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REMEDIAL INVESTIGATION

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905008

ERM-Northeast

ERM-Northeast

PHASE III RI
PLANT BUILDING INTERIOR
WORK PLAN
VAN DER HORST CORP. SITE
PLANT NO. 1
SITE NO. 9-05-008
OLEAN, CATTARAUGUS COUNTY, NEW YORK

FEBRUARY 1991

SUBMITTED TO:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
ALBANY, NEW YORK 12233

SUBMITTED BY:

ERM-NORTHEAST, INC.
5500 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

GPS

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

APR 0 9 1991

Mr. Glenn Wygant
ERM Northeast
5500 Main Street
Williamsville, NY 14221

Dear Mr. Wygant:

Re: Phase III RI Work Plan
VanDerHorst Corporation Plant
No. 1, Site No. 9-05-008

The responses submitted by ERM for the Phase III RI Plant No. 1 Work Plan comments are acceptable. Please revise Table 3-1 as per the comments and responses. The soil boring SB-10 is eliminated which makes the number of subsurface soil samples as 100. Total arsenic analysis has to be included in this table as appropriate. Please submit three copies of the revised final Phase III RI Work Plan within ten days from the date of this letter. The budget amendment for this investigation should be prepared only after the Phase III RI Plant NO. 2 Work Plan is approved. The budget proposals for Phase III RI Plant Nos. 1 and 2 shall be presented as a combined task in this amendment. If you have any questions please call me at 518/457-0315.

Sincerely,

Vivek Nattanmai
Environmental Engineer
Division of Hazardous Waste
Remediation

cc: J. DeFillippi

VN/kd
bcc: E. Belmore
C. Allen
M. Doster 4-10-91
M. Rivara - NYSDOH
V. Nattanmai

ERM-Northeast, Inc.

5500 Main Street • Williamsville, New York 14221 • (716) 633-5920

April 3, 1991

Mr. Vivek Nattanmai
NYSDEC
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, NY 12233

Re: Phase III RI Work Plan, Van Der Horst Corporation, Plant No. 1, City of Olean, Cattaraugus County, Site No. 9-05-008, Contract D002172

Dear Mr. Nattanmai:

The NYSDEC's comments (3/20/91) on ERM's Phase III RI Work Plan (February 1991) to investigate the Plant 1 building interior have been reviewed. Our responses are provided below.

COMMENT 1: Agreed. We will modify the final Work Plan to state that the potential sources include the interior vats, the exterior plating tanks, and the exterior surface spills. The history outline presented in the final RI will be modified in accordance with our Phase III findings.

COMMENT 2: Agreed.

COMMENT 3: Agreed, final Work Plan will be revised as shown (pending finalization of several comments below).

COMMENT 4: Agreed, the 50 proposed samples will be collected for the purpose of initial identification of ACMs, and there will be additional and more detailed sampling required during the design phase. The 50 samples that we propose to collect in the Phase III RI will provide an initial screening of the building's two floors, and many lateral additions.

COMMENT 5: We have spent a considerable amount of time reviewing, decoding, and organizing the USEPA sampling data (enclosed). We have also gone through the Plant building and determined where the USEPA had sampled, and where future sampling should be performed. The thirty-five samples proposed for the Phase III RI will only provide an initial screening and will indicate where more detailed sampling will need to be conducted during the design phase.

The USEPA had only collected a very limited set of samples from the building interior, and many of these samples were destroyed in a laboratory accident. We have tentatively decided where we would like to collect samples: however given the sprawling nature of the building's first floor, it is difficult for us to describe these locations. Briefly, they consist of the following: 1) interior building walls, 2) exterior building walls, 3) lower level floor, 4) roof, and 5) exhaust ducts over each vat.

COMMENT 6: Agreed, but we would like to install boring SB-9 in the former location of MW-15. During our site walkthrough with Mr. Gino Lorenzino, it was mentioned that spillage had occurred off of the loading dock. Concerning MW-18, Buffalo Drilling has seen all of the proposed boring locations and believes that all are accessible. They plan to use a skid rig for the interior drilling.

COMMENT 7: The boring program that we have proposed is not extensive. We feel that is the minimum effort necessary because: 1) all areas of exterior soil contamination abut the plant building, and we presently have no idea as to the lateral extent of contamination under the plant building; 2) we have only proposed one boring for each area of concern with regards to potential source areas for future ground water contamination; and 3) the soil treatability studies are completed, and the final remedy will be dependant upon the volume of soil to be remediated.

With regards to the two sets of borings SB-12/13 and SB-18/19, we would like to perform two borings outside of each tank because we are not sure how close we can get to the tanks, and no tank installation records are available to help locate their boundaries. Also, background interference will prevent us from attempting to delineate the tank using a magnetometer survey.

COMMENT 8: Agreed, with the exception that at locations MW-17 and MW-18, TCL metal analyses should be performed on soil samples collected at the depth equivalent to the bottom of the structure that is being investigated.

