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Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

VanDerHorst Plant No. 2 Site

I.D. Number 9-05-022

August 1993

New York State Department of Environmental Conservation

MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

VanDerHorst Plant No. 2 Site
Olean
Cattaraugus County, New York
Site Code: 9-05-022
Funding Source: 1986 Environmental Quality Bond Act

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the VanDerHorst Plant No. 2 Site in Cattaraugus County, New York. The selection was made in accordance with the New York State Environmental Conservation Law (ECL), and is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). This decision document summarizes the factual and legal basis for selecting the remedy for this site.

Exhibit A identifies the documents that comprise the Administrative Record for the site. The documents in the Administrative Record are the basis for the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision ("ROD") may present a substantial threat to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The major elements of the selected remedy include:

- The asbestos materials will be removed from the plant building and the building will be demolished. The debris will be disposed at appropriate off-site facilities. This will will eliminate the threat posed by the contamination inside the building and provide the space needed for the construction of the cap.

- An impermeable, multilayer cap will be constructed on-site which will be located to the west of the plant building. This will minimize the leaching of contaminants from the soil to the groundwater.

- Soils that are identified as characteristic hazardous waste will be excavated, chemically treated (stabilized) on-site and will be placed on-site before the placement of the cap. This will eliminate the leaching of contaminants from the hazardous soils to the groundwater.

- Contaminated soils (above clean up goals) located in areas other than the cap area will be excavated and will be consolidated on-site in the area to be capped. This will

eliminate the threat posed by the contaminated soil to the public health and the environment via direct contact and fugitive dust emissions.

- The contaminated sediments from Two Mile Creek and the Catch Basin will be dredged and consolidated on-site before the placement of the cap. This will eliminate the threat posed by the creek sediments to the biota and will prevent the leaching of contaminants from the catch basin sediments to the groundwater.

- The on-site groundwater contamination which is limited to the mid-section of the site will be monitored. Because of the inconsistencies detected in the concentration of the contaminants in the groundwater, a two year quarterly monitoring program was implemented in May 1992 by the State. Based on the results obtained from this program, a decision to remediate the groundwater by pump, treat, and discharge methods or natural attenuation process will be made.

- A long-term groundwater monitoring will be implemented to determine the effectiveness of the remedial program after the completion of the construction of the selected remedy.

GND Fees

NEW YORK STATE DEPARTMENT OF HEALTH ACCEPTANCE

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

DECLARATION

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

Because this remedy will not allow for unlimited use and unrestricted exposure within five years after commencement of remedial action, a five year policy review will be conducted. This evaluation will be conducted within five years after the components of the remedy have been constructed to ensure that the remedy continues to provide adequate protection of human health and the environment.

August 3, 1993
Date

Ann Hill DeBarbieri
Deputy Commissioner
Office of Environmental Remediation
New York State Department of Environmental Conservation

TABLE OF CONTENTS

Glossary of Acronyms

CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act
ECL:	Environmental Conservation Law
NCP:	National Contingency Plan
ND:	Not Detected
NYCRR:	N.Y. Codes, Rules, and Regulations
NYSDEC:	N.Y. State Department of Environmental Conservation
NYSDOH:	N.Y. State Department of Health
O&M:	Operation and Maintenance
ppb:	parts per billion
ppm:	parts per million
PRAP:	Proposed Remedial Action Plan
RI/FS:	Remedial Investigation and Feasibility Study
ROD:	Record of Decision
SARA:	Superfund Amendments and Reauthorization Act
SCG:	Standards, Criteria, and Guidance
ug/kg:	microgram per kilogram
mg/kg:	milligram per kilogram
ug/l:	microgram per liter

Notice

The mention of any trade names or commercial products in this document does not constitute any endorsement or recommendation for use by the New York State Department of Environmental Conservation.

RECORD OF DECISION
VANDERHORST CORPORATION PLANT NO. 2 SITE
SITE ID NO. 9-05-022

I. SITE LOCATION AND DESCRIPTION

The VanDerHorst Corporation Plant No. 2 site is located within the northern section of the City of Olean, Cattaraugus County, New York. The property is bounded by an industrial area on its east, several residential properties on its west, a Conrail railroad track on its south, and New York Route 17 on its north (Figure 1). The topography of the site is quite flat and surface water runoff drains to the City's storm sewer system. The nearest surface water is Two Mile Creek which borders the north of the site. The naturally occurring groundwater flow is toward the southwest. The Alleghany River is approximately 1.5 miles southwest of the site.

For the purposes of the following discussions, the overall "Site" can be thought of as consisting of "on-site" and "off-site" components. On-site refers to the property operated by VanDer Horst Corporation and off-site refers to other properties surrounding the facility where samples were taken to determine the impact from the site. These off-site areas include residential areas on the north, east and west and an industrial area on the south and southwest.

II. SITE HISTORY AND ENFORCEMENT STATUS

The VanDerHorst Corporation was founded in 1940 in the City of Olean. The first chrome plating operation in Olean was performed at Plant No. 1, which is located 0.5 miles east of Plant No. 2. The VanDerHorst Corporation opened a second plating operation, plant No. 2, in 1951 on Cornell Street in Olean. Plant No. 2 was constructed to perform iron plating to repair and restore the worn surfaces of machinery components, including cylinders and crankshafts.

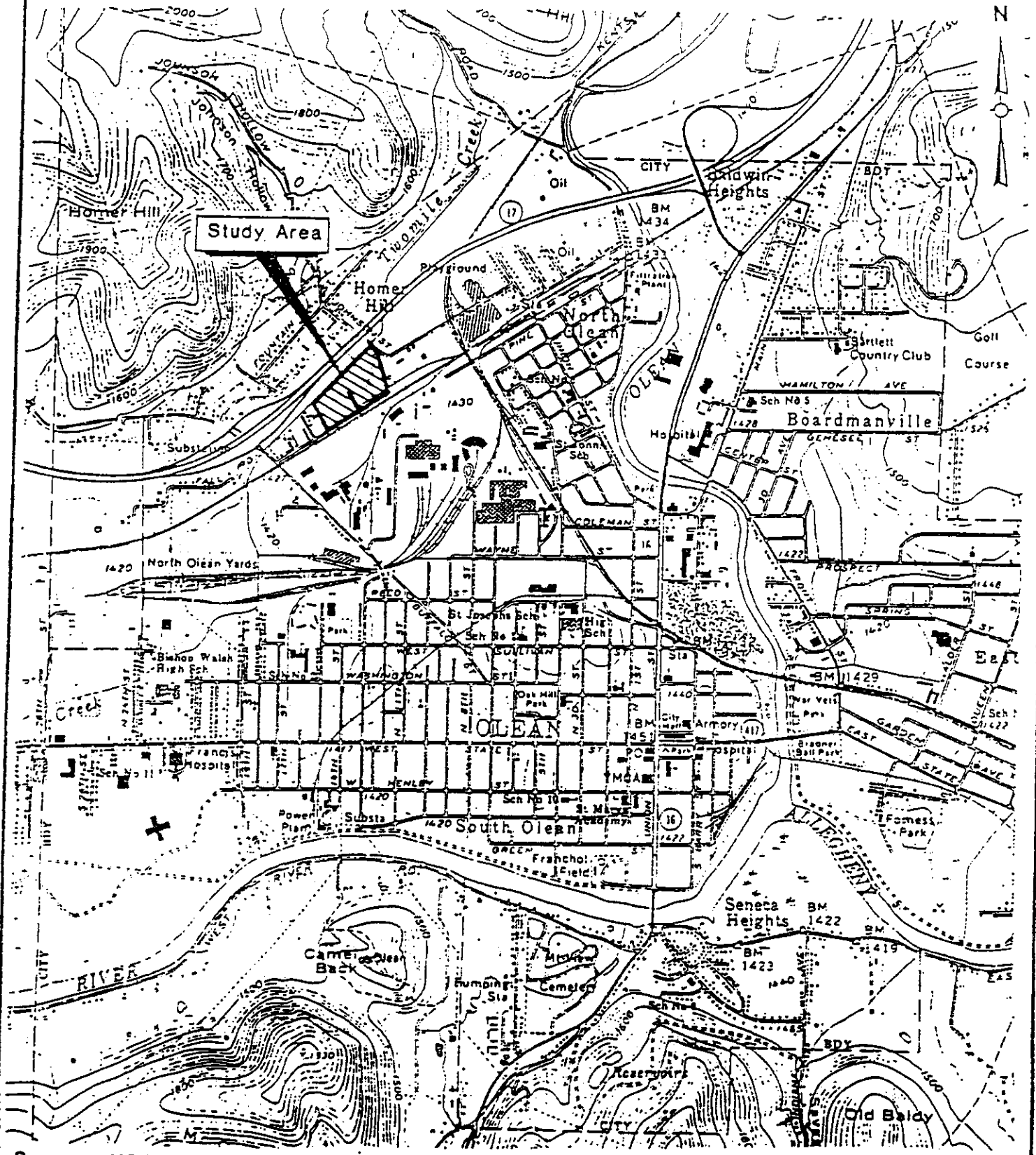
The plant's plating process utilized many large open holding tanks containing a variety of hazardous substances. Figure 2 shows the layout of the plant building, and the location of the tanks inside the building. Several tanks are located below grade to the approximate depth of 12 feet. From the data obtained during the investigation, it is believed that the below grade tanks located inside the building were a major contributor to the subsurface soil and groundwater contamination at the site.

The on-site disposal of wastes reportedly occurred throughout the plant's active period. From the previous records of the plant's activities, documentation from the County Health Department, and interviews with former employees, it is believed that wastes from Plant No. 1 were dumped at Plant No. 2. An area west of the Plant No. 2 building was used as a fill area to deposit all the wastes generated at the plant.

Plant No. 2 ceased manufacturing operations in the summer of 1987. During a preliminary visit in the fall of 1988 by the New York State Department of Environmental Conservation (NYSDEC), several surface soil samples were collected in the fill area for chemical analyses. The results showed very high concentrations of chromium and barium in the soil. The VanDerHorst Corporation Plant No. 2 was listed in the "Registry of Inactive

FIGURE 1

Site Location Map - Van Der Horst Company
RI/FS Plant No. 2



Scale: 1"=2000'

ERM-Northeast

Hazardous Waste Sites" by the NYSDEC in 1988. The Plant No. 2 site was classified as a Class 2 site, which requires remediation to eliminate the significant threat posed by the site to the environment and public health.

In 1989, a summary abatement order was issued by NYSDEC to VanDerHorst Corporation stating that the conditions existing at the plant facility constituted an imminent and substantial danger to public health and the environment. At the hearing, substantial evidence was presented by the VanDerHorst Corporation to prove that the company lacked financial resources to undertake remedial activities, thus making it necessary for the State to do so. Funds from the 1986 Environmental Quality Bond Act were used to investigate the site.

In 1989, another summary abatement order was issued requiring the immediate removal and disposal of large volumes of corrosive plating solutions and other hazardous substances which remained at the VanDerHorst plants. The company responded with a proposed closure plan which fell short of requirements for closure, but did include financial statements which demonstrated that the company lacked financial resources to undertake the necessary activities for adequate closure. The NYSDEC requested USEPA to take action immediately because of the imminent threat posed by these improperly stored chemicals inside the plant's buildings. The USEPA mobilized its team in the middle of 1989 and erected a fence around the fill area at Plant No. 2 site. The chemicals inside the building were properly characterized, packaged, and removed. The removal action completed by USEPA eliminated the threat posed by the various chemicals and spent solutions which were improperly stored inside the building on the site.

NYSDEC's Remedial Investigation/Feasibility (RI/FS) study was completed and in March 1992, a Record of Decision (ROD) was executed for VanDerHorst corporation Plant No.1. The recommended remedial action in the ROD includes asbestos removal, demolition of the building and off-site disposal; on-site stabilization of soil and sediments from Olean Creek and sanitary sewers; pumping of groundwater, treating and discharge to the sanitary sewer for five years as a pilot test program, and long-term groundwater monitoring.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

A Citizen Participation (CP) Plan was developed and implemented to provide concerned citizens and organizations with opportunities to learn about and comment upon the investigations and studies. All major reports were placed in document repository for public review located at the Olean Public Library, 2nd and Laurens Street, Olean, NY. A public contact list was developed and used to distribute fact sheets and meeting announcements.

The following are the dates of CP activities such as public meetings and mailings of information sheets that were conducted for the site:

April 24, 1989	- Information Sheet and Public Meeting
August 21, 1989	- Information Sheet
October 20, 1989	- Information Sheet
March 22, 1990	- Information Sheet
June 26, 1991	- Information Sheet
January 07, 1993	- Information Sheet and Public Meeting

In April 1990, the NYSDOH completed a Health Survey and a Cancer Incident Study for the Olean area. The results are available with the NYSDOH and at the Olean Public Library.

The Proposed Remedial Action Plan (PRAP) for Plant No. 2 was prepared by the State in December 1992. A public meeting was held in Olean in January 1993 and the public comment period was set for January 14, 1993. The comment period was extended twice as requested by the City of Olean Common Council. The final public comment period ended in April 1993.

Inquiries and comments (written and verbal) were received and responded to throughout the course of the project from citizens, elected officials, and special interest groups. Comments received regarding the Proposed Remedial Action Plan have been addressed and are documented in the Responsiveness Summary (Exhibit B).

IV. SCOPE AND ROLE OF THE RESPONSE ACTION

The remedial action selected in this document addresses the on-site contamination areas, while off-site areas did not contain contamination above the clean-up goal or groundwater standards. The media contaminated at the Site include on-site soils, on-site groundwater, and sediments in the Two Mile Creek and a catch basin. The principal threat at the Site is the contaminated soil on-site which releases contaminants to the other media. The information below further defines the risks presented by the Site and describes how the remedy will minimize these risks.

Groundwater underneath the Site property moves generally towards the southwest. The City's main water supply system is located to the southeast of the site which is approximately ten miles away from the site and has been found to be unaffected by contamination from this Site. A supplementary water supply system to meet the peak demands is located approximately one mile to the northeast of the site, but this system pumps the surface water from Olean Creek and not from the groundwater. Drinking water for the nearby residences comes from the local public water supply.

In some cases, the characteristics of a given site make it advantageous to complete the investigations and remedial actions in distinct pieces, or "operable units." An example would be a site where there was a landfill, a lagoon, and a storage area. In that case, it could be more efficient to address each unit separately. At the VanDerHorst Site, there were no advantages in dividing the Site into separate operable units. Therefore, the remedy selected in this document addresses the entire site.

V. SUMMARY OF SITE CHARACTERISTICS

In 1989, the NYSDEC contracted with ERM Northeast to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Site. The RI for the site was done in three phases. Phase I involved sampling and analyzing the surface and subsurface soil, groundwater, and Two Mile Creek sediments. Soil samples from the backyards of the residences adjacent to the site were also taken during the Phase I RI. The samples were analyzed for volatiles, semi-volatiles and metals. The results of these analyses showed contamination in soil, sediment, and groundwater. The major contaminants detected were chromium, lead and arsenic in soil/sediment and chromium, lead, arsenic, beryllium, and benzene in groundwater. These contaminants were determined to be associated with the past

plant activities.

The Phase II RI expanded the investigation based on the results of Phase I RI to define the extent of contamination in various media. The extent of soil/sediment contamination was better defined by taking more samples to calculate the volume of contaminated soil and sediment. Additional monitoring wells were installed to define the extent of groundwater contamination at the site.

The Phase III RI focussed mainly on the investigation of the plant building interior. Several monitoring wells and borings were drilled inside the building to collect and analyze groundwater and subsurface soil samples. At several places inside the building, wipe and dust samples were collected for chemical analyses. The results of these analyses showed that the soil and groundwater beneath the building is contaminated with chromium, lead, arsenic and a few volatiles. Some of the pipelines have asbestos insulation. The sampling locations of these investigations and the locations of the monitoring wells are shown in Figures 3 thru 6. Please refer to the investigation reports for more details.

