culvert on Ingell's property?

R. That is still under consideration.

62C. What about the ditch along the northeast side of the building, is the soil or the runoff in this ditch a concern?

R. The soil in this ditch was sampled and found to decrease to levels below soil cleanup guidelines outside of the area to be excavated. The soil contaminant levels in this ditch were considered when the areas for excavation were developed. The runoff water from this ditch is not a concern since this runoff is minimal and does not leave the site.

63C. Will we attempt to recoup expenses from the property owner, Mr Fried.

R. Yes, I believe the state will seek cost recovery from Mr. Fried, and other potentially responsible parties.

64C. Why do we have to wait, why not initiate the litigation now?

R. The NYSDEC will begin to initiate cost recovery activities immediately after the completion of this ROD. Since the PRP has already refused to implement the ROD, the NYSDEC will implement the remedy and include these costs in our cost recovery action.

65C. Is Mr. Fried still liable if he sells the property?

R. Yes, he would still be liable.

66C. What if he dies, would he still be liable?

R. The Department of Environmental Conservation could pursue his estate.

Appendix B

Now Corporation Site
ID: 3-14-008

ADMINISTRATIVE RECORD

1. Phase I Investigation Report, Now Corporation site, Wehran Engineering, November 1983.

2. Remedial Investigation/Feasibility Study Workplan, Now Corporation site, Engineering-Science, October 1992.

3. Phase II - Remedial Investigation/Feasibility Study Workplan, Now Corporation site, Engineering-Science, July 1994.

4. Remedial Investigation/Feasibility Study Report Volume I, Now Corporation site, Engineering-Science, January 1995.

5. Remedial Investigation/Feasibility Study Report Volume II, Now Corporation site, Engineering-Science, January 1995.

6. Remedial Investigation/Feasibility Study Report Volume III, Now Corporation site, Engineering-Science, January 1995.

7. Record of Decision, NOW Corporation site, Operable Unit 1, New York State Department of Environmental Conservation, March 1995.

8. Letter dated March 15, 1995 from Robert S. McEwan, Jr. (Nixon, Hargrave, Devans & Doyle) to John Helmeset (New York State Department of Environmental Conservation), Re: Comments on the PRAP (February 15, 1995) for the NOW Corporation Site.

9. Letter dated March 15, 1995 from Daniel J. Lowenstein and Bruce R. Nelson (Malcolm Pirnie Inc.), to John Helmeset (New York State Department of Environmental Conservation), Re: Comments on the PRAP (February 15, 1995) for the NOW Corporation Site.

10. Letter dated March 15, 1995 from Frederick Loneker to John Helmeset (New York State Department of Environmental Conservation), Re: Comments on the PRAP (February 15, 1995) for the Now Coporation site.