COMMENT 9: We have unsuccessfully tried to uncover and/or unseal these wells so that we could include an evaluation of them in our Phase III RI. To-date, we do not know how they were "sealed" and if anything can be done to unseal them, consequently, we proposed to install MW-16. Now that the ground has thawed, we propose to dig out this area with a shovel and percussion hammer. If possible, the wells will be sampled; however, we do not recommend sealing them because they may need to be removed during site remediation.

COMMENT 10: It is unlikely that very much of the demolished material will be salvageable from Plant 1. The building is, for the most part, constructed of cinderblocks, wood, and brick. The brick is present in the older part of the plant building and is heavily stained and etched. Also, during the Spring and Summer of 1989 the building's contents were thoroughly salvaged by McKean Machinery (located next store), whom we can only assume were performing the salvaging on behalf of the building's owners. Based upon our conversations with personnel from McKean, the salvaging ceased only because they ran out of things to salvage.

There are a few steel I-beams and holding tanks that may be salvageable. I recommend that we have McKean that a look at the building and see what they think could be salvaged if the building was to be demolished. As I understand it, McKean is in the business of supplying developing nations with used and/or outdated equipment, so they may know if items like piping, boilers, etc. can be salvaged. If salvaging is performed, we will need guidance as to whether we can have McKean perform the salvaging, or whether we need formal quotes and bids from several prospective salvage contractors.

If you have any questions regarding the above please contact us.

Very truly yours,

Glenn T. Wygant
Project Manager

The ERM Group

TABLE 3-1
SUMMARY OF PROPOSED SAMPLE ANALYSES

BUILDING-INTERIOR MATERIAL SAMPLES (i.e., INSULATION)

50 Asbestos

BUILDING-INTERIOR SURFACE SAMPLES

Wipe Samples
20 Cr, As, Pb
Dust Samples
15 Cr, As, Pb

Subtotal= ~~45~~ 35

GROUND WATER SAMPLES FROM NEW WELLS NEAR BUILDING (MW-15 - MW-18)

4 TCL Volatile Organics
4 TAL Metals & Hex Cr

Subtotal = 8

ANALYTICAL SOIL SAMPLES FOR MONITORING WELLS (MW-15 - MW-18)

40 Total Cr & Pb analyses
4 TCLP Metals
4 TCL Volatile Organics

Subtotal = ~~8~~ 48

ANALYTICAL SOIL SAMPLES FOR BORINGS

110 Total Cr & Pb analyses
11 TCLP Metals
23 TCL Volatile Organics
8 PAHs

Subtotal= 152

~~TOTAL NUMBER OF SAMPLES: 263~~

ERM-Northeast

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1.0 INTRODUCTION

1.1 Project Status

This Work Plan was prepared by ERM-Northeast, Inc. (ERM) for the New York State Department of Environmental Conservation (NYSDEC) to provide an outline for completing the Phase III Remedial Investigation (RI) of the Van Der Horst (VDH) Plant No. 1 building interior. These tasks were previously outlined in ERM's January 1991 Draft Scope of Work.