Geology of the Site

Based on the previous studies conducted by the USGS, the City of Olean lies within the glaciated Alleghany River basin. This basin is a glacially scoured valley that has an east-west trend, and a bedrock relief of one hundred feet (230-330 feet below the land surface). The surface deposits are made up of gravelly silty loam which extends to a depth of 30 feet in some areas of the valley, but comprises only a thin section of approximately 10 feet at the Site. A valley fill deposit of fluvial sands and gravel is also present in the area which is approximately 70 feet thick and lies 10-80 feet below land surface. This deposit constitutes the major aquifer in the Olean area and is saturated at depths of 15-20 feet below grade.

According to the investigations, the deposits below the site were found to be primarily of gravel and sand with occasional cobbles, overlain by a few feet of till material. The geotechnical logs for monitoring wells installed at the site correspond with the USGS geological cross-section pictured in Figure 7. A large clay lens was found within the sand and gravel deposit at the northeastern end of the site. The lens thickness varied from 9 feet to 25 feet. The subsurface sediments that were encountered up to 60 feet below grade were similar laterally and vertically in the other areas of the site.

Soil and Sediment Contamination

The Remedial Investigation Report identified four historical source areas as shown in Figure 8. The surface and subsurface soil contamination in source area No. 1 might have resulted from past disposal practices. The contamination in area No. 2 was likely from the leaking chromic acid vat located below grade inside the plant's manufacturing building. Some of the soil samples from area No.3 contained significant concentrations of the chemicals of concern for the site. During the design phase more soil samples will be collected and analyzed to determine whether area No.3 should be considered as a source or not. The contamination detected in the catch basin sediment is believed to be contributing contamination to the groundwater in area No. 4.

The highest chromium concentration detected in area No. 1 in the surface soil was 9690 parts per million (ppm) and in the subsurface soil was 13,100 ppm (at 2-4 feet deep). The

highest chromium concentration detected in area No. 2 in the subsurface soil was 1420 ppm (at 18-20 feet deep). In area No. 4, the chromium concentration detected in the catch basin sediment sample was 43,400 ppm. The chromium contamination detected in the residential soil collected immediately adjacent to the site ranged from 14-20 ppm(comparable with area background). The highest chromium concentration detected in the Two Mile Creek sediment was 4850 ppm. Arsenic and Lead were also detected in soil and sediment samples on locations where chromium was detected. As chromium was considered as the primary contaminant, addressing the chromium contamination will also include arsenic and lead contamination.

Groundwater Contamination

The aquifer beneath the site is approximately 300 feet deep with a clay layer originating at the northeastern end of the site with thickness varying from 9 feet to 25 feet. The aquifer is very productive and has fairly high transmissivity and permeability. The vertical downward hydraulic gradient of the aquifer is more than the horizontal gradient. Because of this, the potential for vertical downward migration of the contaminants in the aquifer is more than for horizontal migration. The groundwater flow in the aquifer is generally to the southwest. This gradient is relatively small across the site and appears to vary seasonally with an "average" flow direction of southwest. The City's main water supply system is located to the southeast of the site which is upgradient to the site. A supplementary water supply system to meet the peak demands is located approximately one mile to the northeast of the site, but this system pumps the surface water from Olean Creek and not from the groundwater.

Two rounds of groundwater sampling were carried out during the Remedial Investigation. The results of the second round of sampling were found to be inconsistent with first round of sampling. The cause of the inconsistencies has not yet been identified. The RI and FS reports were completed based on the results of these two sampling events of groundwater. Because of the uncertainty of the concentrations detected in the groundwater, the NYSDEC initiated a quarterly groundwater sampling program in May 1992 for a period of two years. The results from these sampling events showed concentrations much lower than the previous two sampling events. Also the concentrations detected in the quarterly sampling events were well below groundwater standards except at three on-site locations. All the groundwater samples collected were unfiltered samples. Table 1 presents the results of the six groundwater sampling events. Benzene was detected in both on-site and upgradient monitoring wells. Benzene concentrations ranged from 12 ppb to 170 ppb.

TABLE 1

Groundwater Sampling Rounds
(chromium concentration in ppb)

	First	Second	Third	Fourth	Fifth	Sixth
	(02/90)	(11/91)	(05/92)	(08/92)	(11/92)	(03/93)
MW-2S	135	393	106	188	19	209
MW-4S	ND	187	<10	<10	<10	<10
MW-5S	1500	10	10	19	10	66
MW-5D	18	362	10	<10	<10	<10
MW-7S	215	539	18	12	10	<10
MW-9S	296	10,100	51	56	132	400
MW-10	97	827	<10	10	<10	<10
MW-14	NA	197	<10	15	<10	<10
MW-15	NA	208	<10	<10	<10	<10

MW-19	NA	<56	<10	13	<10	<10
MW-20	NA	1680	426	130	22	67

ND - Non detected NA - Not analyzed

VI. SUMMARY OF SITE RISKS

Part of the RI/FS process included evaluating the risks presented to human health and the environment by the Site as it exists now. The results of this "baseline risk assessment" are used to help identify applicable remedial alternatives and select a remedy. The components of the baseline risk assessment for this Site include:

- a review of the Site environmental setting;
- identification of Site-related chemicals and media of concern;
- an evaluation of the toxicity of the contaminants of concern;
- identification of potential exposure pathways;
- estimating the added risk of experiencing health effects; and
- an evaluation of the impacts of the Site upon the environment.

Exposure pathways consist of five elements: a source of contamination, transport through environmental media, a point of exposure, a route of human exposure, and an exposed population. An exposure route is the mechanism by which contaminants enter the body (e.g., inhalation, ingestion, absorption). Table 2 lists the chemicals identified that are of concern for the site based on the results of the contamination assessment.

The risk assessment for this Site consists of a human health assessment and an environmental risk assessment. Based on the health risk assessment, the threats include direct contact with the contaminated soil, inhalation of contaminated soil via fugitive dust emission, and potential future use of groundwater. Based on the environmental risk assessment, several of the contaminants found in sediment and surface water samples collected from Two Mile Creek are above standards and may be impacting the benthic and aquatic life in the Two Mile Creek. Table 3 summarizes the results of the health and environmental risk assessments.

Under current conditions there are carcinogenic effects from chromium in fugitive dust emissions from soil and from chromium and arsenic by the incidental ingestion of soil. Under future conditions, if no remedial action is taken, the carcinogenic effects could be caused by incidental ingestion of groundwater contaminated with arsenic, benzene and beryllium or by incidental ingestion and fugitive dust emmissions from soil contaminated with arsenic and chromium. The non-carcinogenic effects, under current conditions, could be caused by incidental ingestion of lead contaminated soil. Under future conditions, non-carcinogenic effects could be caused by ingestion of groundwater contaminated with chromium and arsenic.

TABLE 3

SUMMARY OF CHEMICALS TO BE EVALUATED FOR REMEDIATION IN THE FEASIBILITY STUDY - FINAL FISK ASSESSMENT

	Noncarcinogenic Effects	Carcinogenic Effects	Impacts to Aquatic Life
Current Conditions	• Lead in soil	• Chromium in fugitive dust emissions	• Chromium in sediment
Future Conditions	• Chromium and lead in ground water	• Chromium in fugitive dust emissions • Arsenic, benzene, and beryllium in ground water	• Chromium in sediment

The risk assessment concluded that the following chemicals in soil and groundwater, having a concentration in excess of the cleanup goal determined for the site, are posing threats to public health and the environment:

1. Arsenic, lead and chromium in soil.
2. Arsenic, lead, chromium, beryllium and benzene in groundwater.
3. Chromium in sediments.

NYSDEC Groundwater Standards (6 NYCRR Part 703) were considered as criteria for remediating the groundwater contamination. The cleanup level for arsenic, chromium, lead, beryllium, and benzene in groundwater along with the cleanup levels for contaminants in soil and sediment are presented in Table 4.

Based on health effects, a soil cleanup goal was calculated for chromium only. The calculated chromium cleanup level for soil is 50 ppm [milligram/kilogram(mg/kg)]. Lead contamination in soil was found in most of the areas where chromium was found except for three areas. Areas with arsenic contamination was sporadic and very limited. Figure 9 shows the three areas located on the west of the site where arsenic and lead but not chromium were detected above cleanup goals. As chromium was considered as the primary contaminant for the site, addressing chromium contamination will address the arsenic and lead contamination also. To address the arsenic and lead contamination in the three areas where chromium was detected, the following approach was used to determine the cleanup levels. Based on the results of the background soil samples and, since the potential for exposure to on-site soil exists, a remediation cleanup goal was set at 500 ppm (mg/kg) for lead and 35 ppm (mg/kg) for arsenic in soil. Figure No.9 shows the areas where the contamination in soil exceeded the determined clean up level.

As per NYSDEC's sediment criteria, the cleanup goal for Two Mile Creek sediments is 26 ppm of chromium (mg/kg).

VII. DESCRIPTION OF THE REMEDIAL ALTERNATIVES

To determine the most appropriate method for remediating the site, the Feasibility Study was conducted in three parts. The first step identified and "screened" a large number of technologies that could be employed at the site to treat, contain, or dispose of the contaminants. Technologies that passed the initial screening phase were then grouped into different combinations to form remedial alternatives for further evaluation. After an initial analysis to identify the most promising alternatives, a detailed analysis was performed to serve as the basis for selecting a preferred alternative.

To identify technologies useful in addressing the contamination at the site, the three progressively more specific categories of "general response actions," "remedial technologies," and "process options" were identified. For example, regarding soil, one of the general response actions considered was containment. This was then narrowed into the remedial technology of capping, which was further subdivided into the process options of synthetic, asphaltic, and layered caps. A summary of the general response actions, remedial technologies, and process options considered is given in the Feasibility Study.

The initial screening process evaluated all of the identified process options against the single criterion of technical implementability. This also included the evaluation of the "No

TABLE 4

SUMMARY OF SITE CLEANUP LEVELS

Soil

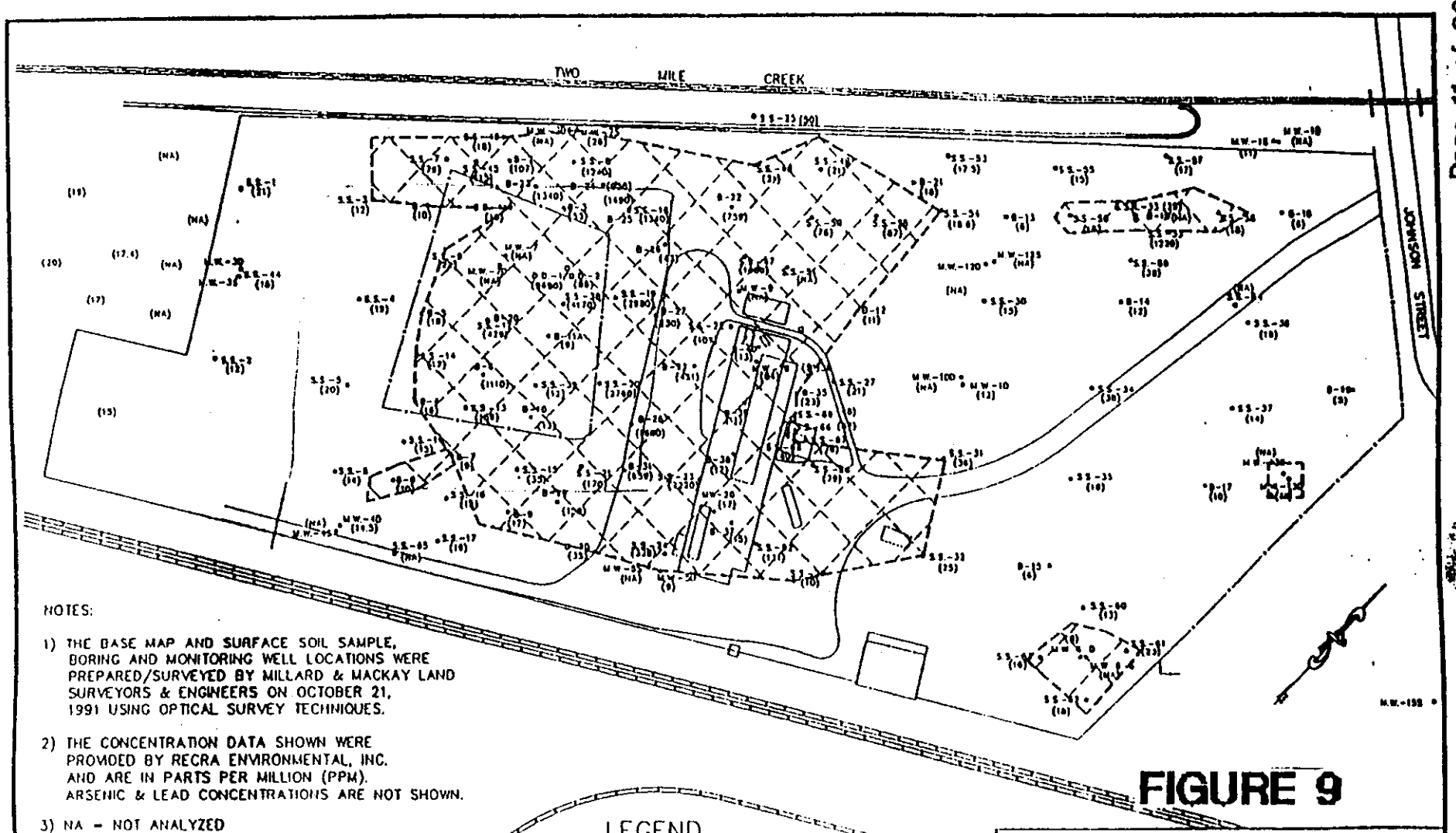
Chemical	Cleanup Level
Chromium	50 mg/kg
Lead	500 mg/kg
Arsenic	35 mg/kg

Ground Water

Chemical	Cleanup Level
Arsenic	25 ug/l
Benzene	0.7 ug/l
Beryllium	3 ug/l
Chromium	50 ug/l
Lead	25 ug/l

Sediment

Chemical	Cleanup Level
Chromium	26 mg/kg



NOTES:

1) THE BASE MAP AND SURFACE SOIL SAMPLE, BORING AND MONITORING WELL LOCATIONS WERE PREPARED/SURVEYED BY MILLARD & MACKAY LAND SURVEYORS & ENGINEERS ON OCTOBER 21, 1991 USING OPTICAL SURVEY TECHNIQUES.

2) THE CONCENTRATION DATA SHOWN WERE PROVIDED BY RECRA ENVIRONMENTAL, INC. AND ARE IN PARTS PER MILLION (PPM). ARSENIC & LEAD CONCENTRATIONS ARE NOT SHOWN.

3) NA = NOT ANALYZED

4) THE LIMITS OF THE SHADED AREA ON THIS FIGURE EXTEND TO FIRST CHROMIUM, ARSENIC OR LEAD CONCENTRATION BELOW ITS CORRESPONDING CLEANUP LEVEL. THE AREA ENCOMPASSED BY THE SHADING IS A CONSERVATIVE APPROXIMATION OF THE EXTENT OF CONTAMINATION AND IS BASED UPON WIDELY SPACED DATA POINTS.

LEGEND

(11) CHROMIUM CONCENTRATION (PPM)
S.S.-23 • SURFACE SOIL SAMPLE (0-0.5FT.)
M.W.-5S • MONITORING WELL (0-2.0FT.)
B-15 • SOIL BORING (0-2.0FT.)
APPROXIMATE AREA OF SURFACE SOIL EXCEEDING CLEANUP LEVELS.

