ANDREW J. ENGLISH

Department of Environmental Conservation

Division of Hazardous Waste Remediation

Amended Record of Decision

VanDerHorst Plant No. 1 Site
City of Olean, Cattaraugus County
Site Number 9-05-008

April 1996

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

DECLARATION STATEMENT
AMENDED RECORD OF DECISION

VanDerHorst Plant No. 1 Site
City of Olean
Cattaraugus County, New York
Site Code: 9-05-008
Funding Source: 1986 Environmental Quality Bond Act

STATEMENT OF BASIS AND PURPOSE

This amended Record of Decision (ROD) documents changes to the selected remedial action for the VanDerHorst Plant No.1 inactive hazardous waste site. The changes are made in accordance with the New York State Environmental Conservation Law (ECL), and are not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP") of March 8, 1990 (40 CFR Part 300).

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

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this amended Record of Decision, may present a current or potential threat to public health and the environment.

DESCRIPTION OF THE AMENDED REMEDY

Based upon the Remedial Investigation/Feasibility Study (RI/FS) for the site, subsequent field investigations, and the criteria used to evaluate remedial alternatives, the NYSDEC has selected an amended remedy for the site consisting of the following major elements:

1. Removal of asbestos, demolition of the building, and off-site disposal of the debris. This task was completed in March 1995.

2. Excavation and off-site disposal of contaminated soils from targeted areas on site and adjacent to the site. Clean soils will be used to fill excavated areas.

3. Removal of contaminated sediments from Olean Creek and storm sewers followed by off-site disposal.

4. Continued groundwater monitoring. The results of this monitoring will form the basis for a decision about what, if any, active groundwater remediation will be undertaken.

The differences between the amended remedy and the original March 1992 ROD include:

* Contaminated on-site and off-site surface and subsurface soil will not be stabilized and left on site but will be disposed of in an off-site landfill.

* Contaminated sediments removed from Olean Creek and the storm sewers will not be stabilized and left on site but will be disposed of in an off-site landfill.

* Active groundwater collection and treatment will be deferred pending results from additional monitoring.

NEW YORK STATE DEPARTMENT OF HEALTH CONCURRENCE

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

DECLARATION

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

4/29/96
Date

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

TABLE OF CONTENTS

Figures

Tables

Exhibits

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

AMENDED RECORD OF DECISION
VANDERHORST PLANT NO. 1 SITE
SITE ID NO. 9-05-008

SECTION 1: INTRODUCTION

In March 1992, the Department selected a remedy for this site to treat chromium contaminated soil and sediment by excavating or dredging and stabilizing them on site. Treated materials would be left on site under a clean soil cover. The remedy selected in the Record of Decision (ROD) also included collecting and treating contaminated groundwater from a single high capacity well for five years as a pilot study. Information from this pilot study would then be used to make decisions about what additional action, if any, would be appropriate for addressing contaminated groundwater. The March 1992 ROD is the subject of this amendment.

Based upon data available at the time, the 1992 ROD called for the excavation and treatment of virtually all soils from the surface to the water table. Additional soil data was obtained during the design of the remedy making it possible to more carefully define the limits of significant soil contamination. This has resulted in a reduction in the total quantity of soil to remediate making off-site disposal of the soil cost-effective. The objectives of the soil removal are to eliminate the exposure to the public via fugitive dust emissions and to minimize the leaching of contaminants from the soil into the groundwater.

A cleanup goal of 50 ppm was established for this site based on the potential for human contact with the contaminated soil via contact and fugitive dust emissions. To eliminate these exposure routes, the Department has selected to do the following: remove the on-site soil containing chromium contamination above the clean up goal to a depth of 2 feet from the surface, backfill the excavated areas with clean fill and place one foot of topsoil on top for vegetation. To minimize the leaching of contaminants from the soil into the groundwater, the Department will remove soil containing chromium at concentrations of 500 ppm or above, from a depth of 2 feet from the surface down to the groundwater table which is located at approximately 20 feet deep at the site. This soil excavation task will cover the entire site except for a small area located north of the building where contamination was found below the cleanup goal. The possibility that the public would come into contact with the soil below three feet is much less, except for construction workers. The Department will seek a deed restriction or a similar arrangement to provide precautionary measures during future construction activities.

The volume estimated in the March 1992 ROD was 22,332 cubic yards and the re-evaluated volume is 8,611 cubic yards. Based on the revised volume of contaminated soil, estimates were done to compare the cost of ex-situ soil stabilization and off-site disposal. The cost of off-site disposal was found to be equivalent to the cost of stabilization. The Department is selecting off-site disposal because the removal of contaminated soil from the site will eliminate direct human contact with the contaminated soil, minimize the leaching of contaminants from the soil into the groundwater, and is cost-effective.

Prior to implementing the groundwater pump and treat pilot study included in the March 1992 ROD to further investigate groundwater contamination, groundwater sampling was conducted in August and September of 1995. The September 1995 sampling was done to

confirm the results obtained in August 1995. The results showed that the contamination in the groundwater has significantly reduced when compared to the 1990 and 1991 sampling results. A quarterly monitoring program began in December 1995 to obtain additional groundwater quality data. The quarterly monitoring of groundwater will be continued for a period of one year after the completion of the construction activities at the site. Future monitoring plans will be made based on the results of the monitoring program. The active pump and treat system will be deferred until adequate data has been collected and interpreted.

Based upon this approach, the Department is amending the March 1992 ROD. The soil and sediment will be excavated and disposed off site instead of treating them on site. Data from additional groundwater monitoring will form the basis for a decision about what, if any, active groundwater remediation will be undertaken.

Background information is presented below to aid in the understanding of the changes to the amended remedy. More detailed background information can be found in the March 1992 ROD and in other documents listed in the Administrative Record.

SECTION 2: SITE LOCATION AND DESCRIPTION

The VanDerHorst Corporation Plant No. 1 Site is located in the northern section of the City of Olean, Cattaraugus County, New York (Figures 1 and 2). The Plant was used for large-scale metal plating, particularly with chromium. Spills and other releases of contaminants contaminated the building, soils, groundwater, sewers, and sediments in Olean Creek. This two-acre property is bounded by a developed residential neighborhood on its north, east, and south and by an industrial area on its west and southwest. The topography of the site is relatively flat and surface runoff drains to the City's storm sewer system. The nearest surface water is Olean Creek, approximately one-half mile east of the site. Groundwater flow is toward the southwest. The Allegheny River is approximately one and one-half miles southwest of the site.

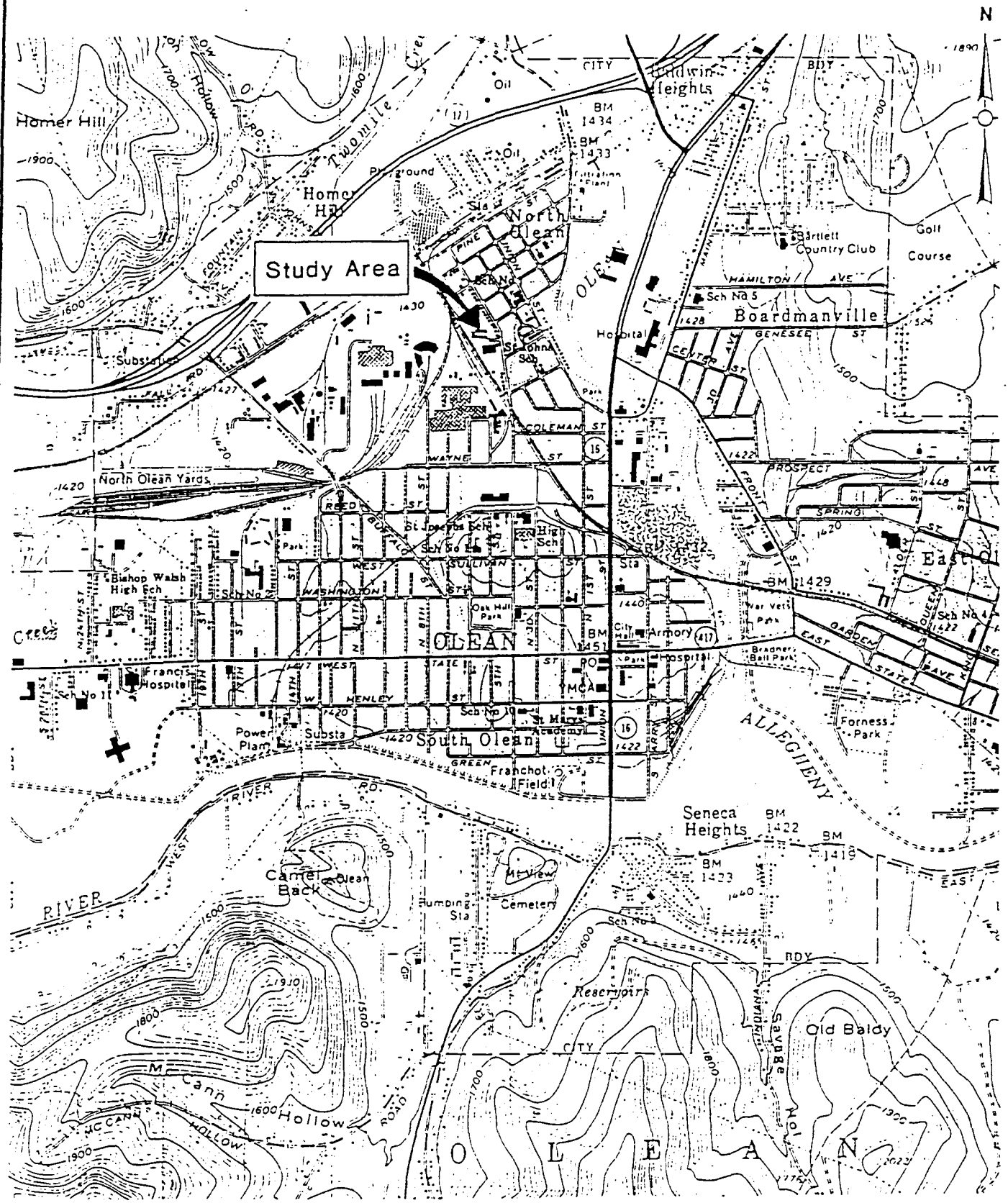
SECTION 3: SITE HISTORY AND WORK ALREADY COMPLETED

The VanDerHorst Corporation began electroplating operations in the early 1940's in a building that had previously been used as a machine shop for the construction of hydraulic presses. There are two *reported* instances of process wastewater being disposed into the ground at the plant site. In one account, iron-contaminated chromic acid was dumped into a shallow hole on site sometime during the early 1940's. Records of the County Health Department refer to an on-site wastewater disposal well, which was in operation until approximately 1952. From 1952 until 1968, process wastewater from the plant was discharged to the City sewer system without any pre-treatment.