1.2 Site Location

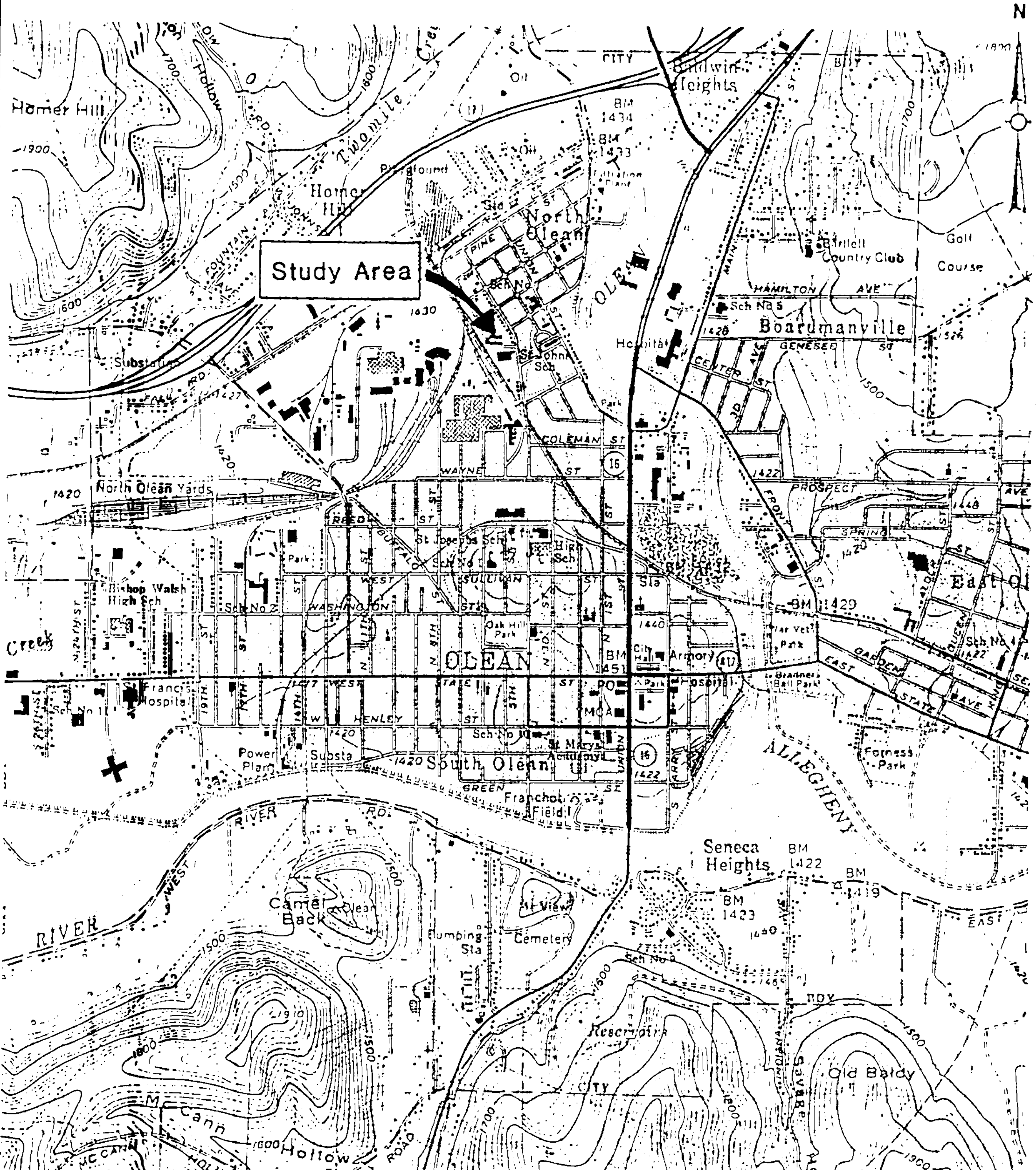
The former Van Der Horst Corporation of America Plant No. 1 chrome-plating facility is located at 314 Pennsylvania Avenue in the northern section of the City of Olean, Cattaraugus County, New York (see Figure 1-1). The subject site, defined for the purpose of this study as the fenced in area at Van Der Horst Plant No. 1, comprises approximately 2 acres in area and lies within the valley of the Allegheny River Basin. Bordering the site to the north, east, and south are several residential properties located along Pennsylvania Avenue, West Fourth Street, Spruce Street, and Vine Street (see Figure 1-2). Two sets of Conrail tracks border the site to the west and southwest, thereby separating the plant from the main industrial area of Olean.

Several other industrial facilities are located near the Plant No. 1, which are shown on Figure 1-2. The larger facilities include an Agway fertilizer plant (CONAP), two Dresser-Rand air compressor plants, and a several acre tract of land owned by Felmont Oil Company which was formerly used for above-ground storage of their locally-produced Pennsylvania Grade crude oil. The building structures on this latter property have been razed and the entire tract is presently a vacant field. Prior to being owned by Felmont Oil, the property was the site of one of the country's first oil refineries, the Socony-Vacuum Oil Company. This refinery operated from 1861 to 1954, with a processing capacity of 7,000 barrels/day of mainly lubricating oils and greases. Also shown on Figure 1-2 are some of the smaller industrial facilities in the immediate area.

1.3 Site History

Dr. Hendrik Van Der Horst founded the Van Der Horst Corporation in 1940 to service the local oil field industry and