0' 100' 200' 400'
SCALE

FIGURE 9

TITLE
VAN DER HORST PLANT 2
CHROMIUM, ARSENIC AND LEAD
CONTAMINATION IN SURFACE SOIL

PREPARED FOR
NYSDEC

ERM-Northeast
Environmental Resources Management

DATE 7/92

Action" alternative which is carried through the entire process to demonstrate the need for remediation at the site and as a requirement of the National Contingency Plan (NCP). A detailed discussion and evaluation of the initial screening process can be found in the Feasibility Study Report.

The remedial technologies and process options that passed the screening process were then assembled into different combinations or remedial alternatives. Theoretically, an immense number of combinations are possible but the NCP provides guidance (40 CFR 300.430(e)(3)) on how to assemble suitable technologies into alternative remedial actions for evaluation. Three sets of alternatives are described: (1) a range of alternatives that remove or destroy contaminants to the maximum extent feasible and eliminate or minimize, to the degree possible, the need for long-term management; (2) "other alternatives which, at a minimum, treat the principal threats posed by the site but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed;" and (3) "one or more alternatives that involve little or no treatment, but provide protection of human health and the environment primarily by preventing or controlling exposure to ... contaminants, through engineering controls" and other methods to "assure continued effectiveness of the response action."

Other than the no-action alternative which is carried through the analysis for comparison purposes, the potential alternatives for remediating the Site present different methods for achieving the major goals of treatment of on-site soil/sediment contamination. The alternatives vary in their approach to these major goals. Although a large number of possible alternatives could be defined, the Feasibility Study presents four alternatives that are representative of the possible actions that could be taken.

As presented below, present worth is the amount of money needed now (in 1993 dollars and with 5% interest) to fund the construction, operation, and maintenance (O&M) of the alternative for 30 years. These figures do not include the costs already incurred to complete the investigations or to complete the Interim Remedial Measures at the Site. Capital cost mainly reflects initial construction costs and O&M cost is the money needed to operate and maintain the alternative. Time to implement refers to the time needed to achieve remedial objectives. All costs and implementation times are estimates. The cost estimates provided in the ROD are revised estimates based on current unit costs obtained for the construction of the remedial action at other hazardous waste sites.

<u>Alternative 1:</u> No action + monitoring.

Present Worth: $441,000
Annual O&M: $441,000
Capital Cost: $0
Time to Construct: 30 years

The costs and activities associated with this alternative all deal with monitoring. Institutional controls such as deed restrictions for the control on the future use of the property and/or fencing around the site property to restrict the entry into the property. Periodic groundwater monitoring would be done to determine the concentration of the contaminants and the migration pathway. Grass will be planted at the site to minimize fugitive dust emissions from surface soil. The no-action alternative is evaluated to provide a baseline for comparing other alternatives.

Alternative 2: **Asbestos removal, and Building demolition + Treatment of characteristics hazardous waste soils and on-site consolidation + Sediment removal from the Creek and the Catch Basin and on-site consolidation + Placement of a cap + monitoring**

Present Worth: $3,802,855
O&M: $464,000
Capital Cost: $3,338,855
Time to Construct: 30 years

This alternative includes the placement of an on-site multi-layer cap in the area located to the west of the plant building. Figure 10 shows the location and layout of the cap. Contaminated soils above the cleanup goals were identified in areas in addition to the area of the cap. The soils from these areas would be excavated and consolidated in the capping area. The Two Mile Creek sediments exceeding the cleanup goal and the Catch Basin sediment would be dredged and consolidated in the capping area.

The contaminated soil exhibiting hazardous characteristics would be stabilized before it is placed in the consolidated area for capping. With the exception of two areas, contamination in soil extends to a depth of approximately eight feet below ground surface. The two other areas of concern have contamination in soil down to the groundwater table. The groundwater table at the site was determined to be between 16 and 20 feet below grade. The contaminated soil in these two areas would be excavated, stabilized, if necessary, and placed in the consolidation area.

Stabilization is a process that reduces the hazard potential of a waste by converting the contaminants into their least soluble, mobile, or toxic form. The physical nature and handling characteristics of the waste are changed by stabilization. The process involves the mixing of chemical agents and/or stabilizers (e.g. cement) to the soil.

The asbestos identified inside the plant building would be removed and disposed off-site. The building would be demolished and the building debris would be disposed off-site.

Alternative 3: **Excavation of contaminated soil and off-site disposal + Sediment removal from the Creek and the Catch Basin and off-site disposal + Asbestos removal, and demolition of the building + monitoring**

Present Worth: $7,910,600
O&M: $464,000
Capital Cost: $7,446,600
Time to Construct: 30 years

This alternative would be the same as Alternative 2 except the contaminated soil and the sediments from Two Mile Creek and the catch basin would be excavated and disposed off-site in permitted landfills. The remaining components of this alternative, including the monitoring provisions, would be the same as Alternative 2.

Alternative 4: **On-site Treatment of contaminated soil and sediment + Asbestos removal, and demolition of the building + monitoring**

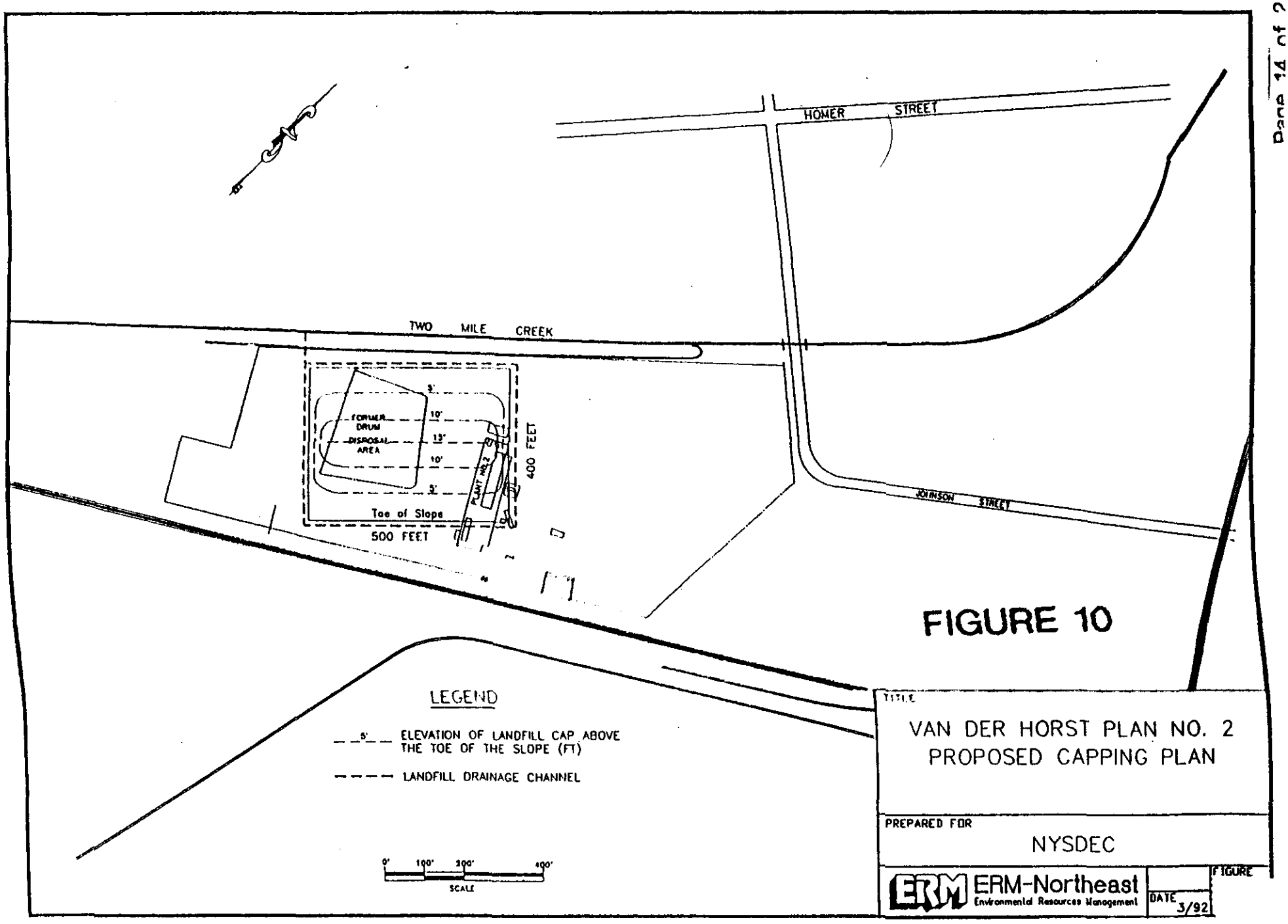

HOMER STREET
TWO MILE CREEK
JOHNSON STREET
FORMER DRUM DISPOSAL AREA
5'
10'
15'
10'
5'
PLANT NO. 2
400 FEET
Toe of Slope
500 FEET
LEGEND
5' ELEVATION OF LANDFILL CAP ABOVE THE TOE OF THE SLOPE (FT)
LANDFILL DRAINAGE CHANNEL
0' 100' 200' 400'
SCALE
TITLE
VAN DER HORST PLAN NO. 2
PROPOSED CAPPING PLAN
PREPARED FOR
NYSDEC
ERM-Northeast
Environmental Resources Management
DATE 3/92
FIGURE

FIGURE 10

Present Worth: $6,125,900
O & M: $464,000
Capital Cost: $5,661,900
Time to Construct: 30 years

The main difference between Alternative 4 and Alternative 2 is that instead of stabilizing only the soil exhibiting the hazardous characterstics, Alternative 4 would stabilize and consolidate on site all the contaminated soil above the cleanup goals. The remaining components of this alternative, including the monitoring provisions, would be the same as Alternative 2.

Groundwater Remediation

Two rounds of groundwater sampling were carried out during the Remedial Investigation. The results of the second round of sampling were found to be inconsistent with the first round of sampling. The RI and FS reports were completed based on the results of these two sampling events of groundwater. Because of the uncertainty of the concentration detected in the groundwater, the NYSDEC initiated, in May 1992, a quarterly groundwater sampling program for a period of two years. The results from these sampling events showed concentrations much lower than the previous two sampling events. Also, the concentrations detected in the quarterly sampling events were well below groundwater standards, except at three on-site locations. All the groundwater samples collected were unfiltered samples. It is uncertain what has caused the significant difference in analytical results for groundwater. Therefore, it has been decided that quarterly analytical sampling of groundwater should be performed for a period of two years, to resolve the inconsistency in the concentrations detected in the sampling events. Based on the results of these quarterly sampling events, a determination will be made on the implementation of an appropriate groundwater remedy.

If it is determined that certain portions of the aquifer cannot be restored to drinking water quality in a reasonable time frame, all or some of the following measures involving long-term management may occur, for an indefinite period of time:

(a) Engineering controls such as physical barriers, or long-term gradient control provided by low-level pumping, as containment measures;

(b) Chemical-specific Standards, Criteria or guidelines (SCGs) may be waived for the cleanup of those portions of the aquifer based on the technical impracticability of achieving further contaminant reduction;

(c) Future institutional controls, in the form of local zoning ordinances, may be recommended to be implemented and maintained to restrict access (potable and industrial) to those portions of the aquifer which remain above remediation goals;

(d) Additional monitoring wells may be installed, if necessary, to define the extent of contamination in the groundwater at the site; and

(e) Periodic re-evaluation of remedial technologies for groundwater restoration.

The decision to invoke any or all of these measures may be made during a periodic review of the remedial action, which will occur at intervals of no less often than every five years. The decision process will take into consideration that the groundwater quality upgradient to the site is contaminated with benzene and other contaminants.

VIII. SUMMARY OF THE COMPARATIVE ANALYSIS OF THE ALTERNATIVES

The site specific goals for remediating this Site can be summarized in general as follows:

a. Prevent direct human contact with contaminated on-site surface and subsurface soil (above cleanup levels) by the placement of a multilayer cap thereby reducing the health risks.

b. Reduce the leaching potential of the contaminants from the soil to the groundwater, thereby reducing the release of contaminants to the groundwater by stabilizing the characteristic hazardous waste and capping the site.

c. Prevent direct human exposure with contaminated groundwater, thereby reducing the risks to human health.

d. Prevent migration of contaminated groundwater from the site and reduce the contaminant levels in groundwater to achieve groundwater standards by monitoring groundwater and, if necessary, implementing a groundwater remedy such as pump, treat, and discharge.

e. Prevent environmental impacts to biota from the contaminated Two Mile Creek sediments by removing the sediments (above cleanup goals) from the creek and consolidating on-site in the area to be capped.

NYSDEC Groundwater Standards (6 NYCRR Part 703) were considered as criteria for remediating the groundwater contamination. Table 4 lists the site specific cleanup levels for various media. For soil remediation, based on health effects cleanup goal was determined for chromium only. The determined chromium cleanup level for soil is 50 ppm (mg/kg).

Lead contamination in soil and sediment was found in most of the areas where chromium was found except for three areas. Areas with arsenic contamination was sporadic and very limited. Figure 9 shows the three areas located on the west of the site where arsenic and lead but not chromium were detected above cleanup goals. As chromium was considered as the primary contaminant for the site, addressing chromium contamination would address the arsenic and lead contamination also.

To address the arsenic and lead contamination in the three areas where chromium was detected, the following approach was used to determmine the cleanup levels. Based on the results of the background soil samples and, since the potential for exposure to on-site soil exists, a remediation cleanup goal was set at 500 ppm (mg/kg) for lead and 35 ppm (mg/kg) for arsenic in soil. Figure No.9 shows the areas where the contamination in soil exceeded the determined clean up level. As per NYSDEC's sediment criteria, the cleanup goal for Two Mile Creek sediments is 26 ppm (mg/kg) of chromium.

The ability of the selected remedy to obtain these goals across the Site is dependent upon many factors. These include the natural heterogeneities of the soil, groundwater conditions, and the characteristics of the contaminants involved, and the physical limitations of the technologies that comprise the remedy. As part of the remedial design process, a remedy "Performance Analysis and Design Modification Plan" shall be developed and implemented during the remediation to monitor and evaluate the effectiveness of the remedy and make changes, if needed, to improve the ability of the selected remedy to achieve the remedial goals. The plan shall include specific and measurable performance criteria and steps to be taken if criteria are not met.

The selected remedy for the Site is Alternative 2, Placement of a cap + Treatment (Stabilization) of characteristic hazardous soil and on-site consolidation + Sediment removal from the Creek and the catch basin and on-site consolidation + Asbestos removal, and Demolition of the building + monitoring. Based on available information, this alternative appears to provide the best balance of trade-offs among the alternatives with respect to the evaluation criteria described below. This section evaluates the expected performance of the selected remedy against these criteria and compares it to other alternatives when there are significant differences.

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is given followed by an evaluation of the preferred and optional alternatives against that criterion.

Threshold Criteria - The first two criteria must be satisfied in order for an alternative to be eligible for selection.

1. Protection of Human Health and the Environment--This criterion is an overall and final evaluation of the health and environmental impacts to assess whether each alternative is protective. This evaluation is based upon a composite of factors assessed under other criteria, especially short/long-term impacts and effectiveness and compliance with Standards, Criteria, and Guidance(SCGs) (see below).

The remedy will control risks to human health and the environment by reducing the release of contaminants to the groundwater, eliminating direct contact with contaminated soils, eliminating threats from inhalation of fugitive dusts, and removing contaminated sediments. The combination of on-site treatment of contaminated soils along with containment will eliminate the source of continuing contamination, prevent the further spread of contaminants, and reduce the concentration of contaminants in the environment. The cleanup of the soil and sediment will result in the indirect cleanup of surface water and air. The relatively low level of contamination in these media and the low risks to human health and the environment make it appropriate to remediate them indirectly. No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy.