For many years, the Plant relied upon the City water system for a source of clean water to use in its operations. In 1951, a production well was installed (46 feet deep) on site. The County Health Department reported that this process supply well was heavily contaminated with chromium by 1959. Use of this well was stopped in 1960. In 1962, a new 91-foot deep process well was installed six to eight feet away from the first one.

FIGURE 1

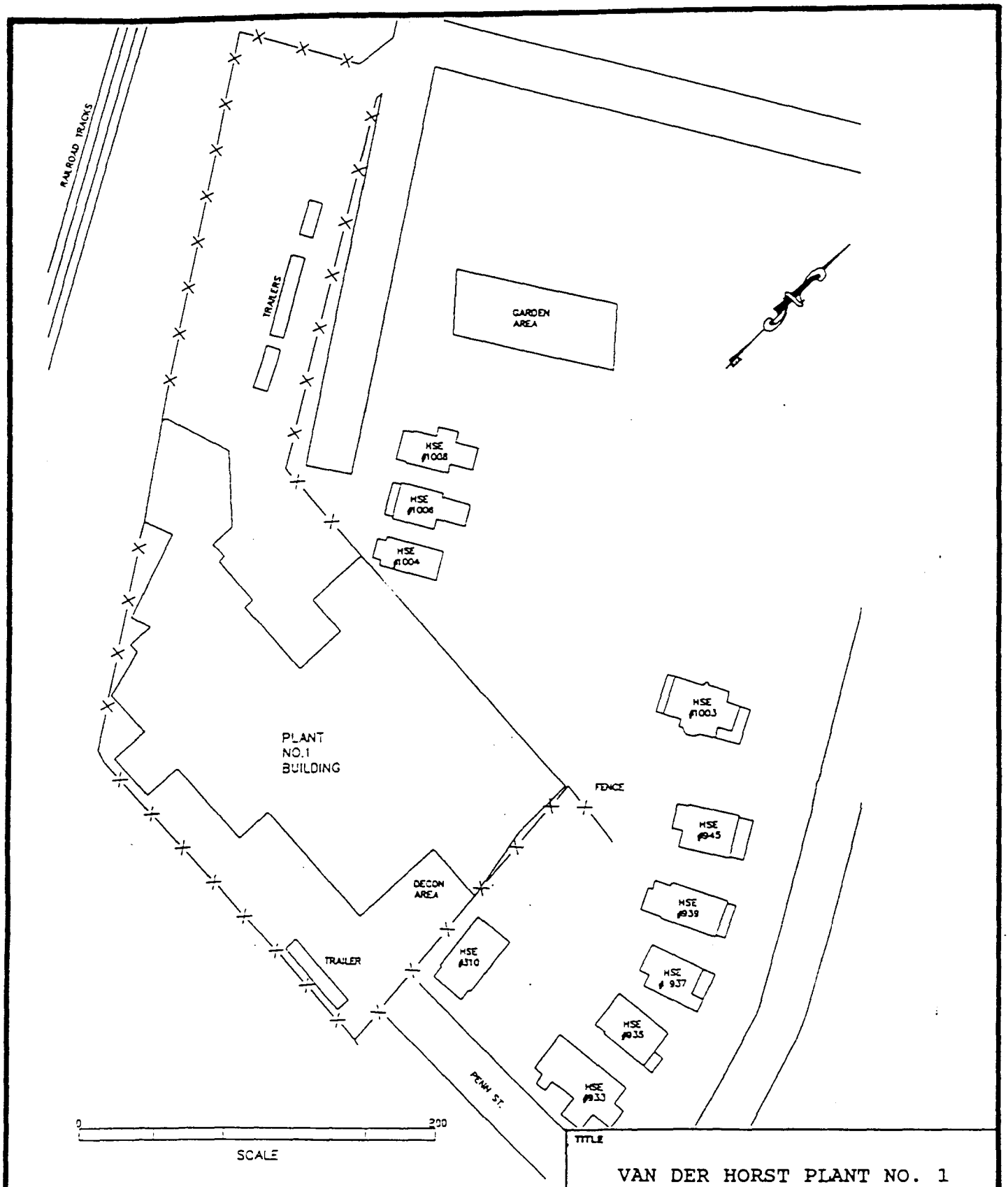
Site Location Map - Van Der Horst Company
RI/FS Plant No.1



Source: U.S.G.S. Quadrangle Map, Olean, N.Y.

Scale: 1"=2000'

ERM-Northeast
Environmental Resources Management



NOTES:

1) BASE MAP PROVIDED BY MILLARD & MAC KAY LAND SURVEYORS OF BUFFALO, NEW YORK.

TITLE

VAN DER HORST PLANT NO. 1

FACILITY PLAN

PREPARED FOR

ERM ERM-Northeast Environmental Resources Management

FIGURE 2

130830

In 1965, an employee emptied a large tank containing chromic acid wastewater into the sanitary sewer. Because the flow rate was high, the wastewater overflowed to a storm sewer. As a result, the acid wastewater reached Olean Creek and killed at least 10,000 fish.

In 1966, Felmont Oil Corporation installed six groundwater collection wells located approximately five hundred feet west of the VanDerHorst Plant. Together, these wells could produce six to ten million gallons per day. This created a cone of depression that extended toward the VanDerHorst Plant. In 1967, Felmont Well No. 5 was shutdown due to high levels of chromium contamination in the water from the well. On June 1, 1967, a press release was issued cautioning the public in the North Olean area against drinking groundwater from private wells. In response to a directive from the County Health Department, VanDerHorst installed a chromium treatment unit and treated their wastewater before discharging it into the sanitary sewer in 1968.

In April 1984, the NYSDEC hired Recra Research, Inc. to complete a Phase I study. The study included a compilation of information from the NYSDEC, the Cattaraugus County Department of Health, and the United States Geological Survey (USGS). The information available then was not adequate to conclude that the Plant No. 1 Site was the source of groundwater contamination in the area. In early 1986, the Felmont wells were shutdown. The VanDerHorst plant closed in July 1987.

In 1989, a summary abatement order was issued by the NYSDEC to VanDerHorst Corporation stating that the conditions existing at the site constituted an imminent and substantial danger to public health and the environment. A second summary abatement order was issued by the NYSDEC in 1989 requiring the immediate removal and disposal of large volumes of corrosive plating solutions and other hazardous substances that remained at the VanDerHorst plants. The company responded with an inadequate closure plan and stated that the company lacked financial resources to undertake remedial activities. This made it necessary for the State to do the work. The NYSDEC hired an engineering consultant (ERM Northeast, Inc.) to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the site. At the request of the NYSDEC, the USEPA characterized, packaged, and removed the hazardous materials from the site. This removal action eliminated the imminent threat posed by the various chemicals and spent solutions which were improperly stored at the site.

The RI confirmed that contamination in soil, creek sediment, and groundwater were the result of past plant activities. The major contaminants detected were chromium, lead, and arsenic in soil/sediment and chromium and lead in groundwater. The FS, completed in January 1992, led to the remedy selected in the March 1992 ROD.

Because the Plant No. 1 Building covered most of the site, it was necessary to demolish and remove the structure before soil cleanup can begin. The demolition of the building was completed in March 1995. All debris was disposed off site. Contaminated soils from residential properties next to the site were also removed and disposed off site. The building slab has been left in place until soil cleanup so that in the interim, contaminated soils would not be exposed.

Other than the USEPA removal action, all activities at the site have been completed under the State Superfund using monies from the 1986 Environmental Quality Bond Act. It is expected that the soil cleanup will also be funded by public money.

SECTION 4: SITE CONTAMINATION

4.1: Site Geology

Based on previous studies conducted by the USGS, the City of Olean lies within the glaciated Allegheny River basin. Surface deposits are made up of gravelly silty loams which extend to a depth of 30 feet in some areas of the valley, but is only about 10 feet thick at the site. Under the site, there is a deposit of fluvial sands and gravel that lies 10-80 feet below land surface. This deposit forms the major aquifer in the Olean area. Groundwater is found beginning at depths of 15-20 feet below grade. The subsurface also includes layers of cobbles (rocks) between three and twelve inches.