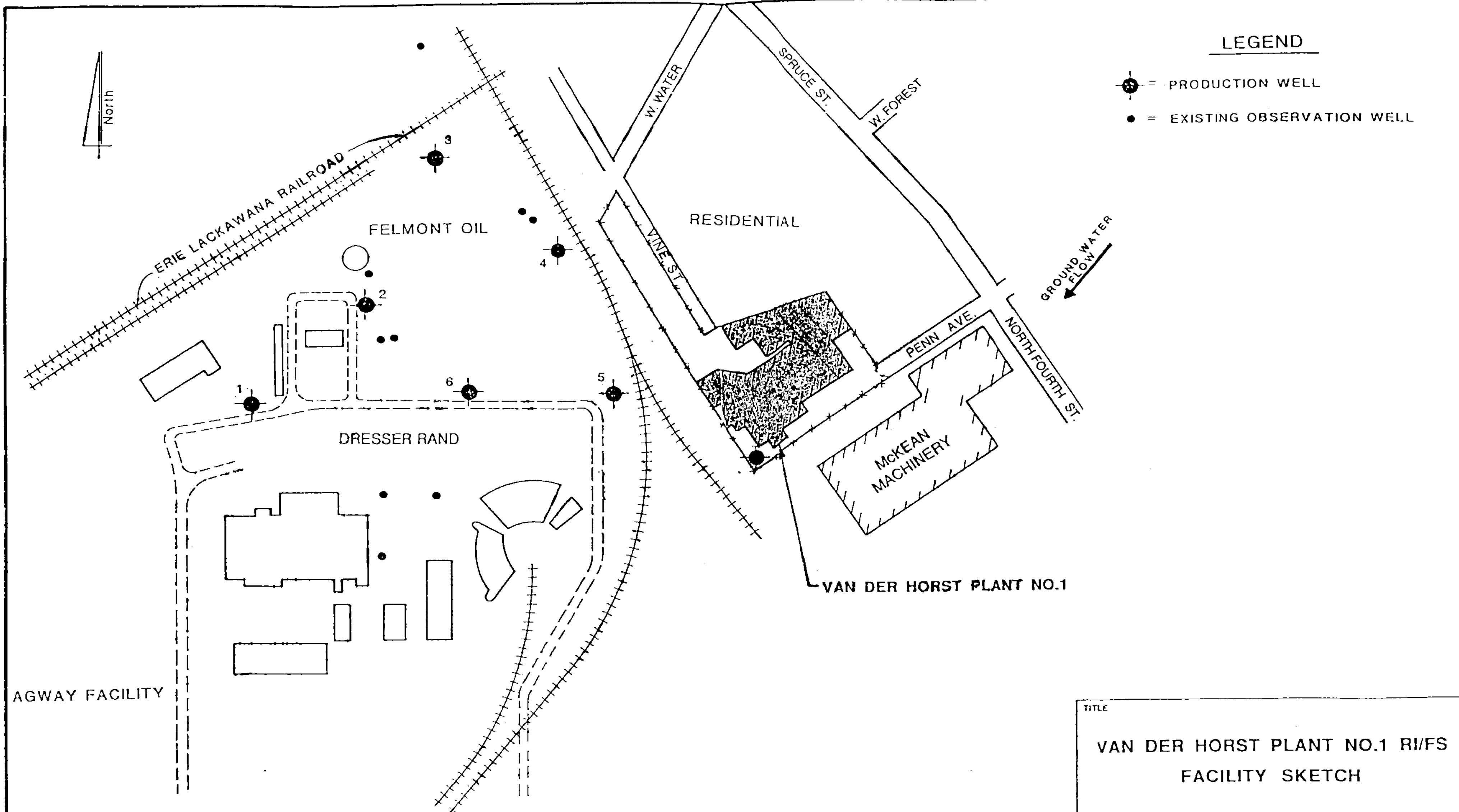
FIGURE 1-1
Site Location Map - Van Der Horst Company
RI/FS Plant No.1



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

Scale: 1"-2000'

ERM-Northeast
Environmental Resources Management



TITLE VAN DER HORST PLANT NO.1 RI/FS FACILITY SKETCH		
PREPARED FOR NYSDEC		
ERM-Northeast Environmental Resources Management	SCALE None DATE Dec. 89	FIGURE 1-2

railroad companies. His first manufacturing operations were located in Olean at Plant No. 1, and consisted of the electrolytic deposition of hard chrome plating on various types of customized metal parts. The corporation developed, patented, and utilized a specialized plating process called Porus-Krome™ during World War II. This process produced a "glass smooth, diamond hard, chromium-plated surface" that retained oil. It was initially used to repair the worn cylinder linings in diesel engines of submarines, tugboats, and combat machines for the U.S. Navy.

In August, 1965, Plant No. 1 was responsible for an accidental discharge of 400 to 500 gallons of untreated chromic acid wastewater directly into the storm sewer system. This resulted in a substantial fish kill of over 10,000 fish near the sewer's outfall in Olean Creek. At that time, the plant routinely disposed of its chromic acid waste through the storm sewer that led to the creek, and the standard operating procedure was to dilute and neutralize the pH of the waste prior to discharge. No residual chromium contamination was detected in Olean Creek after the fish kill; however, thereafter the plant was only allowed to dispose of its waste into the sanitary sewer system.

Chromium contaminated ground water (from spent chromic acid) has been present at Plant No. 1 ever since the plant began operating. During the period between 1941 and 1952, chromic acid waste had allegedly been discharged directly into the ground water via an injection well. Inside the building, several concrete containment vessels which were used for plating are located beneath the floor to depths of approximately 20 feet, which is the approximate top of the local ground water table. Another source of the chromium in the ground water is a former pit (presently filled-in) that was located at the northeastern corner of the property. This pit reportedly received several hundred gallons of chromic acid solution, and as early as 1943 a nearby resident complained to Van Der Horst that disposal at this pit was responsible for changing the color of his well water to yellow.