The other alternatives also will have the same protection level of human health and the environment as stated above for Alternative 2.

2. Compliance Standards, Criteria, and Guidance (SCGs)--Compliance with SCGs addresses whether or not a remedy will meet all Federal and State environmental laws and regulations

and if not, provides grounds for invoking a waiver.

The implementation of the selected remedy should result in compliance with all SCGs. The primary SCGs associated with this Site are the groundwater quality standards promulgated in 6 NYCRR Part 703 and Part 360 landfill closure requirements. Although the chromium contamination present in the groundwater would not be reduced immediately, it is expected to decrease over time to below groundwater standards by natural attenuation. The multilayer cap will conform to the performance standards in 6 NYCRR Part 360 landfill closure requirements. If continued monitoring indicates active remediation of groundwater is needed, this shall be implemented. No characteristics hazardous waste will remain on site by implementing this remedy.

Implementation of Alternative 2 should also result in the attainment of soil quality objectives based upon guidance for the protection of human health, the environment, and groundwater quality. By remediating soil and sediment, surface water/sediments guidance targets should also be attained.

The other alternatives will also comply with all the appropriate NYS SCGs.

Primary Balancing Criteria - The next five "primary balancing criteria" are used to weigh major trade-offs among the different hazardous waste management strategies.

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

Alternative 2 presents the opportunity to achieve a high degree of effectiveness in obtaining the remedial objectives while at the same time minimizing the possibilities for adverse impacts to the community, workers, and the environment. Contaminated soils will be treated in place. Although workers involved in the construction of the remedy will be exposed to contaminated media, standard precautions required by law can mitigate the exposure concerns. The short-term effectiveness for groundwater is low but will be effective on a long-term basis. Because there is no need for any immediate groundwater remediation based on the results obtained, a long-term remedial method is approached.

Other alternatives will also achieve the same degree of effectiveness in fulfilling the remedial objectives as Alternative 2. But the short term impacts will be greater for other alternatives because of the large amount of soil excavation involved. Alternative 2 requires only a minimum amount of excavation. Soil excavation would create air emission problems which would create additional health risks to the community and the construction workers.

4. Long-term Effectiveness and Permanence--If wastes or residuals will remain at the Site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude and nature ~~of the~~ risk presented by the remaining wastes; 2) the adequacy of the controls intended to limit the risk to protective levels; and 3) the reliability of these controls.

Alternative 2 will effectively treat soil exhibiting hazardous characteristics by a stabilization process which will make the contaminants in the soil less leachable. The soil at the site having contamination above the cleanup goals will be capped on-site in place. The contamination in soil was found to extend up to an approximate depth of 8 feet below grade

which is well above the groundwater table at the site. So, the contaminated soil at the site will not be in contact with the groundwater and the mutilayer cap will prevent leaching from the soil to the groundwater. The sediments from the Creek and catch basin will be removed to be consolidated on-site for capping. This will minimize the impact to the groundwater and aquatic and benthic life.

The other alternatives are equally effective in the long term. Alternative 3 is considered not a permanent remedy whereas Alternative 2 is considered as a semi-permanent remedy because it will treat the characteristic hazardous waste by the stabilization process and Alternative 4 is considered as permanent remedy.

Groundwater contamination above groundwater standards was detected in only four on-site monitoring wells. By containing the source of contamination, the contamination in groundwater is expected to decrease overtime to below groundwater standards. A long term groundwater monitoring program will be implemented to monitor the effectiveness of the alternative.

5. Reduction of Toxicity, Mobility, or Volume--Preference is given to alternatives that permanently, and by treatment, significantly reduce the toxicity, mobility, or volume of the wastes at the Site. This includes assessing the fate of the residues generated from treating the wastes at the Site.

The selected alternative will effectively contain the contaminated soils, which are located well above the groundwater table at the site, thereby reducing the mobility of the contaminants. Soil exhibiting hazardous characteristics will be stabilized, thereby eliminating the presence of soils meeting the definition of hazardous waste. The toxicity, mobility or volume of the chromium present in the groundwater will not be immediately reduced. The concentration of chromium present in the groundwater (toxicity) is expected to decrease overtime to below groundwater standards by natural attenuation.

The mobility of the contaminants in the soil would be reduced by implementing the other alternatives but the volume of the contaminated will increase significantly with Alternative 4.

6. Implementability--The technical and administrative feasibility of implementing the alternative is evaluated. Technically, this includes the difficulties associated with the construction and operation of the alternative, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining special permits, rights-of-way for construction, etc.

No significant obstacles are envisioned for implementing the selected remedy. The technologies included in Alternative 2 have been successfully implemented at other hazardous waster sites. It employs relatively basic engineering technology which will provide a high degree of operational reliability.

The implementation of Alternative 3 will have no significant problems. But to implement Alternative 4, an on-site pilot test would be required to determine the appropriate stabilizing agents. Only a bench scale study was conducted during the FS.

7. Cost--Capital and operation and maintenance costs are estimated for the alternatives and compared on a present worth basis. Although cost is the last criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for final selection.

The total costs of the alternatives presented in the PRAP were re-estimated by the Department in June 1993. The re-estimations of the total costs were based on the lowest bids for the remedial construction at other sites in New York. The difference in the total costs resulted because of recent market trends and the increased competition in the construction business. For example, during the preparation of the FS report and the PRAP, the cost for the disposal of hazardous waste in a landfill was approximately $380/cu.yd. whereas now it is $150/cu.yd. Please refer to table 5 for the total cost presented in the PRAP and the re-estimated costs.

The present worth cost of the selected remedy ($3,802,855) is the lowest cost of the alternatives that adequately meet the remedial goals for the Site.

Estimated Costs (Present Worth) of Alternatives:

Alternative 1:	No action + monitoring	$ 441,000
Alternative 2:	Placement of a cap + Stabilization of characteristics hazardous soil and on-site consolidation + Sediment removal from the Creek and the catch basin and on-site consolidation + Asbestos removal, and Demolition of the building + monitoring	$3,802,855
Alternative 3:	Excavation of contaminated soil and off-site disposal + Sediment removal from the Creek and the catch basin and off-site disposal + Asbestos removal, and Demolition of the building + monitoring	$7,910,600
Alternative 4:	On-site Stabilization of contaminated soil and sediment + Asbestos removal, and Demolition of the building + monitoring	$6,125,900

Modifying Criterion - This final criterion takes into account community concerns raised during the project and especially public comments received regarding the Proposed Remedial Action Plan.

8. Community Acceptance--Concerns of the community regarding the RI/FS Reports and the Proposed Remedial Action Plan have been evaluated. A "Responsiveness Summary" has been prepared that describes public comments received and how the Department has responded to the concerns raised. The Responsiveness Summary is included in this document as Exhibit B.

IX. SELECTED REMEDY

The remedy selected for the site by the NYSDEC was developed in accordance with the New York State Environmental Conservation Law (ECL) and is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC Section 9601, et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Based upon the results of the Remedial Investigation and Feasibility Study (RI/FS), and the criteria for selecting a remedy, the NYSDEC has selected Alternative 2 (Placement of a cap + Stabilization of characteristics hazardous soil and on-site consolidation + Sediment removal from the Creek and the catch basin and on-site consolidation + Asbestos removal, and Demolition of the building + monitoring). The total present worth cost of this alternative is $3,802,855. The capital cost of this alternative is $3,338,855 and the O&M cost is $464,000 (based on 30 year O&M).

The elements of the selected remedy are as follows:

- Asbestos materials will be removed from the building and the building will be demolished for off-site disposal. This will provide space for the placement of the cap and will eliminate the threat posed by the contamination inside the building.

- The characteristic hazardous soils located and identified on-site will be excavated, stabilized on-site and will be placed in the area to be capped. This will help eliminate the leaching of contaminants from the hazardous soils to the groundwater.

- Contaminated soils (above cleanup levels) identified in the areas other than the cap area will be excavated and will be consolidated in the area to be capped. This will eliminate the threat posed by the contaminated soil to the public health and the environment via direct contact and fugitive dust emissions.

- The contaminated Two Mile Creek sediment and the Catch Basin contaminated sediment will be dredged and consolidated on-site before the placement of the cap. This will eliminate the threat posed by the creek sediments to the biota and the leaching of contaminants from the catch basin sediments to the groundwater.

- The on-site groundwater contamination which is limited to the mid-section of the site will be monitored. Because of the inconsistencies detected in the concentration of the contaminants in the groundwater, a two year quarterly monitoring program was implemented on May 1992 by the State. After the completion of the monitoring program and based on the results obtained from this program, a decision to remediate the groundwater by a pump, treat, and discharge method or natural attenuation process will be made.

- The multi-layer cap will eliminate the leaching of water through the contaminated soil and sediment. This will, in turn, eliminate the possibility of contaminating the groundwater by leaching.

- A long-term groundwater monitoring will be implemented to determine the effectiveness of the remedial program.

The performance goals to be obtained include (see Table 4 also):

a. Prevent direct human contact with contaminated on-site surface and subsurface soil (above cleanup levels) thereby reducing the health risks by the placement of the multilayer cap.

b. Reduce the leaching potential of the contaminants from the soil to the groundwater thereby reducing the release of contaminants to the groundwater by stabilizing the characteristic hazardous waste and capping the site.

c. Prevent direct human exposure with contaminated groundwater thereby reducing the risks to human health by monitoring the migration of groundwater contamination.

d. Prevent migration of contaminated groundwater from the site and reduce the contaminant levels in groundwater to achieve groundwater standards by performing a groundwater monitoring and if necessary, implement a groundwater remedy such as pump, treat, and discharge.

e. Prevent environmental impacts to biota from the contaminated Two Mile Creek sediments by removing the sediments (above cleanup goals) from the creek and consolidate on-site in the area to be capped.

As discussed above, a "Performance Analysis and Design Modification Plan" shall be developed and implemented to evaluate the effectiveness of the remedy and, if necessary, make changes within the scope of the remedy to improve performance.

X. STATUTORY DETERMINATIONS

The following discussion describes how the remedy complies with the decision criteria in the laws and regulations.

1. Protection of Human Health and the Environment

The remedy will control risks to human health and the environment by reducing the release of contaminants to the groundwater, and eliminate the exposure of contaminated soil via direct contact and fugitive dust emission. The combination of on-site treatment of contaminated soils along with the containment will eliminate the source of continuing contamination, prevent the further spread of contaminants, and actively reduce the concentration of contaminants in the environment. The cleanup of the soil and sediment will result in the indirect cleanup of the surface water, and stream sediments. No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy.

2. Compliance with SCGs

The implementation of the selected remedy should result in compliance with all SCGs. The primary SCGs associated with this Site are the groundwater quality standards promulgated in 6 NYCRR Part 703. Although the chromium contamination present in the groundwater would not be reduced immediately, it is expected to decrease over time to below groundwater standards.

Implementation of Alternative 2 should also result in the attainment of soil quality objectives based upon guidance for the protection of human health, the environment, and groundwater quality. By remediating soil and sediment, surface water/sediments and air quality guidance targets should also be attained.

3. Cost-Effectiveness

Of the alternatives that can achieve the remedial goals and meet the threshold evaluation criteria, the selected remedy has the lowest cost.

4. Utilization of Permanent Solutions and Alternative Treatment Technologies

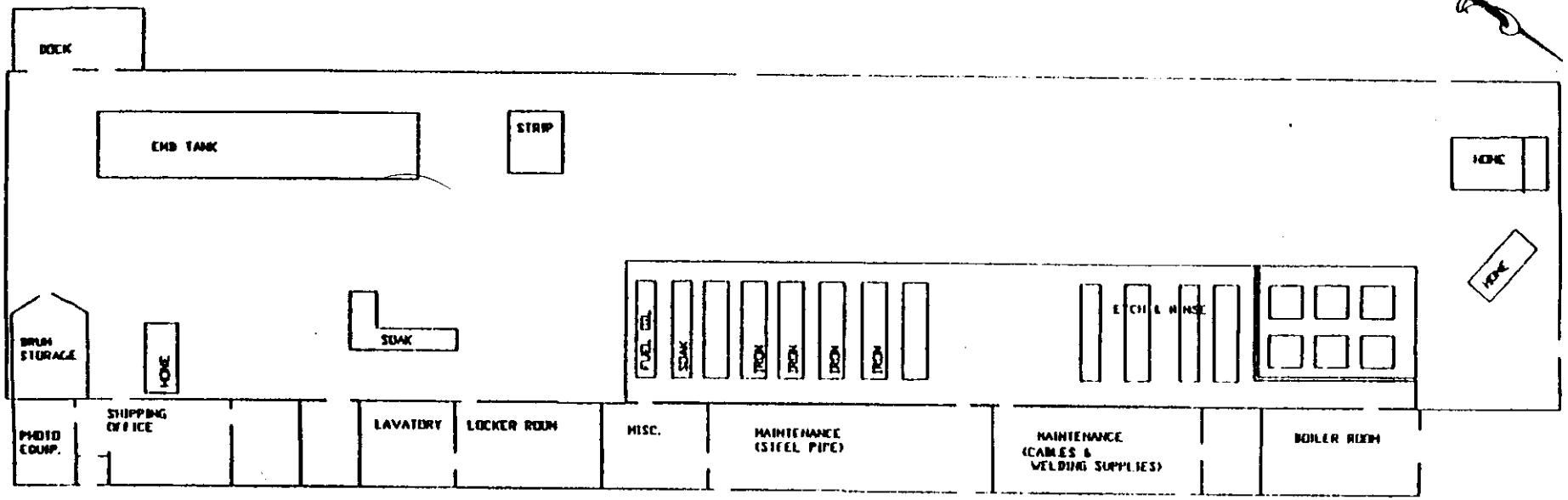
The primary element of the selected remedy include treatment of soil exhibiting hazardous characteristics and containment of contaminated soil. Alternative remedies considered include excavation and off-site disposal. Containment, either on-site or off-site, is not considered a permanent solution. To remediate metals contamination in soil, all available technologies produce residuals that must be disposed. The Department's evaluation is that the added protectiveness of more "permanent" remedies is not significantly greater than that offered by the selected remedy.

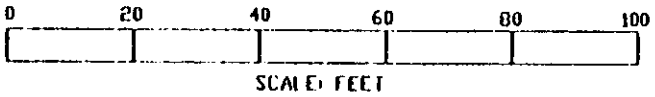
Soils at the site exhibiting hazardous characteristics waste will be treated by stabilization technology and the soils will be made non-leachable permanently. The cleanup goal of 50 ppm for chromium in soil was calculated based on health effects and not on the soil's leaching potential. So, the requirement to treat the contaminated soil (greater than 50 ppm) was not preferred. Instead, the capping technology was included to eliminate the exposure of contaminated soil via direct contact and fugitive dust emissions. The cap will also reduce the leaching of contaminants from the soil to groundwater.

The on-site groundwater contamination which is limited to the mid-section of the site will be monitored. Because of the inconsistencies detected in the concentration of the contaminants in the groundwater, a two year quarterly monitoring program was implemented in May 1992 by the State. After the completion of the monitoring program and based on the results obtained from this program, a decision to remediate the groundwater by a pump, treat, and discharge method or natural attenuation process will be made.

5. Preference for Treatment as a Principal Element

As discussed above, treatment technologies were preferred in the selected remedy for the site where it was determined to be necessary. Based on the results of the two year quarterly monitoring program, if the contaminated groundwater needs to be treated, an appropriate technology such as carbon adsorption technology will be used.





NOTES

1) THE FIGURE WAS ADAPTED FROM A BUILDING PLAN PROVIDED BY THE USEPA AND FROM "VAN DER HORST PLANT NO. 2 SAMPLE LOCATION PLAN" PREPARED BY HILLARD & MAC KAY ON OCTOBER 24, 1991.