4.2: Soil and Sediment Contamination

The RI identified four areas that appear to be the major sources of soil contamination (Figure 3). Area A was contaminated primarily by leaks from chromic acid tanks. Contamination in Areas B and C may have resulted from past disposal practices. Area D contains six plating wells that extend 15 to 20 feet into the ground. Releases from these wells have contaminated soil and groundwater. During the 1989 removal action, the USEPA removed the water from these wells and plugged them.

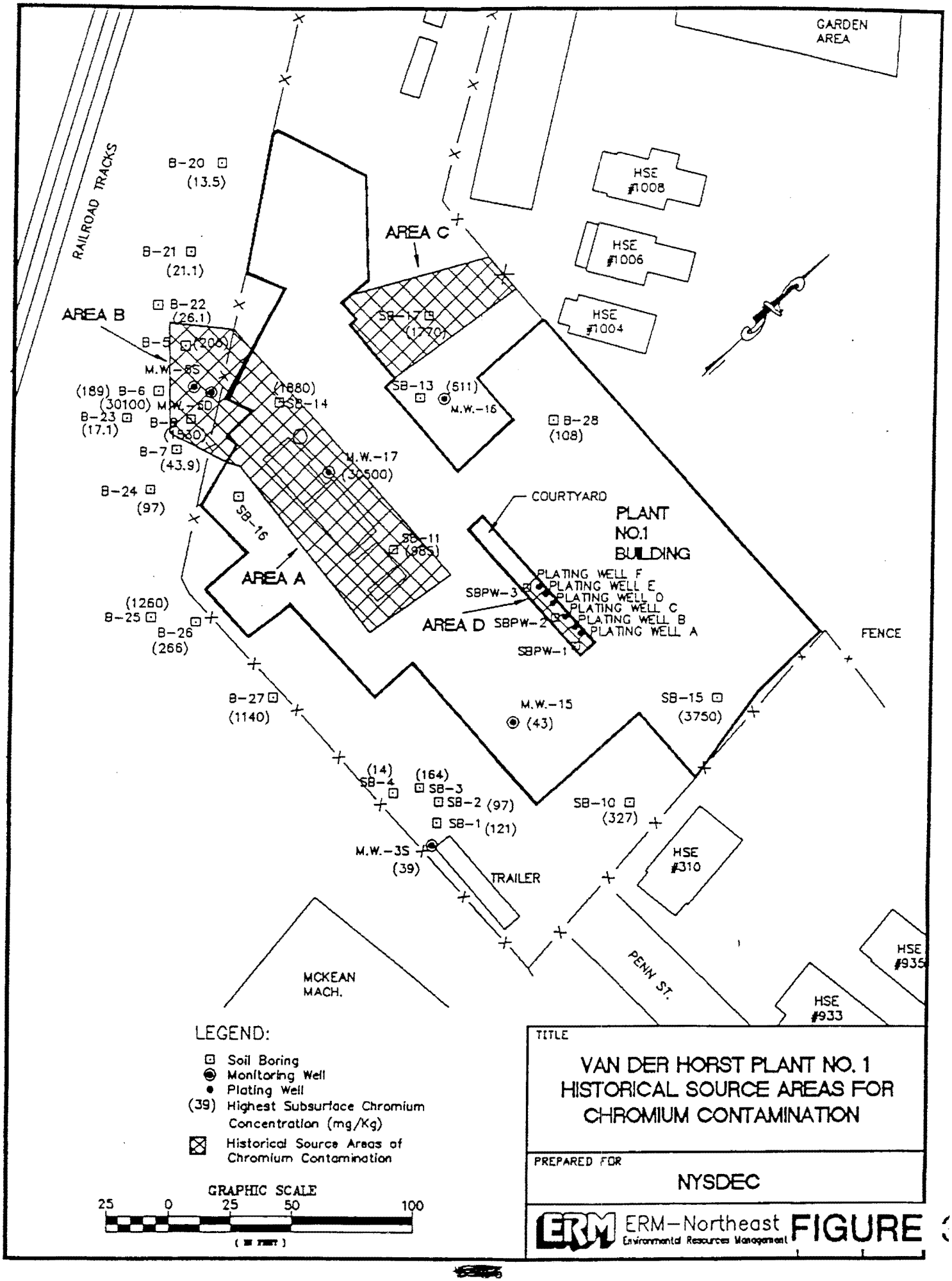
The greatest soil contamination was found in Area B. Chromium was found in surface soil at concentrations as high as 585,000 parts per million (ppm) and in subsurface soil at 30,100 ppm (samples from five to seven feet below surface). The highest level of chromium in Area A soils is 30,500 ppm and was found in subsurface soil at 24-26 feet. Area C surface soil contains chromium at 5,570 ppm. A subsurface soil sample (8-10 feet deep) contained 1,770 ppm of chromium. The highest chromium concentration found in Area D in surface soil was 7,490 ppm.

The highest chromium concentration found in Olean Creek sediments, 3,920 ppm, was in a sample at the outfall of the storm sewer. The highest concentration (14,800 ppm) found in the sewer itself was at the junction of N. Fourth Street and Brookview Avenue.

4.3: Groundwater Contamination

The aquifer beneath the site is approximately 300 feet deep with an intermittent clay layer 90 feet below grade. The aquifer is very productive. Groundwater flows generally to the southwest at a relatively low velocity and with a tendency to move down into the aquifer. The City's main water supply system is located southeast of the site, opposite of the direction of groundwater flow (i.e., upgradient). A supplementary water supply system to meet peak demands is located to the northeast of the site. This system pumps surface water from Olean Creek and not groundwater.

The highest levels of chromium found in groundwater were 264,000 ppb at 30 feet deep beneath the building and 55,700 ppb at 60 feet deep immediately adjacent to the site. Although the exact extent of the downgradient plume is not known, chromium has been found approximately 750 feet southwest of the site at a concentration of 850 ppb at MW-19D.


GARDEN AREA
RAILROAD TRACKS
B-20 (13.5)
B-21 (21.1)
B-22 (26.1)
B-5 (200)
M.W.-5S
(189) B-6 (30100)
M.W.-5D
B-23 (17.1)
B-8 (1530)
B-7 (43.9)
B-24 (97)
(1260) B-25
B-26 (266)
B-27 (1140)
(14) SB-4
(164) SB-3
SB-2 (97)
SB-1 (121)
M.W.-3S (39)
AREA B
AREA A
AREA C
AREA D
SB-17 (1770)
SB-13 (611)
M.W.-16
(1880) SB-14
M.W.-17 (30500)
SB-16
SB-11 (985)
B-28 (108)
COURTYARD
PLANT NO.1 BUILDING
PLATING WELL F
PLATING WELL E
PLATING WELL D
PLATING WELL C
PLATING WELL B
PLATING WELL A
SBPW-3
SBPW-2
SBPW-1
FENCE
M.W.-15 (43)
SB-15 (3750)
SB-10 (327)
HSE #1008
HSE #1006
HSE #1004
HSE #310
HSE #935
HSE #933
TRAILER
PENN ST.
MCKEAN MACH.
LEGEND:
Soil Boring
Monitoring Well
Plating Well
(39) Highest Subsurface Chromium Concentration (mg/Kg)
Historical Source Areas of Chromium Contamination
GRAPHIC SCALE
25 0 25 50 100
TITLE
VAN DER HORST PLANT NO. 1
HISTORICAL SOURCE AREAS FOR
CHROMIUM CONTAMINATION
PREPARED FOR
NYSDEC
ERM-Northeast
Environmental Resources Management
FIGURE

Tetrachloroethene (PCE) in groundwater ranged from 10-20 ppb at 30 feet deep and is not detected at about 300 feet from the site boundary. PCE was not found in deep wells.

SECTION 5: SUMMARY OF NEW INFORMATION

5.1: Soil Contamination

Several soil borings were installed during the remedial design to more accurately determine the extent of soil contamination in the subsurface. This has made it possible to more carefully identify areas of significant contamination. As discussed in Section 1 and based on the new soil data, the surface and subsurface soil contamination was defined in more detail.

The goals of the soil remediation are to eliminate the public exposure to the contaminated soil and minimize the leaching of contaminants from the soil into the groundwater. Removal of the contaminated soil to a cleanup goal of 50 ppm of chromium from the surface to a depth of 2 feet will eliminate the direct exposure to the public. This task will include essentially all the site soil from the surface to 2 feet deep. To minimize the leaching of contaminants from the soil into the groundwater, soils containing 500 ppm of chromium or above will be removed. All the off-site contaminated soil located along the southern and western areas of the site will be removed to a cleanup goal of 50 ppm of chromium.

5.2: Groundwater Contamination

In the March 1992 ROD, several uncertainties and difficulties regarding groundwater conditions were identified. The purpose of the pilot test selected in the March 1992 ROD was to provide information needed to address these issues. Currently, groundwater in the area of the site is not used. During the design of the selected remedy, groundwater in the vicinity of the site was resampled. Analytical results showed that the concentration of chromium in groundwater has significantly decreased over the past several years. For example, monitoring well No. MW-5D contained 55,700 parts per billion (ppb) of chromium in August 1990. In August 1995, the same well contained only 580 ppb of chromium. This was confirmed by results from resampling the well in September 1995. Table 1 shows the results of all groundwater sampling events. Figure 4 shows the locations of the monitoring wells.