In 1967, an industrial well field owned by Felmont Oil and located 500 feet west of Plant No. 1 was found to contain elevated concentrations of chromium (8.36 mg/l total and 0.54 mg/l trivalent) after being in operation for a single year. The City of Olean and the Cattaraugus County Department of Health (CCDOH) expressed considerable concern over this since 13,500 people lived within the city and were dependant upon the local water (private wells, municipal wells, and the Allegheny River) obtained within the Allegheny River Basin. At this time residents were cautioned by the CCDOH against the use of private supply wells for drinking purposes, and were encouraged to use only municipal water. The CCDOH also required the Van Der Horst Corporation to pretreat any chromic acid waste prior to discharge into the city's sanitary sewer system. In March, 1968, a "chrome destruct" unit was installed at Plant No. 1 by the corporation to treat waste in accordance with the effluent limitation for hexavalent chromium.

In May, 1968, Van Der Horst Corporation of America was acquired by Unochrome to become a subsidiary of the largest chrome plating company in the world. However, the operations at Plant Nos. 1 and 2 remained essentially unchanged. Thereafter (in 1973), the Van Der Horst subsidiary was acquired by the R. G. Scott Corporation.

In 1984, the site was listed on the New York State Department of Environmental Conservation (NYSDEC) Registry of Suspected Hazardous Waste Sites. In response, the corporation installed emission control equipment. In 1986, Van Der Horst corporation received a proposed Order on Consent from the NYSDEC in reference to the facility's continued stack emissions. This consent order charged the corporation with "unreasonably interfering with the comfortable enjoyment of life and property". The action stemmed from the repeated complaints, and subsequent legal action, to the CCDOH by nearby residents that emissions from two points at Plant 1 were causing personal injury and property damages. In January, 1987, the corporation signed the consent order calling for a $5,000 fine, and modifications to the emission control equipment that would eliminate any future discharge of chromic acid into the air.

In June, 1987, Van Der Horst ceased all operations at their facilities after the employee's independent union rejected a contract proposal calling for benefit cuts and a 30% reduction in wages for all employees. The contract dispute was not settled and by October, 1987 the plant property was reportedly for sale. In August, 1988, the NYSDEC issued a proposed letter of consent to Van Der Horst Corporation for performing an RI/FS and in May, 1989 the corporation filed for bankruptcy. Studies at the Van Der Horst Plant No. 1 site were underway by May 1989.

The interior of the vacant building was found to contain numerous containers and vats of chemicals that were left unsecured by the Van Der Horst Corporation. The USEPA removed the chemicals from vats (beginning in January, 1990) and is presently in the process of removing the vats. Studies of the surrounding soil and ground water, on the other hand, have been and continue to be conducted under the auspices of the NYSDEC. Prior to this Work Plan, there has been no evaluation of the environmental concerns which remain within or beneath the main plant building. These activities had been "on-hold" due to access restrictions imposed by the USEPA while they removed and disposed of chemical/wastes within the plant.