2) SAMPLING LOCATIONS WERE MEASURED FROM FIXED LANDMARKS BY ERM AND PLOTTED ON THE BASE MAP BY SCALING THE DISTANCES. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

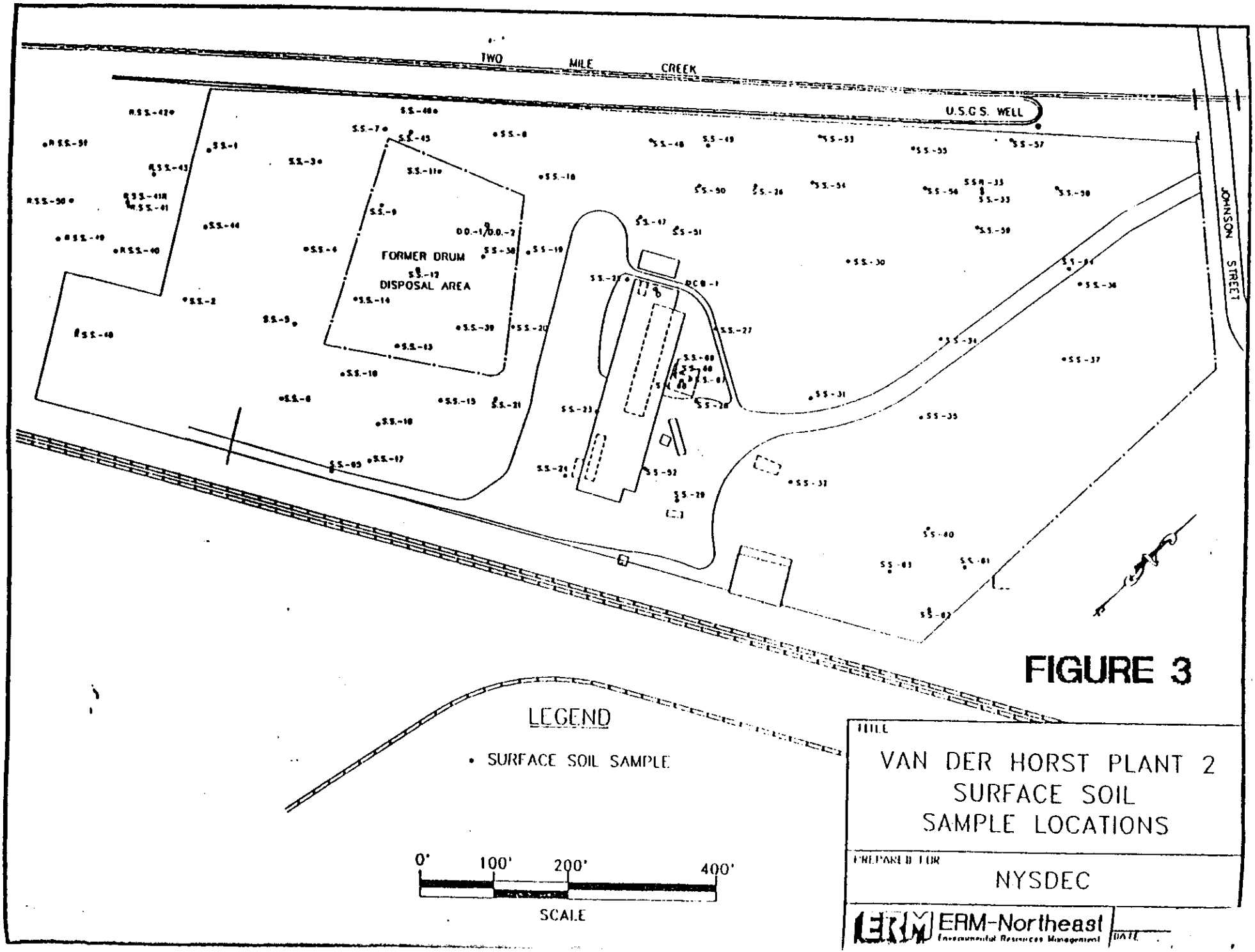
FIGURE 2

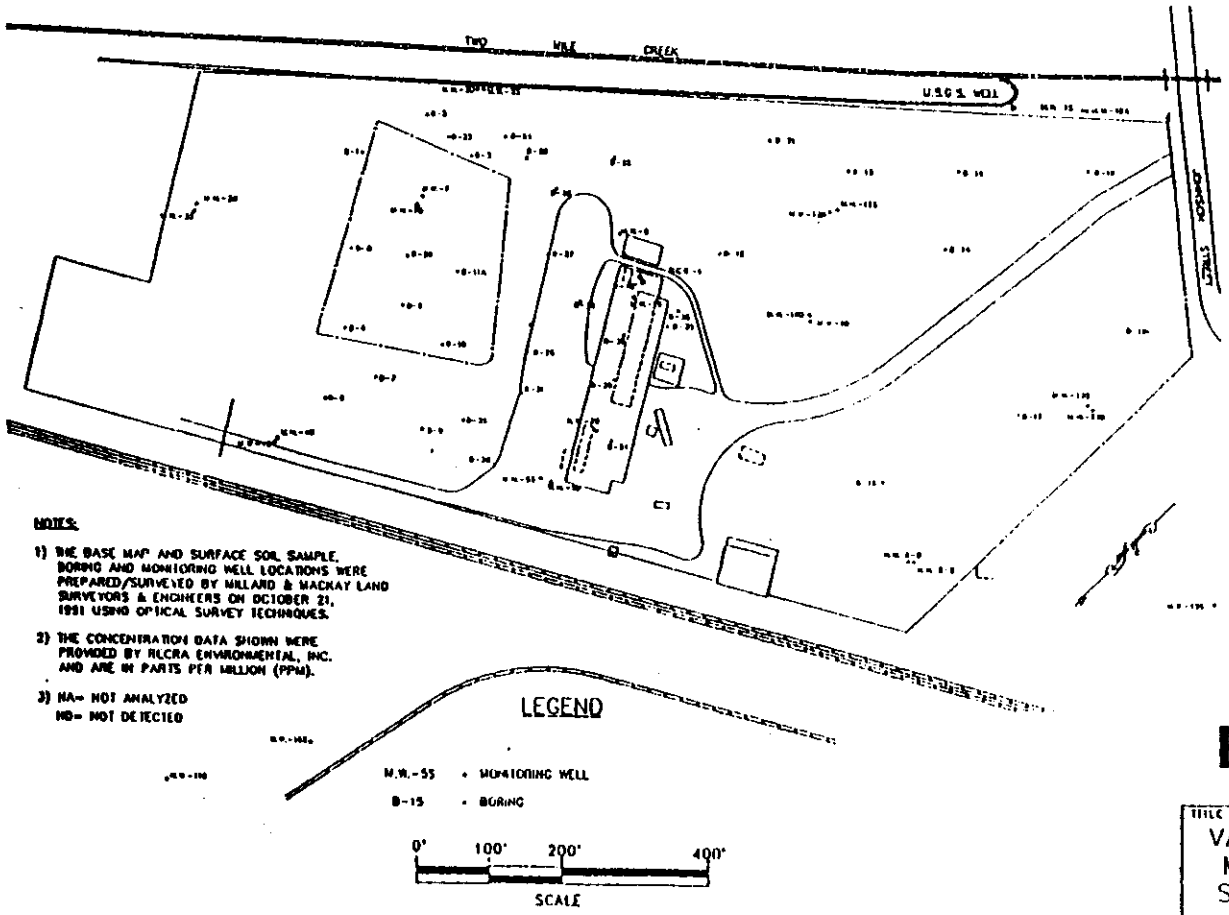
TITLE
VAN DER HORST PLANT #2
ROOM & VAT
IDENTIFICATION

PREPARED FOR
NYSDEC

ERM-Northeast
Environmental Resources Management

DATE


TWO MILE CREEK
U.S.G.S. WELL
JOHNSON STREET
FORMER DRUM DISPOSAL AREA
FIGURE 3
LEGEND
• SURFACE SOIL SAMPLE
0' 100' 200' 400'
SCALE
TITLE
VAN DER HORST PLANT 2
SURFACE SOIL
SAMPLE LOCATIONS
PREPARED FOR
NYSDEC
ERM-Northeast
Environmental Resources Management
DATE



NOTES:

1) THE BASE MAP AND SURFACE SOIL SAMPLE, BORING AND MONITORING WELL LOCATIONS WERE PREPARED/SURVEYED BY MILLARD & MACKAY LAND SURVEYORS & ENGINEERS ON OCTOBER 21, 1991 USING OPTICAL SURVEY TECHNIQUES.

2) THE CONCENTRATION DATA SHOWN WERE PROVIDED BY RLCRA ENVIRONMENTAL, INC. AND ARE IN PARTS PER MILLION (PPM).