Although the additional sampling confirmed the preliminary results, more data are needed before conclusions can be made about groundwater and saturated soil contamination. Under the amended remedy, the Department will conduct quarterly groundwater monitoring. The first round was completed in December 1995. During the plant building demolition, some of the on-site monitoring wells were damaged and the remaining on-site wells will be removed during the soil removal activities. New monitoring wells will be installed after the completion of the construction activities. The quarterly monitoring program initiated in December 1995 will be continued for a period of one year after the installation of new wells. Based on the results of the monitoring program, future monitoring plans (semi-annual or annual) will be made. Additionally, monitoring wells will be installed off-site, if it is predicted that the groundwater plume has migrated away from the current monitoring zone.

The pilot study recommended in the March 1992 ROD will be deferred until adequate

groundwater quality data has been obtained from the monitoring events and a better understanding of the groundwater conditions is achieved.

5.3: Sediment Contamination

To better define the extent of sediment contamination in Olean Creek, additional samples were taken. Based upon all of the data obtained, cleanup in the creek would extend from the sewer outfall to the Route 16 bridge (Figure 5). The total volume of sediment to be dredged from the creek is estimated to be 2100 cu.yds. compared to 272 cu.yds estimated in the original ROD. One sample downstream of the bridge contained 261 ppm of chromium, significantly above the cleanup goal of 26 ppm selected in the ROD. Other samples around that location were below the goal. Because it would be impracticable to dewater the creek to allow for removal of this isolated spot and the environmental threat is low, the Department will not take action at this location. Three other locations that were marginally above the cleanup goal (30.8 ppm, 31.1 ppm, and 44 ppm) will also not be removed.

SECTION 6: CHANGES TO THE SELECTED REMEDY

6.1: Summary of the Original Remedy

The remedy selected in the March 1992 ROD included the following components:

1. Building demolition and off-site disposal.

2. Excavation of approximately 22,000 cubic yards (cu.yds) of soil followed by treatment and placement back onto the site.

3. Removal of contaminated sediments from Olean Creek and the sewers followed by on-site treatment with soils and on-site placement of the treated sediments.

4. Completion of a five-year groundwater collection and treatment pilot project to determine the feasibility of restoring the aquifer to pre-release conditions along with groundwater monitoring.

6.2: Changes to the Original Remedy

The changes to the March 1992 ROD include:

1. Soils targeted for remediation (approximately 9,000 cu. yds.) will be excavated and disposed off-site at an authorized disposal facility. Soils will not be treated and left on site. Based upon soil data obtained after the 1992 ROD, specific areas and volumes of soil have been targeted for removal. This amendment includes the removal of essentially all site soils to a depth of two feet and deeper in several areas where significant levels of contamination extend below that depth. The deepest excavation will be approximately 20 feet. To maintain a protective position regarding future threats to groundwater, deeper soils considered significantly contaminated (i.e., greater than 500 ppm chromium) were included in the estimate. Off site, all contaminated soils above the original cleanup goal of 50 ppm will be removed. Figure 6 shows the extent

TABLE 1

VanDerHorst Corporation Plant No.1

Groundwater Sampling Results (All Results in Parts Per Billion or microgram/liter)

Phase I July 85					Phase II Aug 90				Phase IV Aug 95					Phase V Sept. 95				Phase VI Dec. 95			
SAMPLE	Cr.	Hex.	Iron	Mn.	Cr.	Hex.	Iron	Mn.	Cr.	Hex.	Iron	Ferrous	SAMPLE	Cr.	Hex.	Iron	Mn.	Cr.	Hex.	Iron	Mn.
MW-1D	10	45	4300	371	18	ND	2930	159	10	ND	20	150	MW-1D								
MW-1S	10	[illegible]	15200	3080	ND	11	10300	487	10	ND	90	150	MW-1S								
MW-2	1990	603	44200	2190	2860	2580	6300	899					MW-2								
MW-3D	10	95	1220	70	23	ND	1630	71	10	ND	20	100	MW-3D								
MW-3S	4550	1160	2280	120	240	192	19000	970	70	29	7000	200	MW-3S								
MW-3S2									20	37	20	60	MW-3S2								
MW-4	24	66	21400	1400	17	15	9910	707	10	16	20	120	MW-4								
MW-5D	13400	4140	1570	504	55700	35900	3260	323	580	678	20	200	MW-5D	536	489	67.7	26.6	1570	1100	18300	1490
MW-5S	8870	4100	12800	1640	3920	7580	2030	663	50	ND	880	1150	MW-5S								
MW-5S2									630	ND	930	920	MW-5S2	4940	99.9	5940	1560	2650	3350	3550	1490
MW-5S3									90	ND	820	960	MW-5S3								
MW-5B					13	27	512	101	20	ND	20	150	MW-5B								
MW-6D	21	70	3060	113									MW-6D								
MW-6S	162	291	28800	2770					30	29	680	350	MW-6S								
MW-7D	5600	1700	1050	1280	5040	6300	4600	333	610	391	20	300	MW-7D	430	366	204	15.9	1030	949	2270	272
MW-7D F	5270	3080	1220	1240									MW-7D F								
MW-7S	29	44	18700	1290	33	32	13300	5360	20	16	80	250	MW-7S								
MW-8	10	104	10400	808	29	26	14500	649	20	ND	20	150	MW-8								
MW-9D	10	57	950	473	132	70	115000	4300	20	ND	20	80	MW-9D								
MW-9S	67	31	78400	4040	29	16	40200	2870	30	ND	2200	5800	MW-9S								
MW-10					13	ND	10400	1050	30	ND	200	750	MW-10								
MW-11D					1030	1030	9270	909	860	519	20	20	MW-11D	478	391	220	10.4	259	234	842	32.1
MW-11D									780	551	20	200	MW-11D								
MW-11D									820	498	20	40	MW-11D								
MW-11S					10	ND	9390	565	30	ND	20	240	MW-11S								
MW-12					19	ND	24400	649	30	ND	20	100	MW-12								
MW-13					10	ND	11500	904	30	21	20	60	MW-13								
MW-14					95	ND	68200	4240	40	ND	20	60	MW-14								
					Phase III Aug 91																
MW-15					846	17	90200	6900					MW-15								
DUP-10					198	104	19600	4110					DUP-10								
MW-16					4070	18	21400	1310					MW-16								
MW-17					264000	167000	93300	4070					MW-17								
MW-19D					851	56	43600	5090	30	ND	20	560	MW-19D								
MW-30D									40	ND	80	560	MW-30D	5.7	11.9	888	625	9.6	9.3	3410	642
MW-3DA									20	10	890	280	MW-3DA								
MW-4SA									20	ND	520	1610	MW-4SA								
MW-4DR									20	ND	70	50	MW-4DR								

Cr. - Chromium ; Mn. - Manganese ; Ferrous - Ferrous Iron ; Hex. - Hexavalent Chromium

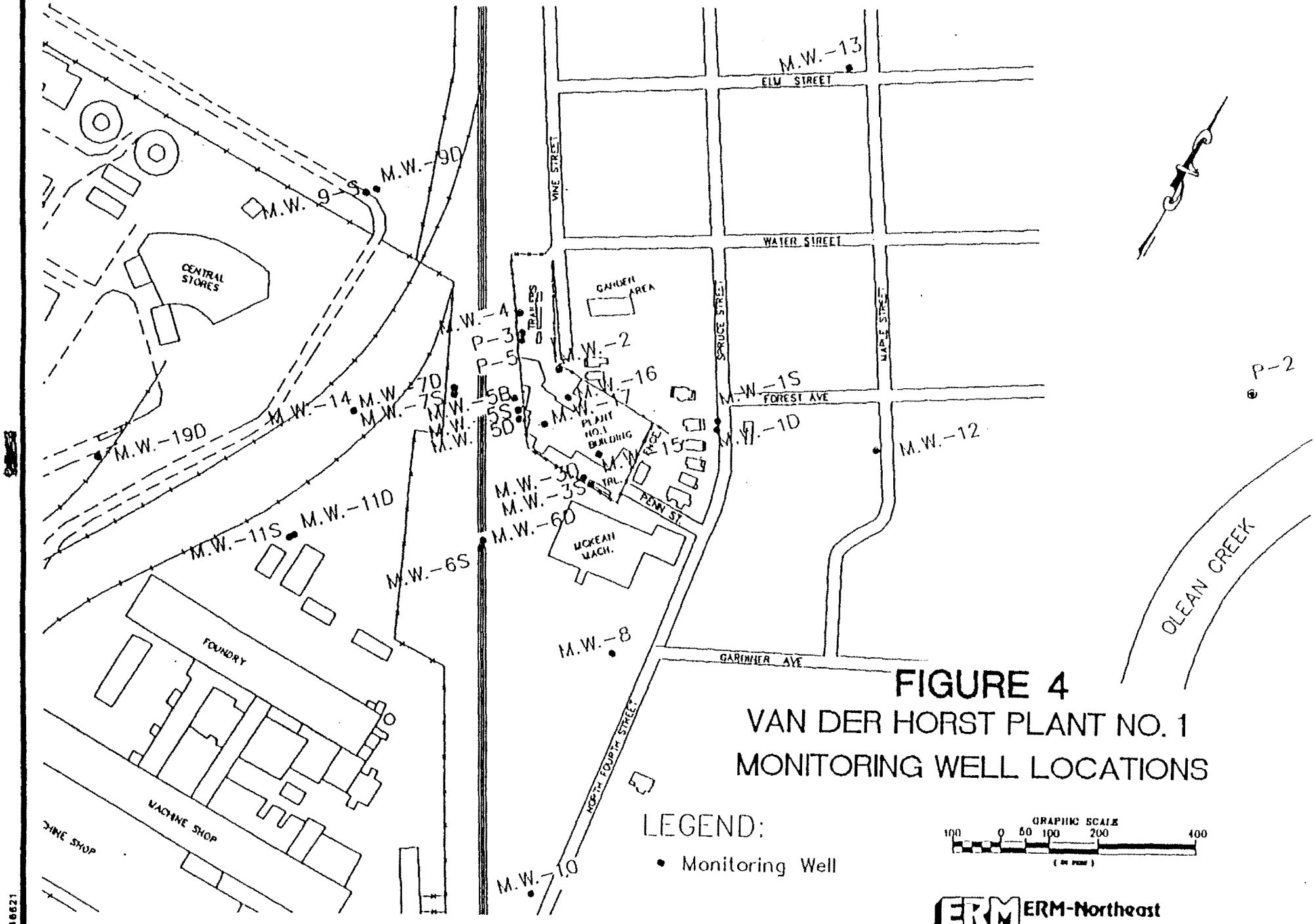


FIGURE 4
VAN DER HORST PLANT NO. 1
MONITORING WELL LOCATIONS

LEGEND:

• Monitoring Well

GRAPHIC SCALE
100 0 50 100 200 400

ERM-Northeast
Environmental Resources Management

146621

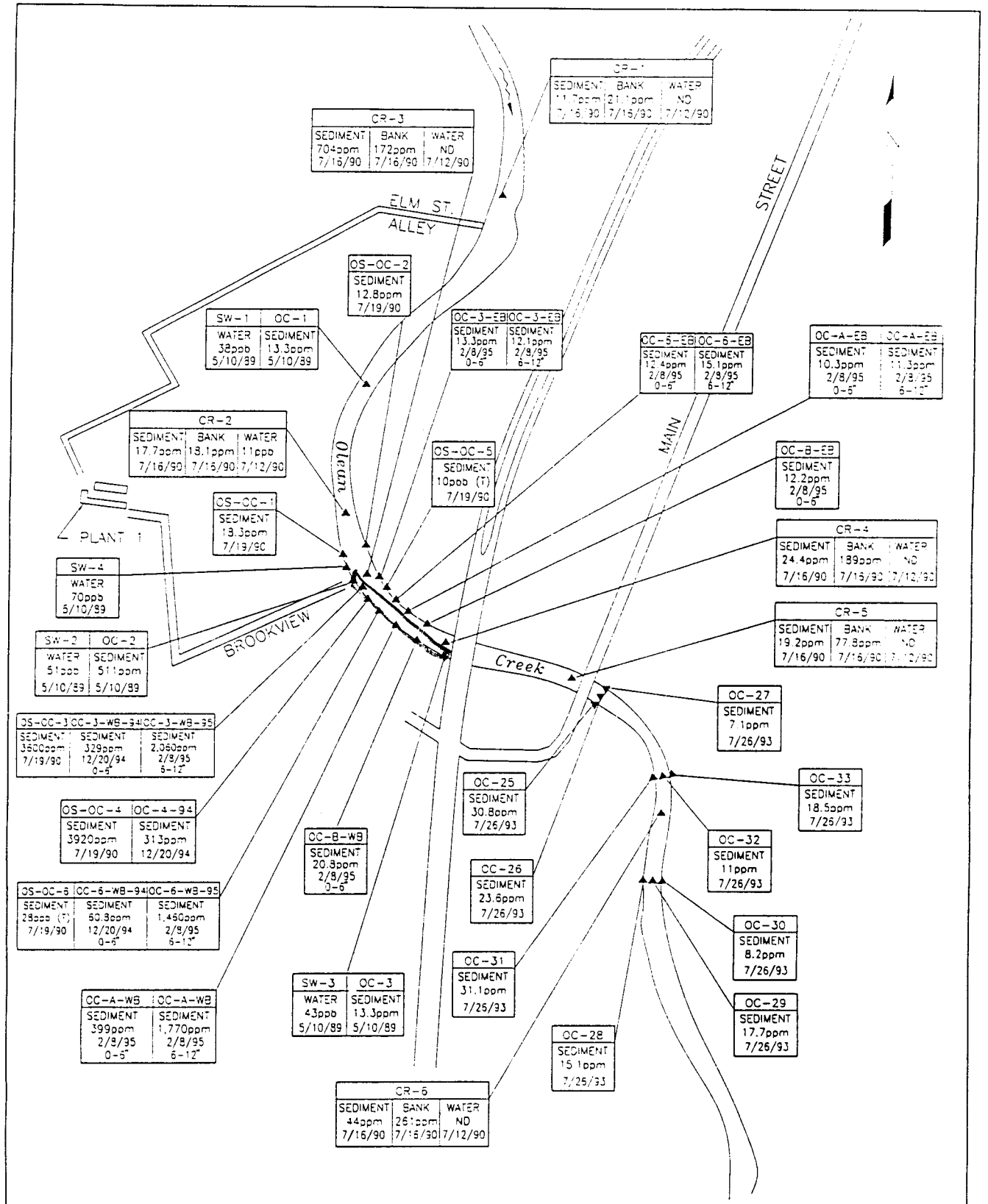

CR-3
SEDIMENT 704ppm 7/16/90
BANK 172ppm 7/16/90
WATER ND 7/12/90
CR-1
SEDIMENT 11.7ppm 7/16/90
BANK 21.1ppm 7/16/90
WATER ND 7/12/90
ELM ST.
ALLEY
STREET
OS-OC-2
SEDIMENT 12.8ppm 7/19/90
SW-1
WATER 38ppb 5/10/89
OC-1
SEDIMENT 13.3ppm 5/10/89
OC-3-EB
SEDIMENT 13.3ppm 2/8/95 0-6"
OC-3-EB
SEDIMENT 12.1ppm 2/8/95 6-12"
OC-5-EB
SEDIMENT 12.4ppm 2/8/95 0-6"
OC-6-EB
SEDIMENT 15.1ppm 2/8/95 6-12"
OC-A-EB
SEDIMENT 10.3ppm 2/8/95 0-6"
OC-A-EB
SEDIMENT 11.3ppm 2/8/95 6-12"
CR-2
SEDIMENT 17.7ppm 7/16/90
BANK 18.1ppm 7/16/90
WATER 11ppb 7/12/90
Olean
MAIN
OS-OC-5
SEDIMENT 10ppb (T) 7/19/90
OC-8-EB
SEDIMENT 12.2ppm 2/8/95 0-6"
OS-OC-1
SEDIMENT 18.3ppm 7/19/90
PLANT 1
CR-4
SEDIMENT 24.4ppm 7/16/90
BANK 189ppm 7/16/90
WATER ND 7/12/90
SW-4
WATER 70ppb 5/10/89
CR-5
SEDIMENT 19.2ppm 7/16/90
BANK 77.8ppm 7/16/90
WATER ND 7/12/90
SW-2
WATER 51ppb 5/10/89
OC-2
SEDIMENT 511ppm 5/10/89
BROOKVIEW
Creek
OC-27
SEDIMENT 7.1ppm 7/26/93
OS-OC-3
SEDIMENT 3600ppm 7/19/90
OC-3-WB-94
SEDIMENT 329ppm 12/20/94 0-6"
OC-3-WB-95
SEDIMENT 2,060ppm 2/8/95 6-12"
OC-25
SEDIMENT 30.8ppm 7/26/93
OC-33
SEDIMENT 18.5ppm 7/26/93
OS-OC-4
SEDIMENT 3920ppm 7/19/90
OC-4-94
SEDIMENT 313ppm 12/20/94
OC-8-WB
SEDIMENT 20.8ppm 2/8/95 0-6"
OC-32
SEDIMENT 11ppm 7/26/93
OC-26
SEDIMENT 23.6ppm 7/26/93
OS-OC-6
SEDIMENT 28ppb (T) 7/19/90
OC-6-WB-94
SEDIMENT 60.8ppm 12/20/94 0-6"
OC-6-WB-95
SEDIMENT 1,450ppm 2/8/95 6-12"
OC-30
SEDIMENT 8.2ppm 7/26/93
OC-31
SEDIMENT 31.1ppm 7/25/93
OC-A-WB
SEDIMENT 399ppm 2/8/95 0-6"
OC-A-WB
SEDIMENT 1,770ppm 2/8/95 6-12"
SW-3
WATER 43ppb 5/10/89
OC-3
SEDIMENT 13.3ppm 5/10/89
OC-29
SEDIMENT 17.7ppm 7/26/93
OC-28
SEDIMENT 15.1ppm 7/25/93
CR-6
SEDIMENT 44ppm 7/16/90
BANK 26.1ppm 7/16/90
WATER ND 7/12/90
LEGEND
▲ = SAMPLE LOCATION
60.8ppm = TOTAL CHROMIUM CONCENTRATION
28ppb (T) = TCLP CHROMIUM CONCENTRATION
ND = NONE DETECTED
TITLE
OLEAN CREEK SAMPLE LOCATIONS AND CHROMIUM CONCENTRATIONS
PREPARED FOR
NYSDEC
ERM-Northeast
ERM
DRAWN M.M./E.M.F.
JOB NO. 154.013.10
FILE NAME OLE-SAMP
7/27/95