1.4 Current Situation

1.4.1 Background

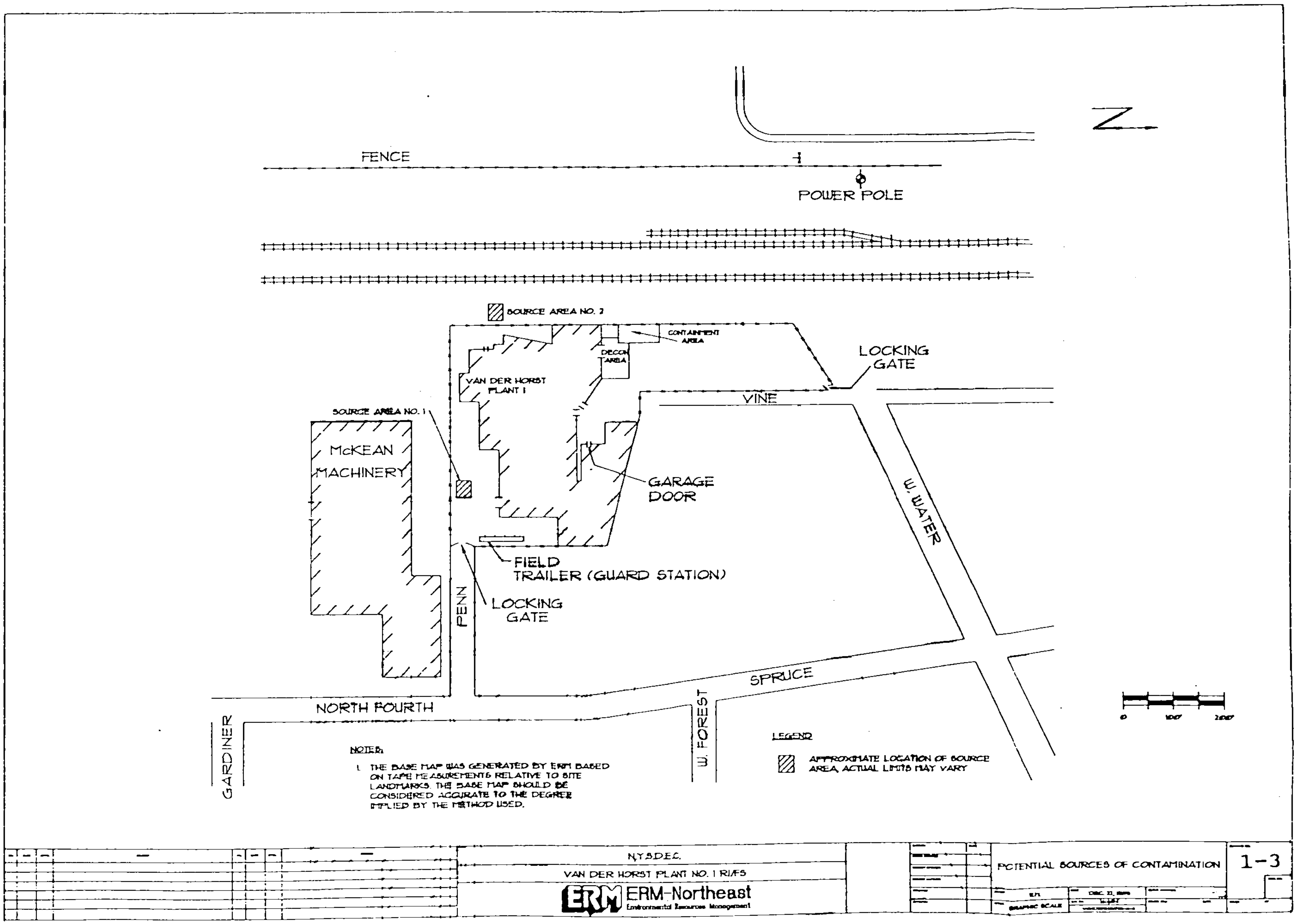
Previous investigations by the NYSDEC and the CCDOH have documented that chromium has migrated off-site via transport in surface water, ground water and air. This migration has resulted in the localized contamination of Olean Creek, the permanent closure of nearby industrial and residential ground water wells, and the deposition of chromium onto soils downwind of Van Der Horst Corporation's Plant No. 1.

Presently the plant is vacant, without a caretaker, and the majority of the production equipment has been removed from the interior of the building during salvage operations in 1988 and the spring of 1989. The property is completely circumscribed by a chain-link fence, and numerous "keep out" signs have been posted. All three entrance gates through the fencing (two on Penn Avenue and one on Vine Street) have been secured with chains and locks. Entrances into the plant building have also been secured with locks. An on-site project trailer is located adjacent to the Penn Avenue entrances. This trailer houses all support equipment, and contains a telephone (with answering machine) for off-site communications.

1.4.2 Overview of RI Findings

The ground water table at the site has relatively little gradient and the local direction of ground-water flow is not yet clearly distinguishable. The mean gradient (i.e., slope) of the ground water for the three remaining dates was found to be approximately 0.00001 ft/ft, while the hydraulic conductivities in all of the monitoring wells was measured to be approximately 10^{-3} cm/second.

The Phase I RI identified two source areas located near the site which appear to be the result of past disposal/ discharge activities at Plant No. 1 (Figure 1-3). Both of these areas appear to be less than 200 square feet in surface area and contain chromium contaminated soil at concentrations exceeding 9,000 ppm (based on surface soil samples from these areas). Chromium concentrations measured in ground water samples from the perimeter wells of the study area indicate that the extent of contamination extends beyond these wells. However, it appears that chromium and PCE concentrations decrease radially from the site in the study area.


FENCE
POWER POLE
SOURCE AREA NO. 2
CONTAINMENT AREA
DECON AREA
VAN DER HORST PLANT I
LOCKING GATE
VINE
SOURCE AREA NO. 1
McKEAN MACHINERY
GARAGE DOOR
W. WATER
FIELD TRAILER (GUARD STATION)
LOCKING GATE
PENN
SPRUCE
NORTH FOURTH
GARDINER
W. FOREST
NOTES:
1. THE BASE MAP WAS GENERATED BY ERM BASED ON TAPE MEASUREMENTS RELATIVE TO SITE LANDMARKS. THE BASE MAP SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.
LEGEND
APPROXIMATE LOCATION OF SOURCE AREA, ACTUAL LIMITS MAY VARY
0
100'
200'
N.Y.S.D.E.C.
VAN DER HORST PLANT NO. 1 RI/FS
ERM-Northeast
Environmental Resources Management
POTENTIAL SOURCES OF CONTAMINATION
1-3

was this in phase II

Phase II of the remedial investigation is presently underway and involves a redefined lateral delineation of the ground water contamination by adding downgradient perimeter wells, performing a second round of ground water analyses, conducting an additional inventory and characterization of existing residential supply-wells adjacent to the contaminant plume, and sampling off-site residential soil. The second round of ground water analyses also involves sampling all wells (Phase I and II) for contaminants identified during the on-site source characterization in Phase I.