3) NA= NOT ANALYZED
ND= NOT DETECTED

FIGURE 4

TITLE
VAN DER HORST PLANT 2
MONITORING WELL AND
SOIL BORING LOCATIONS

PREPARED FOR
NYSDEC

ERM-Northeast

DATE

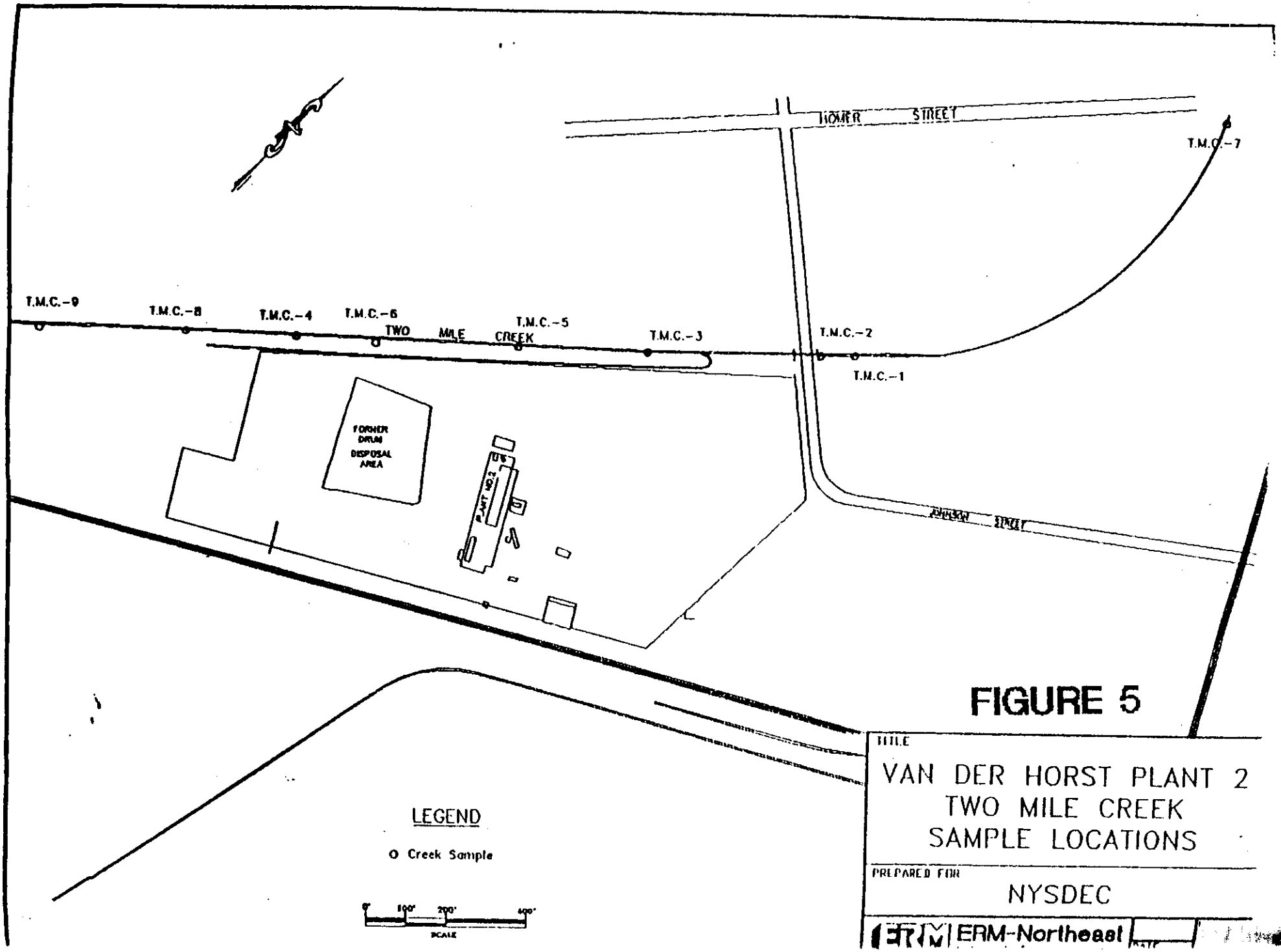


FIGURE 5

TITLE

VAN DER HORST PLANT 2
TWO MILE CREEK
SAMPLE LOCATIONS

PREPARED FOR

NYSDEC

ERM-Northeast

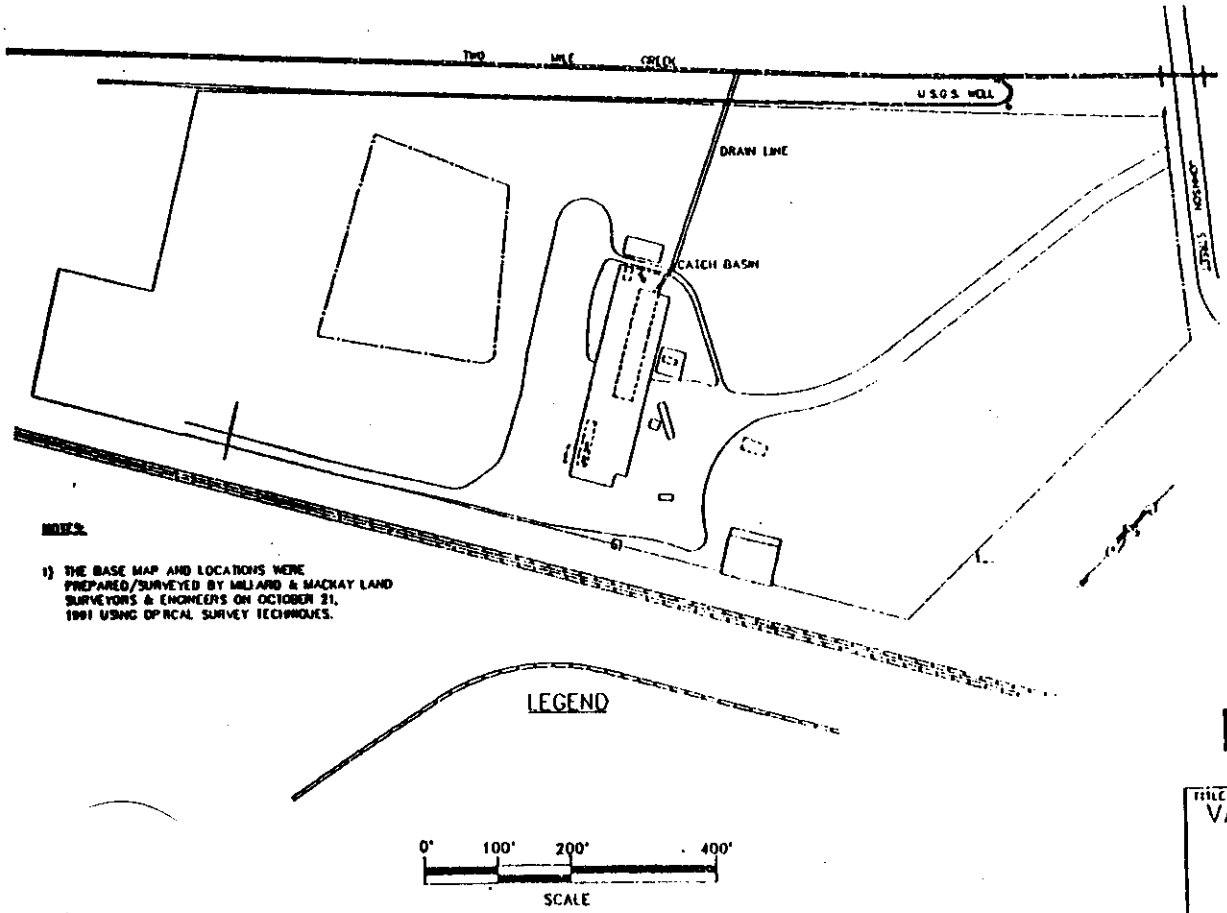


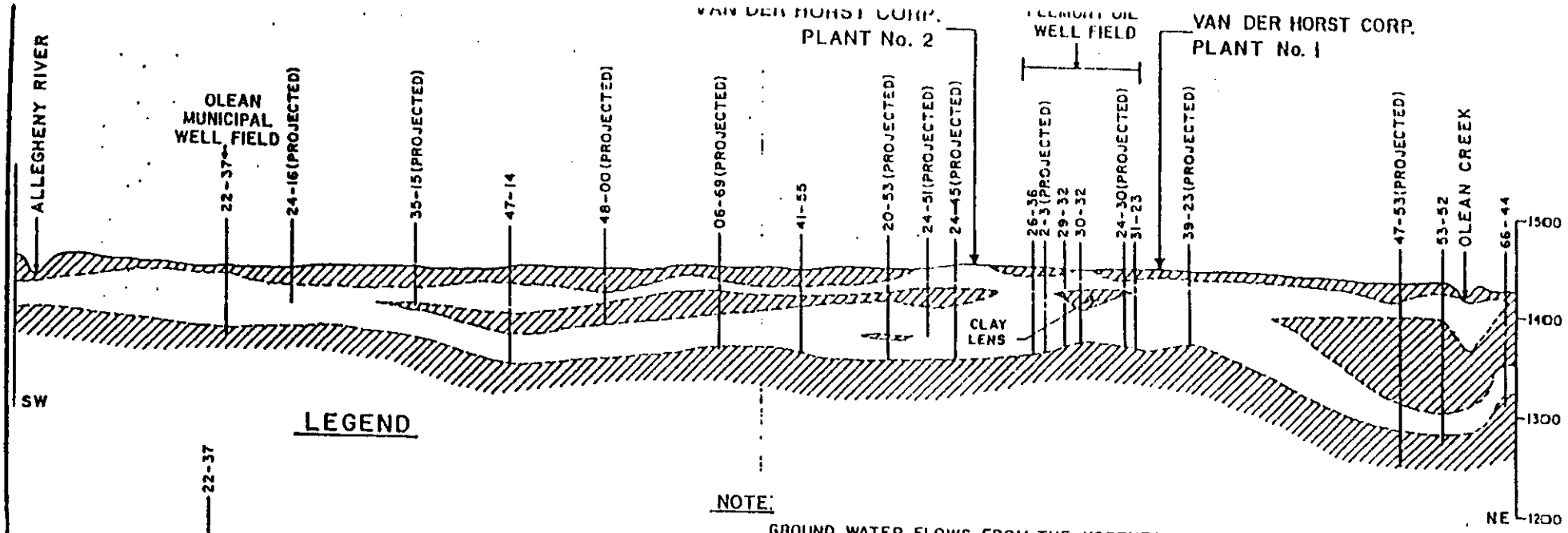
FIGURE 6

TITLE
VAN DER HORST PLANT 2
CATCH BASIN AND
DRAIN LINE
LOCATION MAP

PREPARED FOR
NYSDEC

ERM-Northeast

DATE



LEGEND

22-37

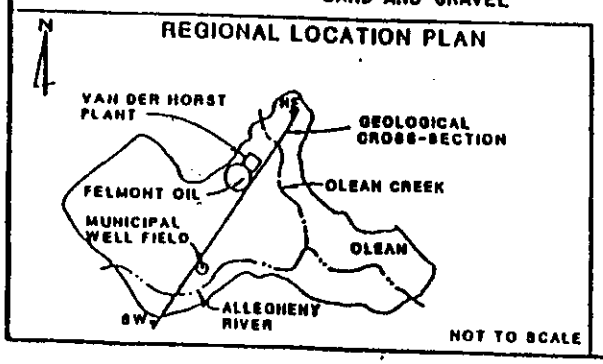
WELL LOCATION AND NUMBER (LATITUDE AND LONGITUDE)

DEPOSITS OF SILTS AND CLAYS (GLACIOLACUSTRINE OR ALLUVIAL)

FLUVIAL DEPOSITS OF SAND AND GRAVEL

NOTE:

GROUND WATER FLOWS FROM THE NORTHEAST TO THE SOUTHWEST. CONSEQUENTLY, THE CLAY LENS BENEATH THE FELMONT OIL FACILITY MUST BE CONSIDERED WHEN INSTALLING DOWNGRADIENT WELLS.



HORIZONTAL SCALE: 1" = 1,000'
VERTICAL SCALE: 1" = 100'
VERTICAL EXAGGERATION: 10 X
(SOURCE: U.S.G.S., 1985)

FIGURE 7

TITLE

VAN DER HORST RI/FS
GEOLOGICAL CROSS - SECTION

PREPARED FOR

NYSDEC

ERM-Northeast
Environmental Resources Management

SCALE

DATE 12/88

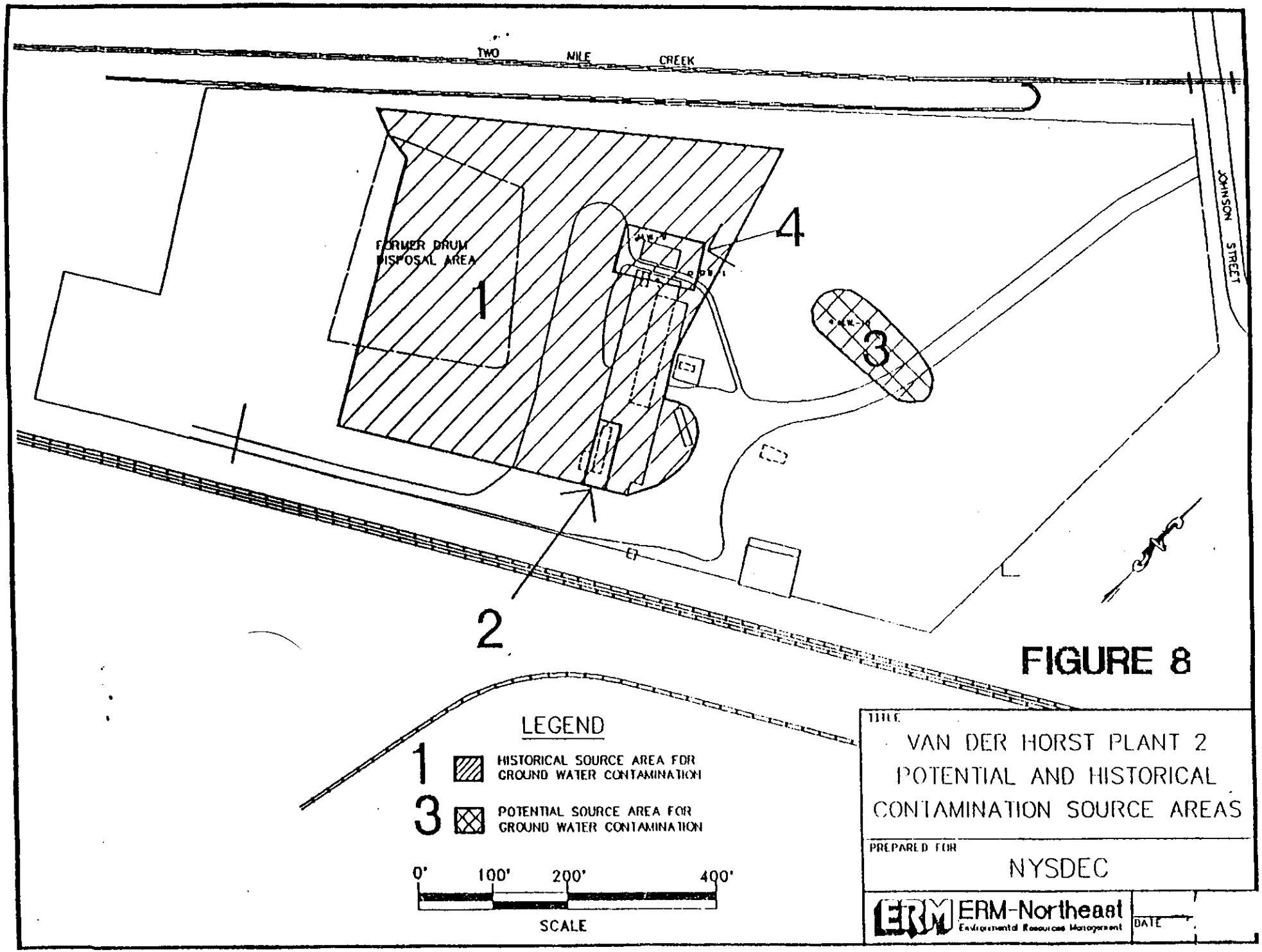

TWO MILE CREEK
JOHNSON STREET
FORMER DRUM DISPOSAL AREA
1
2
3
4
LEGEND
1 HISTORICAL SOURCE AREA FOR GROUND WATER CONTAMINATION
3 POTENTIAL SOURCE AREA FOR GROUND WATER CONTAMINATION
0' 100' 200' 400'
SCALE
TITLE
VAN DER HORST PLANT 2
POTENTIAL AND HISTORICAL
CONTAMINATION SOURCE AREAS
PREPARED FOR
NYSDEC
ERM-Northeast
Environmental Resources Management
DATE

FIGURE 8

TABLE 2

INDICATOR CHEMICALS
EVALUATED IN THE RISK ASSESSMENT

SOIL	GROUND WATER	SURFACE WATER
Arsenic	Antimony	Barium
Barium	Arsenic	Cadmium
Benzo(a)pyrene	Barium	Chromium
Beryllium	Benzene	Lead
Cadmium	Beryllium	Manganese
Chromium	Bis(2-chloroethyl)ether	Zinc
Copper	Chromium	
Lead	Lead	
Manganese	Manganese	
Methylene Chloride	Tetrachloroethane	
Nickel		
Trichloroethene		

TABLE 5

VANDERHORST CORPORATION PLANT NO.2 SITE
COST COMPARISON OF REMEDIAL ALTERANTIVES

	Cost in the PRAP			Re-estimated costs		
	Capital Cost	O&M Cost	Total Cost	Capital Cost	O&M Cost	Total Cost
Alternative 1	$ 0	$441,000	$ 441,000	$ 0	$441,000	$ 441,000
Alternative 2	$ 3,949,000	$464,000	$ 4,413,000	$3,338,855	$464,000	$3,802,855
Alternative 3	$17,479,000	$464,000	$17,943,000	$7,446,000	$464,000	$7,910,600
Alternative 4	$10,890,000	$464,000	$11,354,000	$5,661,900	$464,000	$6,125,900

Alternative 1: No action + monitoring

Alternative 2: Placement of a cap + Stabilization of charactestics hazardous soil and on-site consolidation + Sediment removal from the Creek and the Catch Basin and on-site consolidation + Asbestos removal, Decontamination and Demolition of the building + monitoring.

Alternative 3: Excavation of contaminated soil and off-site diposal + Sediment removal from the Creek and the Catch Basin and off-site disposal + Asbestos removal, Decontamination and Demolition of the building + monitoring.

Alternative 4: On-site Stabilization of contaminated soil and sediment + Asbestos removal, Decontamination and Demolition of the building + monitoring.

EXHIBIT A

VANDERHORST CORPORATION PLANT NO.2 SITE
ADMINISTRATIVE RECORD

Work Plans and Reports

1. Phase I RI work plan, ERM Northeast, September 1989.

2. Phase RI and Phase I & II FS Reports, ERM Northeast, February 1991.

3. Work Plan Addendum Phase II RI, ERM Norhteast, April 1991.

4. Phase III RI Work Plan, ERM Northeast, April 1991.

5. Final RI Report, ERM Northeast, July 1992.

6. Final FS Report (Phase I, II & III), ERM Northeast, July 1992.

7. Proposed Remedial Action Plan, NYSDEC, January 1993.

Correspondence

1. Citizen Participation Plan prepared by NYSDEC, April 1989.

2. Comment letter from V. Nattanmai (DEC) to D. Sutton (ERM) on Phase I RI Work Plan. October 17, 1989.

3. Health Survey of residents near VanDerHorst Plant Nos. 1 and 2, Olean, NY. Prepared by NYSDOH, April 1990.

4. Cancer Incident study in the City of Olean, Cattaraugus County. Summary of methods and findings, NYSDOH, April 1990.

5. Comment letter from V. Nattanmai (DEC) to D. Sutton (ERM) on Phase I RI and Phase I & II FS Reports. January 4, 1991.

6. Response letter from D. Sutton (ERM) to V. Nattanmai (DEC) on Phase I RI and Phase I & II FS Reports. January 17, 1991.

7. Comment letter from V. Nattanmai (DEC) to D. Sutton (ERM) on Phase II RI Work Plan. March 4, 1991.

8. Response letter from D. Sutton (ERM) to V. Nattanmai (DEC) on Phase II RI Work Plan. March 12, 1991.

9. Response letter from V. Nattanmai (DEC) to D. Sutton (ERM) on Phase II RI Work

Plan. April 1, 1991.

10. Comment letter from V. Nattanmai (DEC) to D. Sutton (ERM) on Phase III RI Work Plan. April 12, 1991.

11. Comment letter from V. Nattanmai (DEC) to G. Wygant (ERM) on Final RI/FS Report. May 27, 1992.

12. Response letter on final RI/FS Report from G. Wygant (ERM) to V. Nattanmai (DEC). June 1992.

13. Letter to revise the final RI/FS Report from V. Nattanmai (DEC) to G. Wygant (ERM). July 09, 1992.

14. Letter from P. Marcus (City of Olean) to V. Nattanmai (DEC) requesting for an extension of the public comment period for the PRAP. February 05, 1993.

15. Letter from V. Nattanmai (DEC) to P. Marcus (City of Olean) agreeing to extend the public comment period for the PRAP. February 12, 1993.

16. Letter from V. Nattanmai (DEC) to P. Marcus (City of Olean) providing the responses to the specific issues of the PRAP raised by the City of Olean Common Council. February 16, 1993.

17. Letter from P. Marcus (City of Olean) to V. Nattanmai on two specific concerns on the proposed remedy. February 17, 1993.

18. Letter from D. Darragh (Attorney for the City of Olean) to M. Doster (DEC) requesting to re-evaluate the remedial alternatives. February 24, 1993.

19. Letter from V. Nattanmai (DEC) to P. Marcus (City of Olean) responding to the two specific concerns on the proposed remedy. March 02, 1993.

20. Letter from A. English (DEC) to D. Darragh (Attorney for the City of Olean) responding to the re-evaluation of the remedial alternatives. April 07, 1993.

21. Letter from D. Darragh (Attorney for the City of Olean) to A. English (DEC) requesting for the re-estimation of the remedial alternatives. April 16, 1993.

22. Record of Decision prepared by NYSDEC, July 1993.

EXHIBIT B

Responsiveness summary

VanDerHorst Corporation Plant No. 2
I.D. No. 9-05-022

Introduction:

This responsiveness summary summarizes the public comments expressed at the public meeting held on January 7, 1993 at the Olean Municipal Building and the responses relative to the Proposed Remedial Action Plan (PRAP) for the VanDerHorst Corporation Plant No. 2 Site. No written comments were received during the public comment period, which ran from December 8, 1992 to January 14, 1993. Additional written comments received after the comment period were incorporated into this document because of a written request to extend the comment period until March 1, 1993 from the Director of Public Works, City of Olean. The written request for the extension of comment period was approved by NYSDEC. A second request from the City of Olean Common Council for the extension of the comment period was approved, which extended the comment period until April 19, 1993.