FIGURE 5

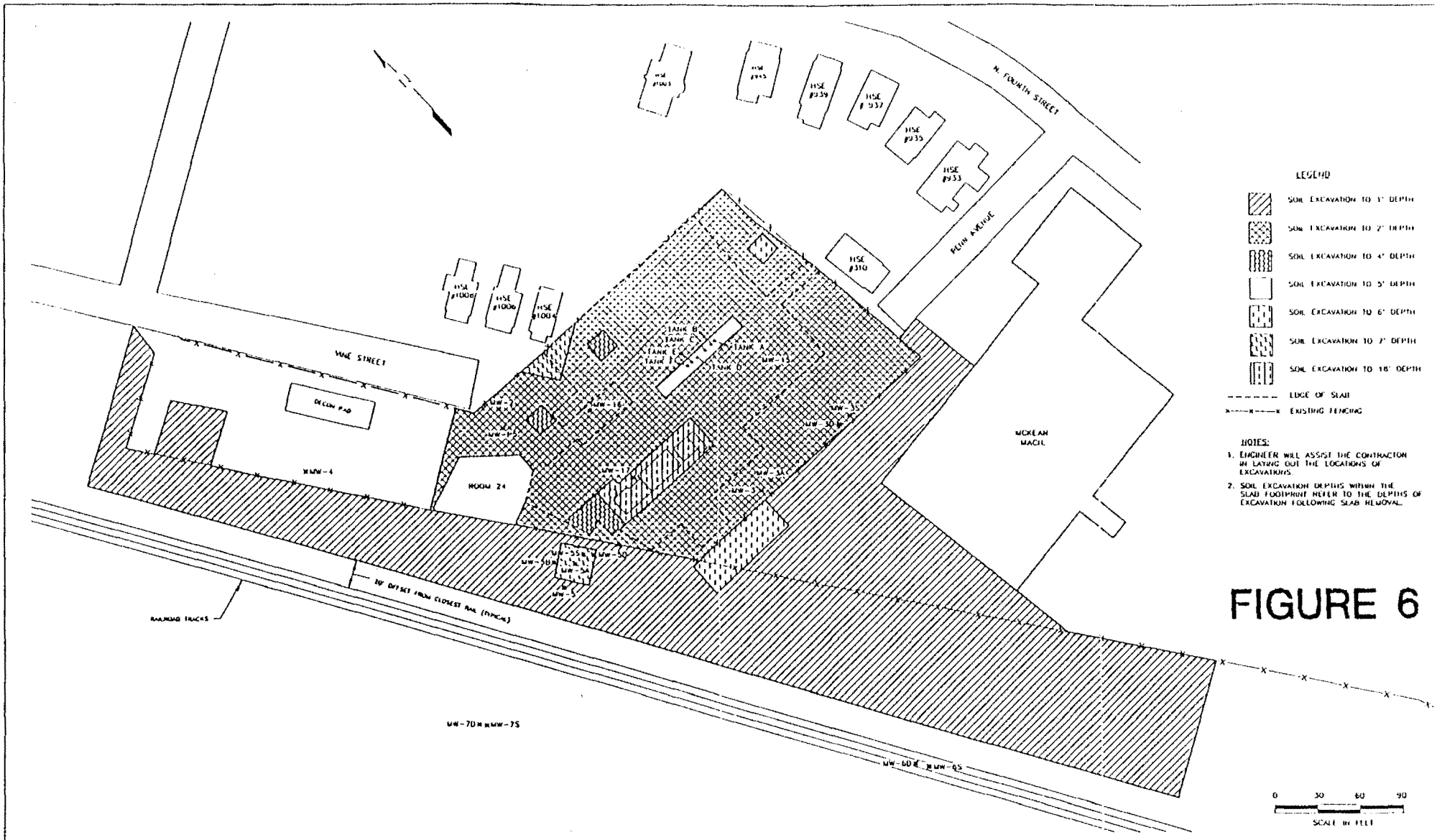


FIGURE 6

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SOIL EXCAVATION and SITE RESTORATION

ERM-Northeast
Environmental Resources Management

VAN DER HORST PLANT #1
SOIL EXCAVATION PLAN

of the soil removal proposed. All excavated soil will be replaced with clean soil and the surface will be graded and revegetated. Figure 7 shows the final grading plan.

2. Contaminated sediments removed from Olean Creek and the storm sewers will not be stabilized on site but will be disposed off site at an authorized disposal facility.

3. Active groundwater collection and treatment will be deferred pending results from additional monitoring.

Groundwater monitoring will continue until the fate of the contaminated groundwater can be confidently determined. If necessary, additional monitoring wells will be installed and sampled to define the current extent of the plume. If the monitoring data shows that the plume could present a significant future threat to human health or the environment, a more extensive study, including groundwater modelling, will be undertaken. Based upon the results of this study, options to address the threat will be evaluated and an appropriate remedy will be selected after an opportunity for public participation had been provided.

6.3: Evaluation of Changes

As required, the proposed changes to the ROD have been evaluated against the criteria used to select remedial actions. The changes have been compared to the original remedy. The results of the evaluation are summarized below:

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 amended remedy will eliminate the risks to human health such as direct contact and inhalation of dust from contaminated surface soil by removing and disposing all soil from the surface to two feet. The amended remedy will protect the environment by minimizing the release of contaminants from the soil into the groundwater. This will be achieved by the removal and disposal of significantly contaminated soil from two feet to approximately 20 feet. No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy. Some soils containing chromium at concentrations greater than 50 ppm will remain at depth on site but will not present a significant threat. Groundwater will be monitored to find out if active remediation is necessary to prevent significant threats to human health and the environment in the future. The proposed disposal method for creek sediments presents no change in protectiveness to Olean Creek.

The amended remedy for soil and groundwater will have the equivalent protection level of human health and the environment as stated for the original remedy.

2. **Compliance Standards, Criteria, and Guidance (SCGs)**--Compliance with SCGs addresses

whether a remedy would meet all Federal and State environmental laws and regulations and if not, provides grounds for invoking a waiver.

The implementation of the amended remedy should result in compliance with all SCGs applicable for this site. The groundwater will not achieve groundwater standards immediately but the quality of the groundwater will be monitored on a long-term basis and all reasonable efforts will be utilized to achieve the standards. The primary SCGs associated with this site are the groundwater quality standards promulgated in 6 NYCRR Part 703, Part 376 for off-site landfill disposal, and guidance regarding soil cleanup levels. The removal of contaminated soils will eliminate exposures to contaminated surface soils. Excavated soils will be tested and disposed following the land disposal restrictions in Part 376. After additional monitoring provides data adequate for evaluating groundwater conditions, a decision will be made about what, if any, active groundwater remediation is needed.

Primary Balancing Criteria - **The next five "primary balancing criteria" are used to weigh major trade-offs among alternatives.**

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

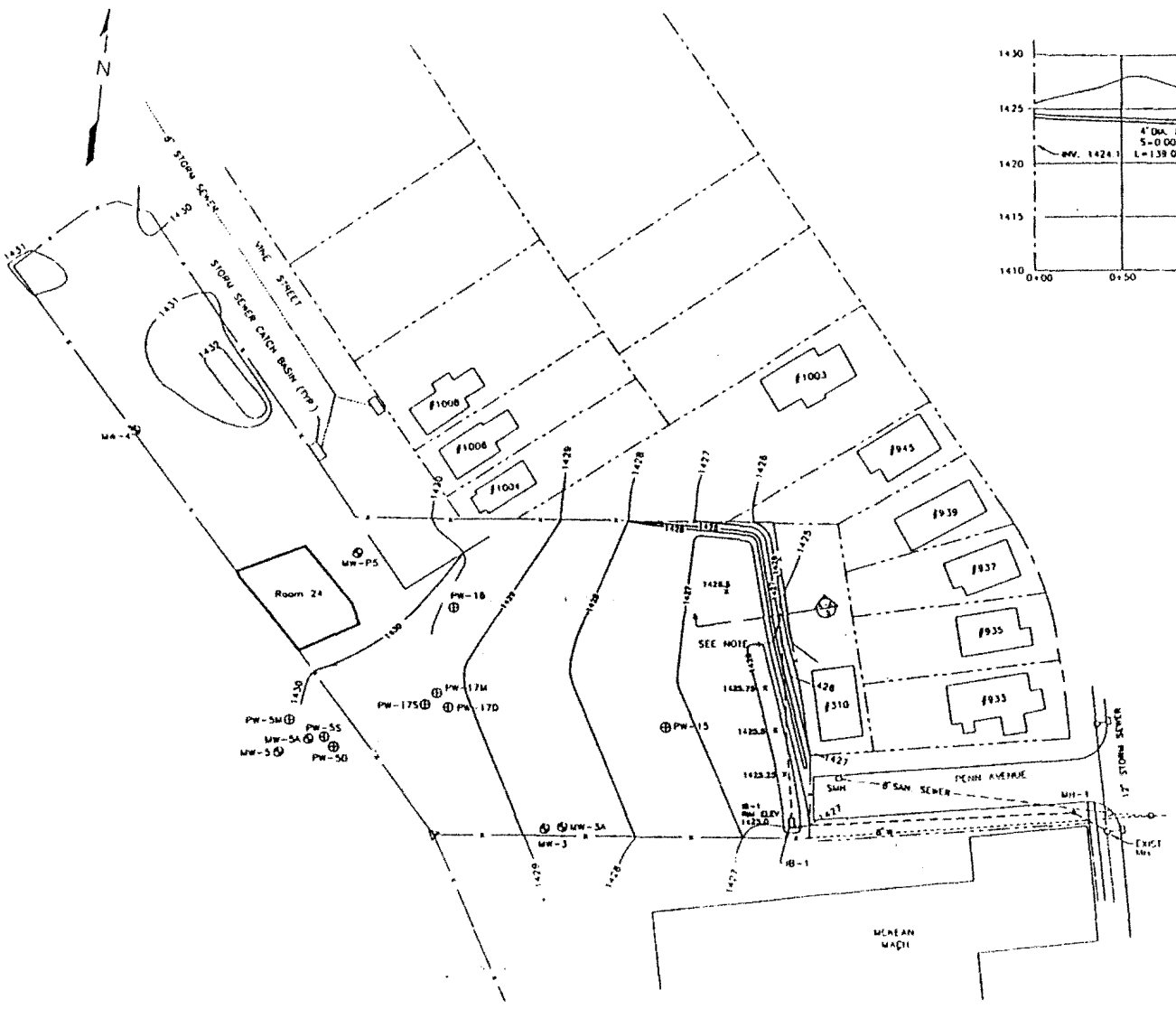
The amended remedy presents the opportunity to achieve a high degree of effectiveness in obtaining the remedial objectives while also minimizing the possibilities for adverse impacts to the community, workers, and the environment. Although workers involved in the construction of the amended remedy may be exposed to contaminated media, standard precautions can mitigate exposure concerns. Dust suppression techniques will be used to prevent wind borne contaminants from leaving the site. Since groundwater in the area of the site is not used, there are no short-term impacts. Preliminary data suggests that groundwater conditions are improving. Therefore, no additional risk is presented by postponing a decision about active remediation.