The Phase II RI has involved the installation of an additional 6-inch I.D. piezometer for performing a pumping test which will facilitate ground-water modelling efforts. The pump test was designed to evaluate the capture zone for an extraction system at the site. The well network in the study area will be modelled using the USGS - MODFLOW ground water computer model. This model will be used for evaluation of the possible future migration of contaminants towards the public supply well system.

1.4.3 Overview of FS Findings

General remediation goals for the Plant No. 1 FS were guided by 40 CFR 300.68 (Code of Federal Regulation 1987), which specifies that the objective of every remedial action is to "mitigate and minimize damage to and provide adequate protection of public health, welfare or the environment". The following site-specific remedial goals were developed for the site, based on the Phase I RI:

Soil

Limit migration of on-site fugitive dust containing hexavalent chromium that would result in an excess of cancer risk of greater than 10^{-4} to 10^{-7}.

Limit releases of chromium and PCE to ground water that would exceed NYSDEC drinking water criteria or result in a potential future excess cancer risk of greater than 10^{-4} to 10^{-7}.

Ground Water

Limit potential future ingestion of ground water containing chromium and PCE that would exceed NYSDEC drinking water criteria or result in an excess cancer risk of 10^{-4} to 10^{-7}.

Sediment

Limit releases of hexavalent chromium from sediments that would result in surface water levels impacting benthic and aquatic life.

Surface Water

Restore surface water to hexavalent chromium levels that would not impact benthic or aquatic pelagic life.

Structures/Vats

Limit direct contact or migration of contaminants on the surface of the plant building or within vats and pits inside the plant building.

Eight (8) comprehensive remedial alternatives were developed for the Van Der Horst Plant No. 1 site by combining the alternatives for soil/sediment and ground water. These remedial alternatives will be further evaluated during the Phase III FS. Note that there is presently no information on the presence and extent of soil and ground water contamination beneath the plant building. This information, as well as information on the environmental conditions of the plant building structures, is necessary to finish both the RI and FS.

1.5 Organization of Work Plan

Overall, the Work Plan Addendum includes a detailed description of the Phase III RI program (Task V) that is needed to complete an RI Report and the Detailed Analysis of Alternatives (Task VI) for the FS for the site. These items are based upon the Phase III RI ("Survey of Building Interior") Scope-of-Work (January, 1991) and subsequent NYSDEC recommendations. The Scope of Work was based upon our January, 1991 site visit and reiterated the data needs identified by ERM-Northeast in the draft Phase 1 RI and the draft Phase 1 and 2 FS reports. The organization of this Work Plan is as follows:

Section 1.0 - Introduction
Section 2.0 - Physical Characteristics of the Plant No. 1 Area
Section 3.0 - Phase III RI: Plant Building Interior

2.0 PHYSICAL CHARACTERISTICS OF THE PLANT NO. 1 AREA

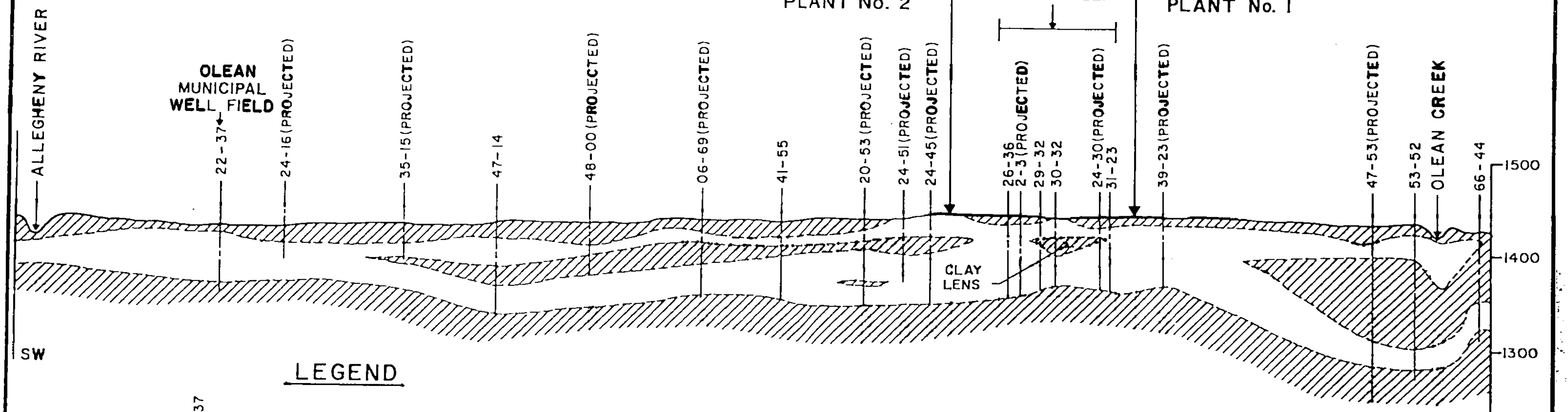
2.1 Local Geology

The City of Olean lies within the glaciated Allegheny River Basin. This basin is a glacially-scoured valley that has an east-west trend and a bedrock relief of several hundred feet. After glacial scouring, the valley was then backfilled with sediments deposited by post-glacial and fluvial processes. Presently, the bedrock outcrops only in the hills on the north and south sides of the Allegheny River Basin (see Figure 1-1), while in the valley the bedrock is covered by up to three hundred feet of valley-fill glaciofluvial sediment. These surficial glacial deposits are present at the Van Der Horst site, and they overly sedimentary bedrock of the Upper Devonian Series.