A series of remedial investigations conducted by the NYSDEC found contamination in soil, sediment and groundwater. The major contaminants were found to be chromium, lead and arsenic in soil and sediment; and chromium, lead, arsenic, beryllium and benzene in groundwater. A Feasibility Study (FS) Report was prepared based on the results of the investigations. Various remedial technologies applicable to the site were grouped together to form four (4) remedial alternatives for the site. These alternatives were evaluated against eight (8) criteria which are: compliance with NYS Standards, Criteria and Guidance (SCGs); reduction of toxicity, mobility or volume; short-term impacts and effectiveness; long-term effectiveness and permanence; implementability, cost, community acceptance and overall protection of human health and the environment.

Based on the evaluation of the remedial alternatives, the selected remedial action consists of: asbestos removal from the building, building demolition, Two Mile Creek sediment removal, Catch Basin cleaning, surface and subsurface soil removal and on-site consolidation, stabilization of the soils exhibiting hazardous characteristic and on-site consolidation, capping of the consolidated area, site restoration and long-term groundwater monitoring.

Q1: Does "construction phase" refer to the construction of the cap at the site?

A1: The construction phase includes all the tasks of the remedial action plan which are: building demolition; on-site consolidation of contaminated soil and sediment; capping and groundwater monitoring. The construction phase will start after the approval of the detailed design of the remedial action plan.

Q2: When will the demolition of the manufacturing building at plant #1 and #2 take place?

A2: As discussed at the public meeting, the tentative schedule for the construction phase is spring 1994. But considering the need for conducting additional borings inside the buildings to better define the extent of contamination in soil, the buildings may have to be demolished earlier. This means that there is good possibility for the buildings to be demolished in late 1993.

Q3: Is plant #1 cleaned up yet?

A3: The hazardous chemicals that were improperly stored inside the buildings of plant #1 and plant #2 were removed and disposed off-site. The tentative schedule for the clean up of soil, sediment and groundwater contamination at plant #1 will begin along with plant #2 remediation.

Q4: How far out and deep is the soil contamination at plant #2?

A4: The horizontal extent of soil contamination at plant #2 covers a large area around the past disposal area and the building. Other smaller areas were also identified for remediation inside the site boundary. Please refer to Figure 9 in the ROD. No off-site contamination above clean-up goals were identified. The depth of the soil contamination is approximately 4 to 6 feet, except for two locations where contamination extends down to the top of the groundwater table, which is 16-20 feet.

Q5: Will plant #2 and plant #1 look similar to the figure of the Union Road site, which shows a view of the site after capping?

A5: The plant #2 will look similar to that figure of the Union Road site except for the elevation of the cap. The plant #1 will be kept as a flat surface once the excavated areas are filled back with solidified soil. It is planned to leave a flat surface instead of a mound of 15-20 feet high at the plant #1 site for aesthetic reasons.

Q6: Will the soil from plant #1 be transported to plant #2?

A6: Currently, the Department is re-evaluating the remedy selected for Plant # 1. At this time, this evaluation indicates that changing the treatment (stabilization) method from ex-situ to in-situ (i.e. treat soils in the ground without excavation) may be appropriate. If it is determined that in-situ treatment is appropriate, the Department will prepare an amendment to the Plant #1 ROD. The in-situ stabilization will be more effective, economical and will eliminate the need for the transportation of solidified material from Plant # 1 to Plant # 2.

Q7: What and for how long will these sites be monitored?

A7: The sites will be monitored for groundwater, which will give an indication as to whether the capped/treated soil at the site is still contributing contamination to the groundwater. At plant #1, the groundwater will be pumped, pre-treated and discharged to the Publicly Owned Treatment Works (POTW) for a period of five years as a pilot program, in addition to the long-term monitoring. The cap at plant #2 will be seeded, mowed periodically and monitored and repaired for any cracks. The long-term monitoring will be conducted until conditions have completely stabilized or groundwater goals are achieved.

Q8: Once the remediation is completed for these sites, will someone be permitted to build over the top of these sites?

A8: Yes, in some areas at plant #2. As planned, the area of the cap at plant #2 will occupy half of the site. The other half of the plant #2 site will be clean and can be used for construction. Also, buildings can be constructed without disturbing the capping area at plant #2 or the excavated areas at plant #1. The type of construction depends on what type of development the City or the developer wants to do at these sites.

Q9: When you say that the groundwater is contaminated, what does that mean? Is it safe to drink the groundwater? A few years back people in the neighborhood had private wells in their yards which were being used.

A9: The regulations promulgated by the NYSDEC define the best usage of groundwater as being a source of potable water. In conjunction with the NYSDOH, the NYSDEC has developed standards that state the maximum allowable concentrations of various chemicals in the groundwater. When the chemicals detected in groundwater sample exceed these standards, the groundwater is considered contaminated. For example, the groundwater standard for chromium is 50 parts per billion (ppb). If the concentration of chromium exceeds 50 ppb, then the groundwater is considered contaminated at that location. The groundwater at these sites is not considered safe to drink. It is reported that the residences in North Olean area are supplied by the City's water supply system. This system pumps the groundwater from a location

away from and unaffected by these sites. The pumped groundwater is analyzed and treated prior to its distribution to the residences. As a part of this investigation, a residential well survey was conducted in 1989. The survey showed that there are no private wells in use around these sites.

Q10: Several people in the area had cancer and died of cancer. Could these deaths be the result of the contamination at these sites?

A10: The cancer incidence study conducted by NYSDOH indicated that the number of newly diagnosed male and female cancer cases did not differ significantly from the expected number. Overall cancer incidence in the City of Olean did not differ from other comparable areas of New York State between 1976-1986.

Cancer, unfortunately, is a common disease. One of every three persons will develop it during his/her lifetime, and it eventually affects three of every four families. The number of people with cancer is increasing in most communities because more people are living to older ages, where cancer is more common.

Much more research is necessary before the causes of cancer are well understood. Current knowledge, however, suggests that the leading preventable cause of cancer is cigarette smoking. Dietary practices such as excessive alcohol consumption and the eating of high fat foods are also believed to be important. In fact, tobacco and diet may account for as many as two-thirds of all cancer deaths. Other avoidable risk factors include excessive exposure to sunlight, ionizing radiation, and various occupational exposures to cancer-causing agents.

Q11: Are there any significant concerns that citizens should be aware of during the transport of contaminated or solidified soil from plant #1 to plant #2? Is there a possibility that the plant #2 cap might leak?

A11: Currently, the Department is re-evaluating the remedy selected for Plant # 1. At this time, this evaluation indicates that changing the treatment (stabilization) method from ex-situ to in-situ (i.e. treat soils in the ground without excavation) may be appropriate. If it is determined that in-situ treatment is appropriate, the Department will prepare an amendment to the Plant #1 ROD. The in-situ stabilization will be more effective, economical and will eliminate the need for the transportation of solidified material from Plant # 1 to Plant # 2.

The stabilization process will bind the contaminated soil in a monolith (a large, soild block) form and will prevent the water leaching through. The cap to be placed at plant #2 is a well demonstrated and proven technology. The cap will prevent water from precipitation from contacting and leaching contaminants from the soils. All the contaminated soil, which was detected down to a depth of 6 feet, is above the groundwater table, which was found to be between 16-20 feet below grade. These steps will prevent any significant contaminant

migration or "leaking".

Q12: Will the plant #2 "landfill" be monitored? Will the monitoring expenses be paid for by the State? Will the City be expected to do anything or be made responsible for the expenses?

A12: The capping of the "landfill" at plant #2 will be monitored as described in answer A7 and the monitoring expenses will be paid by the State. The City will not be expected to get involved or to pay for the expenses. The State is following legal procedures needed to make the responsible parties (the owner of the company) pay for the investigation and remediation cost of this project.

Q13: Does the figure that showed the contaminated soil areas at plant #2 include the contaminated groundwater areas too? How far away from plant #2 does the groundwater contamination extend?

A13: Figure 5-9 of the plant #2 Feasibility Study report shows the areas where chromium, lead and arsenic contamination in soil is above the cleanup goals. From the results of the three recent groundwater sampling events conducted by NYSDEC, it is evident that the groundwater contamination is not significant and exists only in few of the on-site wells.

Q14: A resident living in an area west of the plant #2 site has applied for a loan and was denied by the bank. The bank told the resident that his residence is located within a contaminated "red zone"? What is a "red zone"? Is that a DEC term? Is there anything the resident can do to get this classification changed?

A14: The contaminated "red zone" is not a NYSDEC term. The resident should ask the bank to provide more information on what basis that area is designated as contaminated "red zone". If the bank replies that the area is located adjacent to plant #2 site, then the resident should make copies of relevant pages of the RI and FS reports and justify that the contamination at plant #2 is contained within the site boundaries. The copy of the RI and FS reports are available at the Olean public library for reference.

Q15: How deep will the wastes or contaminated soil be buried at plant #2 before capping? Will it be placed below the groundwater table?

A15: The contaminated soil will not be buried, rather it will be consolidated on the surface in the waste disposal area and a cap will be placed on top. The contamination in subsurface soil at the site was detected from the surface to a depth of 6 feet except for two locations which will be excavated. All the contaminated soil will be above the groundwater table which was found to be

between 16-20 feet below grade at the site.

Q16: Where will the soil for the cap come from? How deep will be the cap be? How high will the landfill go above the natural elevation of the area?

A16: The cover materials for the cap including the low permeability soil and topsoil will be brought from an outside source. The cap will be placed above the ground surface. The cap will be approximately 10 to 15 feet above the natural elevation of the site.

Q17: Will the cap at plant # 2 site be designed in accordance with 6 NYCRR Part 360 ? Will there be a berm around the cap? Where will surface water runoff go? Will the capping have a leachate collection system typical of a 6 NYCRR part 360 landfill?

A17: Yes, the cap to be constructed at plant #2 will be designed in accordance with 6 NYCRR Part 360. There will be a berm or a drainage ditch around the capping area for the collection and discharge of surface water. The surface water runoff from the capping area will be discharged to Two Mile Creek. There will not be any leachate collection system for the cap because no leachate is expected to be generated.

Q18: Are there any groundwater monitoring wells southwest of the Conrail tracks? Were they "clean", i.e. were the contaminants detected below standards?

A18: Yes. There are some monitoring wells southwest of the Conrail tracks. The results of three recent groundwater sampling events conducted by NYSDEC at the site showed that only three on-site wells detected contamination above standards. Groundwater in all of the other on-site and off-site wells contained chemicals below groundwater standards.

Q19: Based on groundwater flow velocities, is it possible to determine if any contaminants migrated past the monitoring wells southwest of the site?

A19: The aquifer in the North Olean area is very flat and the horizontal gradient is negligible. The contaminant plume at plant #2 seems to be small in area based on the results of the groundwater sampling. Based on the estimated velocity of groundwater and the physical/chemical factors that reduce contaminant migration in an aquifer, the possibility for the contaminant plume at plant #2 to migrate past the wells located southwest of the site is very remote.

Q20: Does the RI/FS incorporate an Environmental Impact Statement (EIS)? Do you require an EIS for these type of projects? Why doesn't this type of project have similar EIS requirements?

A20: Although the terminology is different, the RI/FS process includes all of the elements of an EIS. An RI/FS project is a step-by-step process of determining the nature and extent of contamination at the site. As part of the RI/FS, detailed environmental and public health assessments are done. The reports generated for an RI/FS project, such as Phase I and II RI and FS reports, workplans, proposed Remedial Action plan and Record of Decision are more descriptive, technical, and informative than an EIS. In effect then, the RI/FS and ROD process addresses EIS requirements, which include the public meetings, fact sheets, and this responsiveness summary.

Q21: Who, and with what criteria made the decision as to which alternative was to be used for the remediation of the site? How much of the decision was based on the saving of approximately $10 million to the State Superfund?

A21: Ultimately, the NYSDEC is responsible for selecting the remedial alternative to be implemented at a given site. Please refer to the attached RI/FS fact sheet prepared by the Department which outlines the criteria used in selecting the proposed remedial action for a site. Cost effectiveness is one of the five "balancing criteria" which can be considered only after the "threshold criteria" of providing overall protection of human health and the environment and complying with legal/policy requirements are met. As required by State Law, the NYSDEC must ensure that selected remedies are cost effective. Therefore, cost effectiveness is a significant factor but is secondary to protectiveness and compliance.

Q22: What studies were done to determine the economic effect a hazardous waste site will have on the industrial development on the surrounding lands?

A22: The VanDerHorst Corporation Plant #2 hazardous waste site was identified, classified and investigated by NYSDEC. By remediating this site, NYSDEC is trying to eliminate the threats posed by the site to human health and the environment. This in turn will improve the overall situation already existing around this site. Cost is considered as one of the criteria in the selection of remedial action. The site specific economic analysis to determine the economic effect a hazardous waste site will have on the industrial development on the surrounding lands was not done.

Q23: What effects will the site have with regard to lending by financial institutions on commercial and residential projects in the area? Will the site impact phase I and phase II environmental studies for lending?

A23: NYSDEC does not have any control on the procedures followed by financial institutions for lending. NYSDEC will provide the technical information of the site for anyone who is interested.

Q24: If the recommended remediation plan is implemented, will the site be delisted by NYSDEC? If not, why wasn't another alternative selected that might allow delisting?

A24: The site will be reclassified from Class 2 to Class 4, which means the site is properly closed and requires continued management. After a careful evaluation of the factors that define "feasibility", it was determined that the selected remedy presents the best overall solution to the problem. Please refer to answer A 21.

Q25: Has there been a review of the project and remediation alternatives by a qualified independent party?

A25: The Department encourages the review of its proposed remedies by all interested parties. Although the Department does not have the authority or resources to require third party reviews, significant resources are expended toward assisting interested parties in understanding and responding to these proposals.

Q26: Have similar projects been studied within the State and outside of the State to determine and review the effects of this plan? If so, which projects were they?

A26: Waste containment using an engineered final cover is a well demonstrated technology that has been implemented at hazardous waste sites. For example, Love Canal site, Niagara Falls, New York and the Xerox Landfill site, Webster, New York are two of several sites that have implemented containment technology as the final remediation. The Union Road site, Buffalo, New York and Buffalo Color Site, Buffalo, New York are two other sites that have selected the capping technology as the final remediation.

Q27: What will be the long term effects with the proposed plan? Will follow-up remediation be necessary on the disposal site? If there is to be any future remediation, what funding has been set aside from the State's fund to cover it or who would be responsible for the costs if not the State?

A27: The proposed plan requires long-term groundwater monitoring and maintenance of the cap. In the unlikely event that long-term monitoring indicates unexpected problems, the State will take action to mitigate any significant threat to human health or the environment. It must be noted, however, that the long-term ability of the State to carry out this function is dependent upon continued legislative support.

Q28: If the value of the surrounding properties diminish because of the waste site, can recovery be made from the owner of the site? Who is the past and

present owner of the site and what are their addresses?

A28: After identifying the contamination at the site, NYSDEC undertook the investigation and remediation of the site to mitigate the threats posed by the site. The remediation of the site would leave the property in a condition better than what it was and that would be expected to improve the property value. State law requires that the Department make every reasonable effort to recover costs from parties responsible for the improper disposal of hazardous waste. Third parties are free, within the constraints of the law, to seek compensation for damages caused by the existence of the site. The NYS registry of inactive hazardous waste site lists the current owner as R.G.Scott,Inc. (11818 Ridgeview, Mesquite, TX) and the past owner as VanDerHorst Corporation (314 Penn Avenue, Olean, NY).