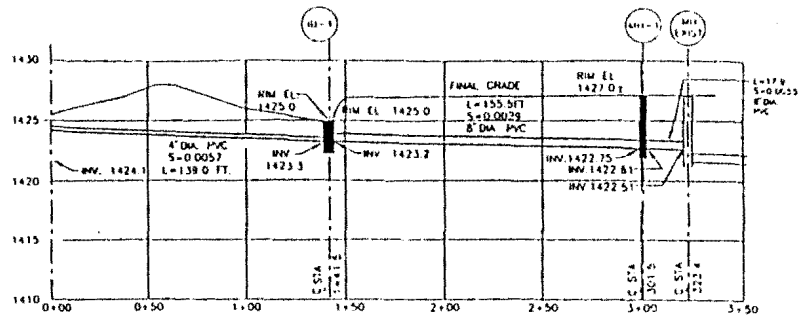
The amended remedy will take about the same amount of time to complete as the original remedy.

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.

The amended remedy will remove targeted soils from the site for disposal in an off-site landfill. The amended remedy will be a permanent remedy relative to the site and will be effective on a long-term basis.

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.





PROPOSED STORM SEWER PROFILE

H: 1"=30'
V: 1"=5

NOTES

1. EXISTING INFORMATION SHOWN ON THIS DRAWING HAS BEEN ADAPTED FROM A SITE SURVEY BY KREHBIEL ASSOCIATES DATED 8/2/93
2. EXISTING UTILITY INFORMATION SHOWN ON THIS DIAGRAM IS BASED ON INFORMATION AND DATA FURNISHED TO THE DEPARTMENT AND TO ENGINEERS BY OTHERS. DEPARTMENT AND ENGINEER ARE NOT RESPONSIBLE FOR THE ACCURACY OF SUCH INFORMATION
3. FINAL GRADES SHOWN ON THIS DRAWING REFLECT FINAL SURFACE GRADES, INCLUDING SIX INCHES OF TOPSOIL. CONTRACTOR SHALL PLACE COMMON FILL OR UNCONTAMINATED NATIVE SOIL TO THE SUBGRADES NECESSARY TO IMPLEMENT THIS GRADING PLAN.
4. CONNECT EXISTING 4" PERFORATED PVC PIPE, CURRENTLY DAYLIGHTED AT ELEVATION 1424.1, TO PROPOSED INLET BASIN NO. 1 AS SHOWN ON PROFILE AND DETAILS.
5. THE AREA NORTH OF ROOM 24 SHALL BE RESTORED TO ORIGINAL GRADE WITH 6 INCHES OF TOP SOIL AND SEEDING.
6. THE STORM DRAINAGE SYSTEM HAS BEEN SIZED TO ACCOMODATE 100 YEAR STORMWATER RUNOFF UNDER THE PROPOSED GRADING SITE CONDITIONS AS SHOWN. FUTURE CHANGES TO SITE CONDITIONS WHICH RESULT IN AN INCREASE IN STORMWATER FLOW WILL REQUIRE CORRESPONDING MODIFICATIONS TO THE DRAINAGE SYSTEM.
7. UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

LEGEND

- PROPOSED INLET BASIN
- PROPOSED MANHOLE
- PROPOSED MONITORING WELLS
- 1431 PROPOSED CONTOURS
- PROPOSED STORM SEWER PIPES
- 1428 EXISTING CONTOURS
- EXISTING FENCE
- EXISTING MONITORING WELLS TO REMAIN

0 15 30 60
SCALE IN FEET

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ERM-Northeast
Environmental Resources Management
ERM

VAN DER HORST PLANT #1
PROPOSED GRADING PLAN

JAN. 18, 1996

FIGURE 7

The amended remedy will effectively reduce the mobility and volume of the contaminants by removing soil. The mobility of the contaminants in the soil would have been reduced by implementing the original remedy but the volume of the soil would have increased.

6. **Implementability**--The technical and administrative feasibility of carrying out 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 equipment is evaluated along with potential difficulties in obtaining special permits, rights-of-way for construction, etc.

No significant obstacles are envisioned for implementing the amended remedy. It employs relatively basic engineering skills that will provide a high degree of operational reliability.

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 costs presented below are based on revised volumes of soil and sediment to be excavated from the site and recent prices obtained for landfill disposal and on-site stabilization. Other costs such as the removal of sediment from the sewers, site restoration and groundwater monitoring were not revised because these costs did not change significantly from the previous estimate.

Soil targeted for excavation in original remedy - 22,300 cubic yards
Soil targeted for excavation in amended remedy - 8,600 cubic yards

The estimated total costs for the entire project under the original remedy and amended remedy are presented below. These estimates include the costs for design, administration and contingencies.

	Off-site disposal	On-site Stabilization
Previous Estimate	$8,831,914	$7,269,422
Current Estimate	$5,432,987	$5,505,394

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

Community Acceptance-- A 30-day public comment period established for the site ran from February 26 , 1996 to March 27, 1996. A public meeting was held on March 7, 1996 at the City Council Chambers of the Olean Municipal Building. Comments raised during the public meeting and written comments received during the comment period were addressed with responses from the Department in a "Responsiveness Summary" prepared by the Department. The Responsiveness Summary is included in this document as Exhibit B. The selected remedy for the site presented in the Amended ROD is the same remedy proposed in the proposal to amend the March 1992 ROD.

SECTION 7: COMPONENTS OF THE AMENDED REMEDY

The main components of the amended remedy include:

1. Removal of asbestos, demolition of the building, and off-site disposal of the debris. This task was completed in March 1995.

2. Excavation and off-site disposal of contaminated soils from targeted areas on site and next to the site. Clean soils will be used to restore excavated areas.

3. Removal of contaminated sediments from Olean Creek and storm sewers followed by off-site disposal. Excavated areas will be backfilled with clean materials.

4. Continued groundwater monitoring. The results of this monitoring will form the basis for a decision about what, if any, active groundwater remediation will be undertaken.

Exhibit A
Administrative Record File Index
VanDerHorst Plant No. 1 Site
Site ID No. 9-05-008
City of Olean, Cattaraugus County

Reports/Orders

1. **Record of Decision**; prepared by the NYSDEC, dated March 26, 1992

2. **Proposed Remedial Action Plan**; prepared by the NYSDEC, dated March 1992.

3. **Preliminary Site Assessment Report (Phase I/II)**; prepared by, Recra Reseach, dated April 1984.

4. **RI/FS Work Plan**, prepared by ERM Northeast, dated April 1989.

5. **Citizen Participation Plan**, prepared by the NYSDEC, dated

6. **Phase I RI Report**, prepared by ERM Northeast: dated March 1990.

7. **Phase II RI Report**, prepared by ERM Northeast, dated May 1991.

8. **Final RI Report**, prepared by ERM Northeast, dated January 1992.

9. **Phase I/II Feasibility Study Report**, prepared by ERM Northeast, dated March 1990.

10. **Final Feasibility Study Report**, prepared by ERM Northeast, dated January 1992.

11. **The use of Natural Processes for the Control of Chromium Migration** by Paul C. Chrostowski, Judi L. Durda, Kristen G. Edel mann. Remediation/Summer 1991.

12. **Natural Attenuation of Hexavalent Chromium in Groundwater and Soils** by Carl D. Palmer and Robert W. Plus. Groundwater Issue, U.S. environmental Protection Agency, EPA/540/S-94/505, October 1994.

13. **Analytical Reports** from RECRA Laboratories. Includes the soil and sediment data obtained during the remedial design.

EXHIBIT B

VANDERHORST CORPORATION PLANT NO.1
SITE NO. 9-05-008

RESPONSIVENESS SUMMARY

The VanDerHorst Corporation Plant No. 1 Site is located in the northern section of the City of Olean, Cattaraugus County, New York. The Plant was used for large-scale metal plating, particularly with chromium. Spills and other releases of contaminants contaminated the building, soils, groundwater, sewers, and sediments in Olean Creek. This two-acre property is bounded by a developed residential neighborhood on its north, east, and south and by an industrial area on its west and southwest. The nearest surface water is Olean Creek, approximately one-half mile east of the site. Groundwater flow is toward the southwest. The Allegheny River is approximately one and one-half miles southwest of the site.