Q29: Why not install a leachate collection system? This would be in place in the event that any water does permeate the cap system or enter the encapsulation area via lateral flow or downward flow of water through soil.

A29: A leachate collection system will not be necessary for plant #2 site because of the following reasons:
a) The cap will prevent water from precipitation from contacting and leaching contaminants from the soils. In other words, vertical movement of precipitation through the soil will be prevented. b) After construction, all contaminated soils will be 10 to 15 feet above the water table. This will prevent the "lateral" migration of contaminants. c) The soil exhibiting hazardous characteristics will be chemically "stabilized". This will immobilize the contaminants.

Q30: Is any contaminated soil to be left in contact with groundwater, i.e. below grade?

A30: No. The contamination in subsurface soil at the site was detected from the surface to a depth of 6 feet, except for two locations which will be excavated. So, all the contaminated soil in the landfill will be well above the groundwater table, which is 16-20 feet below grade. This ensures that there will not be any horizontal movement of water through the contaminated soil.

Q31: Could solidified material from plant #1 that is brought over to plant #2 be placed as a bottom liner for wastes at plant #2? Can soil be solidified at plant #2 and used as liner over the surface of the ground upon which contaminated soil would be placed?

A31: Currently, the Department is re-evaluating the remedy selected for Plant # 1. At this time, this evaluation indicates that changing the treatment (stabilization) method from ex-situ to in-situ (i.e. treat soils in the ground without excavation) may be appropriate. If it is determined that in-situ treatment is appropriate, the

Department will prepare an amendment to the Plant #1 ROD. The in-situ stabilization will be more effective, economical and will eliminate the need for the transportation of solidified material from Plant #1 to Plant #2.

The soils exhibiting hazardous characteristics at Plant #2 will be stabilized and placed on the ground as a liner. The stabilized soils will prevent any significant contaminant migration but will not possess the physical characteristics of a "liner".

Q32: Any idea how much material that would have to be removed?

A32: At plant #1, approximately 21,000 cu.yd. of soil and sediment will be excavated and stabilized. At plant #2, the estimated volume of contaminated soil above cleanup goal is 37,000 cu.yd. Of this total volume at plant #2, it is estimated that 4800 cu.yd. will exhibit hazardous characteristics. Before the placement of the cap on the landfill at plant #2, approximately 7726 cu.yd. of soil must be excavated from other areas of the site to be consolidated in the area to be capped.

Q33: We are aware of State's fiscal problems, we are afraid that after the site is cleaned to what the State believes is "clean" and "safe", ultimately the State may come to the City and give them the responsibility for the maintenance and monitoring. We are concerned about the possibility of a problem happening after the City ends up with the responsibility. Will the State defer responsibility to local government at some time in the future?

A33: In accordance with the requirements of the Environmental Conservation Law, the NYSDEC is taking steps to seek reimbursement for remedial costs from the responsible parties. In the interim, the NYSDEC has and will continue to exercise its authority to construct, operate, and maintain the remedy. See also answer A 27, page 8.

Q34: Is there Any site that people could see this type of remedy being implemented?

A34: See answer A 26, page 8

Q35: What is the numerical value (scoring via TAGM 4030) placed on the PRAP since the recommended plan is a hybrid of the alternatives in the Feasibility Study? (Especially for overall protection of human health and the environment).

A35: Please recognize that TAGM 4030 is used as a tool by the Department in the remedy selection process. This process is complex and does not completely lend itself to strict quantification. Therefore, the scoring table is only one component of the overall process. Remedies selected by the Department

reflect what we believe to be the best combination of all of the selection criteria. The scores obtained for the on-site containment alternative and the off-site disposal alternative on overall protection of human and the environment were almost equal.

Q36: Is it possible that the contamination be removed off-site and the site could be left as a "pond"? This would save costs on capping and backfill.

A36: The cost of excavation, transportation and the fee for disposal would be much higher than the cost of backfilling and the placement of the cap.

Q37: Is it possible to pump groundwater from the vicinity of the former Agway-Felmont Plant? This would create a cone of influence which would draw out contamination using a very large pumping well.

A37: As described in the ROD for plant #1, groundwater will be extracted at Plant # 1 at the rate of approximately 250 gallons per minute (gpm). The results of this withdrawl will be evaluated and options for future actions will be determined. The contaminant plume at plant #2 seems to be small in area based on the results of the groundwater sampling. Based on the estimated velocity of groundwater and the physical/chemical factors that reduce contaminant migration in an aquifer, the possibility for the contaminant plume at plant #2 to migrate past the wells located southwest of the site is very remote. So, there is no need for the installation of a pump well to capture the groundwater plume at plant No.2.

Q38: At plant #1 it is noted that 250 gallons per minute is a lot of water. It may be that DEC will have to revise their water treatment plant limits to lower than current levels, i.e. may have to go to 1 ppm for chromium and even lower for arsenic.

A38: The acceptable limits of inorganic constituents at the point of discharge to the POTW were established by the City of Olean. The acceptable chromium level is 5.5 mg/l for the discharge to POTW. During the pump test which was conducted in December 1990, the groundwater was extracted at the rate of 250-300 gpm and was discharged to the POTW without the need for pre-treatment. The pump test was conducted for 36 hours. Throughout the pump test, the chromium level in the groundwater was well below 5.5 mg/l. Therefore, the volume of water collected will not inhibit our ability to obtain the established pre-treatment standards. At plant #1, arsenic is not a contaminant of concern in groundwater. In any event, the discharge to the POTW will conform to permit limits established by the City of Olean.

Q39: What comfort level do you give the County of Cattaraugus Industrial

Development Agency (CCIDA) that the DEC proposed remediation will not have a negative financial effect on both the CCIDA and our existing tenants in the Olean Industrial Park? What comfort level do you give us that this proposed remediation will not be cost prohibitive for business and developers to erect new structures which enhance the tax base and retain along with create new jobs?

A39: As discussed in answer A 22, page 7, implementation of the selected remedy will significantly improve the already existing conditions at the site. It is not possible to quantify the economic effects in a meaningful way due to great uncertainties in the future economy of the area.

Q40: What comfort level do you give us that the proposed DEC remediation will have regarding lending by financial institutions along with the lender's site impact analysis as it relates to phase I and II environmental studies?

A40: See answer A 23, page 7.

Q41: What comfort level do you give the CCIDA and the citizens of New York State that the public money they have put into this industrial park will not be jeopardized as it relates to the proposed remediation?

A41: See answer A 22, page 7.

Q42: If the proposed remediation does not work and negatively impacts the industrial park, what comfort level do you give that DEC will "fix" the effected industrial park?

A42: See answer A 27, page 8.

Q43: What comfort level do you give us that the proposed remediation will not negatively impact the health of those employed at the industrial park?

A43: See answer A 27, page 8.

FACT SHEET

Remedial Investigation/ Feasibility Study

The Department of Environmental Conservation (DEC), along with the Departments of Health (DOH) and Law (DOL), is responsible for ensuring the cleanup of inactive hazardous waste sites across the state. Under New York State's Hazardous Waste Site Remedial Program, the process begins with the discovery of a potential hazardous waste site and follows a path of thorough investigation, enforcement, remedial action selection, design, construction and monitoring. This fact sheet highlights one stage in the comprehensive process, the **Remedial Investigation/Feasibility Study (RI/FS).**

RI/FS begins when hazardous waste contamination is confirmed.

The RI/FS follows preliminary site investigations by DEC and DOH that verify hazardous wastes are present and that the wastes pose a significant threat to public health and the environment.

DEC and DOH gather detailed site information work toward an effective remedial action.

DEC's Division of Hazardous Waste Remediation or the responsible party under an enforceable consent order carries out an RI/FS to determine the nature and extent of contamination. DEC, along with DOH, uses the RI/FS information to select a remedial action that effectively eliminates the threat posed by the site. The RI/FS results in a Record of Decision (ROD) describing the cleanup that will be carried out and documents the decisions that led to the chosen remedial action.

The state initiates a variety of activities to inform and involve the public during the remedial process.

Throughout the remedial process, the state encourages public involvement. The public plays a key role in the RI/FS to help shape the final remedial decision. Public meetings, newsletters, fact sheets and project documents contribute to the exchange of information and provide opportunity for comment.

produced by
New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*
in cooperation with
New York State Departments of Health and Law

The state achieves successful hazardous waste remediation with the cooperation of many groups

State engineers, geologists, chemists and health specialists work with consultants, contractors, municipalities, potentially responsible parties and citizens to investigate the contamination and develop appropriate remedial actions. The RI/FS process requires a detailed examination of a site to fully understand its impact on public health and the environment before deciding on a remedial action. The process can take up to two years to complete.

The sections below describe how the state reaches a remedial action decision.

Remedial Investigation (RI)

The RI defines the threat to public health and the environment.

The responsible party or DEC performs an RI at each Class 2 inactive hazardous waste site after preliminary investigations have shown that contaminants pose a significant threat to public health or the environment. Through extensive sampling and laboratory analyses, the RI identifies the length, depth and width of contamination, defines the pathways of migration and measures the degree of contamination in surface water, groundwater, soils, air, plants and animals. Information gathered during the RI fully describes the hazardous waste problem at the site so that the appropriate remedial action can be developed.

DOH evaluates ways people may be exposed to hazardous waste.

DOH reviews and recommends activities that will be performed during the RI to ensure that a complete picture of potential health impacts is understood. Such activities include identifying the ways contamination can reach people, either through direct contact, eating, drinking or breathing.

Feasibility Study (FS)

Remedial action choices are developed during the FS.

The Feasibility Study uses RI information to develop alternative remedial actions that will eliminate the threat to public health or the environment posed by the site. Wherever feasible, the state selects a remedy, such as destruction, that permanently reduces or eliminates the contamination.

The state evaluates the remedial alternatives to reach a balanced decision that protects people and the environment.

The responsible party and DEC screen each alternative to make sure the remeday is technically suitable for the site. Following the initial screening, DEC and DOH weigh the remaining alternatives against a number of other conditions, including:

- overall protection of public health and the environment;
- reduction in toxicity, mobility and volume of hazardous waste (e.g., by thermal destruction, biological or chemical treatments or containment wall construction);
- long-term effectiveness and permanence;
- short-term effectiveness and potential impacts during remediation;
- implementation and technical reliability;
- compliance with statutory requirements;
- community acceptance; and
- cost.

DEC prepares the proposed remedial action plan for public comment.

The outcome of the selection process is the recommendation of a remedy that best satisfies a combination of these conditions. The remedy becomes part of a proposal that is presented to the public for comment.

Proposed Remedial Action Plan and Public Comment

The state presents the proposed remedial action plan to the public.

After the RI/FS is completed, DEC and DOH hold a public meeting to propose the remedial solution. The Proposed Remedial Action Plan (PRAP) summarizes the decision that led to the recommended remedial action by discussing each alternative and the reasons for choosing or rejecting it.

Public comment can make a difference in the remedial action plan.

The public is encouraged to review the PRAP and make comments either at the meeting or during the comment period that follows. The comments are reviewed and compiled in a Responsiveness Summary and modifications to the proposed remedial action may be made. Additional public notice is required if a modified remedial action differs significantly from the earlier selection.

The final remedial decision is documented in the record of decision.

DEC drafts a Record of Decision (ROD) which includes the selected remedial action, the Responsiveness Summary and a bibliography of documents that were used to reach the remedial decision. DOH and DOL have an opportunity to comment on the draft ROD before final DEC approval. When the ROD is finalized, remedial design and construction can now begin.

For a full explanation of the ROD, see the companion fact sheet, "Record of Decision."

For More Information

- about the RI/FS, remedy selection process, or citizen participation, call DEC's 24-hour toll-free hazardous waste remediation information line at 1 (800) 342-9296.
- If you have questions about the health impacts of a hazardous waste site, contact the Department of Health's Help Liaison Program (HeLP) at 1 (800) 458-1158, extension 402.

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Regional Headquarters

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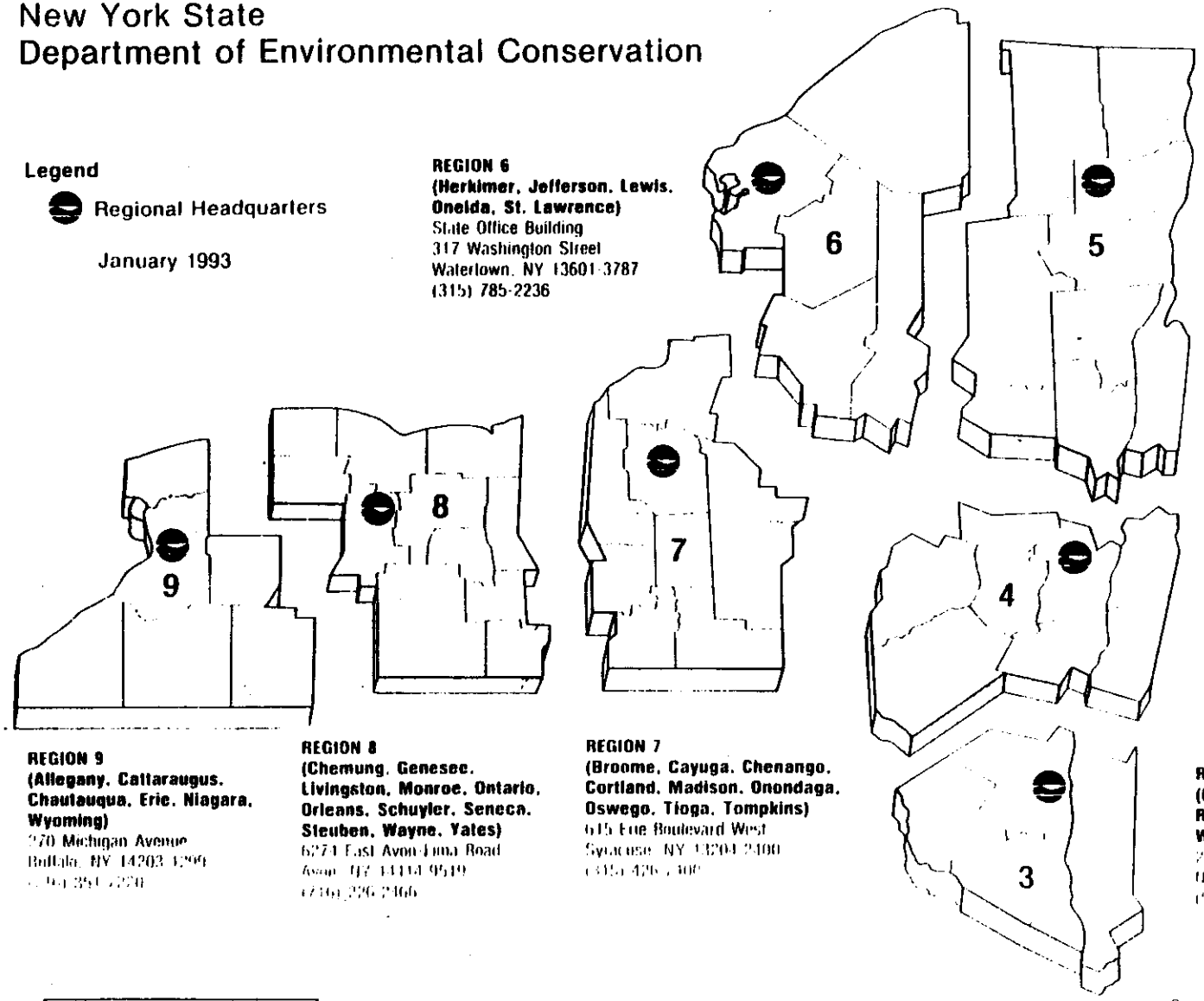

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