A Record of Decision (ROD) was signed for the site in March 1992. The components of the remedial action included in the 1992 ROD are as follows: 1) the removal of asbestos from the building and the demolition of the building for off-site disposal (please note that this task was completed in the month of March 1995), 2) removal of contaminated sediments from Olean Creek and storm sewers for on-site stabilization and placement, 3) surface and subsurface soil removal for on-site stabilization and placement, 4) groundwater pumping with one well, on-site treatment and discharge to the Publicly Owned Treatment Works as a pilot test for a period of five years, and 5) long-term groundwater monitoring program.

Based on the additional soil data obtained during the design of the remedial action, the volume of contaminated soil and the cost of ex-situ soil stabilization and off-site disposal remedial alternatives were reestimated. The reestimation showed that the cost of off-site disposal would be equivalent to the cost of stabilization. Therefore, the Department has amended the March 1992 ROD. The ROD amendment consists of the following changes to the original 1992 remedy: 1) contaminated on-site and off-site surface and subsurface soil will not be stabilized and left on site but will be disposed of in an off-site landfill, 2) contaminated sediments removed from Olean Creek and the storm sewers will not be stabilized and left on site but will be disposed of in an off-site landfill, and 3) active groundwater collection and treatment will be deferred pending results from additional monitoring.

A public participation meeting was held on March 7, 1996 at 7:00 P.M. at the Council Chambers of the Olean Municipal Building, Olean, NY. The Department presented the details of the amended ROD and received comments from the public. This responsiveness summary summarizes the public comments received during the public meeting and the Department's responses to the comments. The public comment period established for the site ran from February 26, 1996 to March 27, 1996.

Question 1: Where will the excavated soils from the site be disposed? Will the excavated soil from this site be disposed at the Plant No.2 site?

Response 1: The excavated soils and sediments from this site will be tested for hazardous characteristics prior to disposal in an appropriate off-site landfill facility approved by the Department. The excavated soils or sediments from this site will not be disposed at the Plant No.2 site.

Question 2: Was the last groundwater monitoring done in August 1995? What were the results of the groundwater sampling?

Response 2: The August 1995 groundwater sampling was done as part of a groundwater study initiated by the Department. The results showed a significant decrease in chromium concentration. Another sampling event was done in September 1995 to confirm the results of August 1995. The results of these sampling events and other previous sampling events are shown in Table 1 attached to the proposal. The Department has made plans to do quarterly monitoring at the site to understand the changes in the groundwater conditions. As part of this plan, a sampling event was done in December 1995, the results of which are also provided in Table 1.

Question 3: After the building was demolished, residents located adjacent to the site raised concerns regarding the increase in noise level from the railroad tracks and nearby industries. Is it possible to use concrete debris from the ice rink that is being demolished in the City of Olean to construct a berm at the site?

Response 3: The Department sees technical and legal problems in placing the concrete debris from the ice rink to form a berm along the railroad tracks at Plant No. 1 site. The Department is willing to discuss the construction of a berm as a collaborative effort with the City. The Department has scheduled a meeting during the week of April 29, 1996 with the City of Olean officials to discuss this issue.

Question 4: Can the Department do something about the strong winds blowing towards the residences after the demolition of the building? Will the Department use the funds saved from the changes in the remedy to construct a berm or to improve the conditions at the site to minimize the wind problem?

Response 4: Refer to response No.3. The Department may be able to plant some trees above the berm to be constructed along the property line of the site adjacent to the railroad tracks which would reduce the wind blowing towards the residences.

Question 5: The surface water drainage from the site is flooding property located to the east of the site. Can the Department do some grading to minimize this problem? Is it possible to do a temporary solution to this problem prior to the start of the construction activities at the site?

Response 5: The Department will inspect the areas at the site and will evaluate the possible measures to address this problem.

Question 6: How do you account for the changes in chromium concentration in the groundwater samples from MW-5S collected in August and September 1995? Which laboratory did the analyses. Was it an approved laboratory? Where is MW-5S is located?

Response 6: The wells were purged prior to the collection of samples. This involves removing three well volumes of water to make sure that the water sampled is representative of the aquifer. The samples collected from MW-5 were more turbid in comparison to other wells. Refer to Table attached to this document. The concentration of chromium in the sample from MW-5S was 630 ppm in August 1995, increased to 4940 ppm in September 1995, and decreased to 2650 ppm in December 1995. It is believed that these fluctuations result from chromium attached to particles in the water rather than chromium dissolved in groundwater. Future quarterly groundwater sampling will provide more data to understand these fluctuations in this well and other wells too.

In August 1995, groundwater samples were analyzed by the Department's laboratory located in Albany. The hexavalent chromium and ferrous iron analyses were conducted in the field by Department's personnel immediately after the collection of samples. Ecology and Environment Laboratories of Buffalo, a laboratory approved by NYSDOH, performed the analyses in the September 1995 and December 1995 events.

Question 7: The turbidity data for the sampling conducted in August 1995 and later sampling events were not provided to the County Health Department. Is turbidity a minor interference in the chemical analyses of metals? Turbidity data from future monitoring events should be provided to the County Health Department.

Response 7: The Department will forward the turbidity data from previous sampling events and will forward all the future sampling data along with the results. Turbidity is an interference in the chemical analyses for hexavalent chromium.

Question 8: Where did the chromium in the groundwater go?

Response 8: Factors such as dilution of the contamination, removal of chemicals from the site which contributed contamination to the groundwater, natural attenuation or other similar factors could be responsible for the change in chromium concentrations. Because various factors could cause this change, it is difficult to predict the fate of the contamination that existed in 1989, 1990 and 1991. The data from the future monitoring of groundwater will help provide an explanation to this issue.

Question 9 : Does the total cost estimate presented include the cost of all the tasks in the remedial action plan? Is the dredging work in Two Mile Creek included in the

total cost?

Response 9: The total cost estimate for the amended remedy includes the cost of asbestos removal and building demolition for off-site disposal, removal of contaminated soil and sediment for off-site disposal, pump and treatment of groundwater for a period of five years and long-term groundwater monitoring. The total cost also includes the cost of removal of sediment from Two Mile Creek (approximately 1000 linear feet north of Constitution Avenue) and off-site disposal.

During the public meeting, the Project Manager made an error in the statement regarding the tasks included in the total estimated cost. Please note that the total estimated cost also includes the cost of removal of sediments from Two Mile Creek as stated in the above paragraph.

Question 10: When will the bid documents be out for bidding? How long will the construction take to complete from beginning to end? Is the bidding open to all contractors?

Response 10: The bid documents should be out in April 1996. The construction work at the site will take approximately four to six months to complete. The bidding process and contract approval by the State normally takes three to four months. The bidding is open for all qualified contractors.

Question 11: In the Department's February 26, 1996 letter to the City of Olean, a statement was made regarding the installation of new on-site and off-site wells but a similar statement was not found in the amended ROD. Please explain.

Response 11: Refer to the first complete paragraph, page 6 of the amended ROD. This paragraph states that new on-site wells will be installed after the completion of the construction activities. The last sentence in the paragraph states that additional off-site wells will be installed, if necessary.

Question 12: Please explain the significance of "if" in the last sentence of the first complete paragraph on page 6 of the amended ROD.

Response 12: The Department is still considering the possibility of a significant chromium plume in the groundwater far downgradient of the site. The available data does not appear to support this prediction. The Department has undertaken periodic groundwater sampling and the results of these monitoring events will form the basis for future investigations and recommendations for the remediation of groundwater at the site. Because of this uncertainty regarding groundwater conditions, the Department will first evaluate additional monitoring data and other available information before making a decision about installing wells downgradient from the site.

Question 13: When will the new on-site wells be installed? What are the analytical parameters to be included in the groundwater sampling? Is there a commitment to install

off-site wells?

Response 13: The new on-site wells will be installed after the completion of the construction activities at the site. The analytical parameters to be analyzed in the groundwater samples will be total chromium, iron, manganese and hexavalent chromium. The field parameters such as pH, turbidity and temperature will measured during the sampling events. The Department is committed to install additional on-site wells. The decision to install off-site wells will be made based on the results obtained in the monitoring events.

Question 14: Will there be long-term groundwater monitoring after the completion of the quarterly monitoring events?

Response 14: Yes, the long-term monitoring will be conducted after the completion of the quarterly monitoring events.

The following are the responses to written comments on the ROD Amendment:

Question 15: The project manager, Vivek Nattanmai, received a comment letter from Eric Wohlers, Director, Cattaraugus County Health Department on March 27, 1996. The main issues raised in that letter are: 1. Data gaps exist in the groundwater sampling results, 2. The groundwater plume might have migrated farther away from the site and might impact the Allegany well-field, 3. The next groundwater monitoring should include the sampling of City of Olean wells located southwest of the site, and 4. The developing and monitoring of off-site wells should be done immediately.

Response 15:

Response to Issue Nos. 1and 3

The results of the quarterly groundwater monitoring initiated by the Department will fill the data gap that exists in the groundwater quality data for the site. The Department will include the wells identified in the letter for the next quarterly groundwater sampling.

Response to Issue Nos. 2 and 4

Refer to Response Nos. 11, 12 and 13.