Previous geological studies (USGS, 1976; USGS, 1985; USGS, 1988) have determined that the unconsolidated sediments locally consists of unconsolidated glacial and fluvial deposits, ranging from 150 to 300 feet in thickness. (Figure 2-1). The lowermost sediments consists of glaciolacustrine clays and silts. These sediments were deposited in glacial lakes and locally can range up to 150 feet in thickness (USGS, 1988). Overlying these sediments are deposits of till and stratified drift which were deposited by a former glacial ice tongue that extended down Olean Creek. At the land surface are post-glacial deposits that consist of silty and gravelly sands that range from 10 to 30 feet in thickness (USGS, 1985).

The surficial soils in the valleys are classified as Recent alluvium and exhibit a wide range of sediment grain size. These deposits are made up of gravelly silt loams which extend to depths of 30 feet in some areas of the valleys, but comprise only thin veneer of approximately 10 feet at the Van Der Horst site. The surface soil in the Olean area is classified as an Unadilla silt loam. A valley fill deposit of fluvial sands and gravels is also present on site. The material is approximately 70 feet thick and lies 10 to 80 feet below land surface. This deposit constitutes the major aquifer in the Olean area and is saturated at depths of 15 to 20 feet below grade. Clay lenses have been documented to occur within the valley fill deposit; however, none were encountered during the Phase I Remedial Investigation.

The bedrock which outcrops in the valley walls of the Allegheny River Basin and underlies the site (approximately 230-330 feet below land surface) is comprised of the Northeast Shale



LEGEND

22-37 — WELL LOCATION AND NUMBER (LATITUDE AND LONGITUDE)

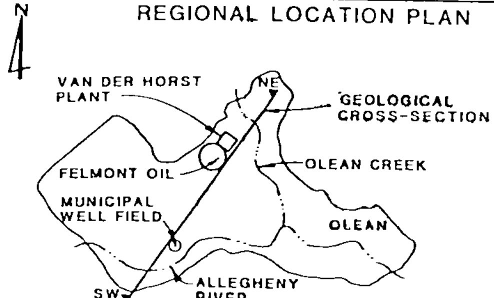
DEPOSITS OF SILTS AND CLAYS (GLACIOLACUSTRINE OR ALLUVIAL)

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.

REGIONAL LOCATION PLAN



NOT TO SCALE

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

TITLE		
VAN DER HORST RI/FS GEOLOGICAL CROSS-SECTION		
PREPARED FOR: NYSDEC		
ERM-Northeast, Environmental Resources Management	SCALE / DATE 12/89	FIGURE 2-1

member of the Canadaway Formation of the Awkwright Group. The Northeast member consists of shales interbedded with siltstone. As stated above, the surface of the bedrock exhibits the direct effects of glaciation (USGS, 1988). Topographic relief in the Olean area indicates that the bedrock surface elevation varies by several hundred feet, with high relief on the hillsides and low relief in the valley. The bedrock in this region is not a ground water resource, although it is utilized for oil and gas production in some areas outside of Olean (at considerable depths).

The investigation of the Van Der Horst Plant No. 1 site involved the installation of deep monitoring wells which penetrate surficial deposits to a depth of approximately 60 feet. Logs of these wells indicate the deposits to be primarily gravel and sand with occasional cobbles, overlain by a few feet of fill material. These findings correspond with the USGS geological cross section pictured in Figure 2-1. The subsurface sediments that were encountered up to 60 feet below ground surface were similar laterally and vertically. Only during the drilling and installation of MW-8 was any significant deposit of clay and silt encountered. This well is located south of Plant No. 1, and fine grained deposits were encountered to a depth of 15 feet below grade.

At Van Der Horst Plant No. 1, the relatively homogeneous geology is surficially overlain by a wide range of fill materials. During ERM's on-site investigation it was observed that the surficial materials consist of cinders, slag, crushed stone, and other fill materials indicative of an urban industrial setting. Although fill was detected in all soil borings, the distribution of the above-mentioned constituents was found to vary somewhat, as was the thickness of the deposit (ranging from 2 feet to 7 feet). Test pits dug on-site to a depth of three feet revealed approximately 1 foot of light tan, loose, sandy soil intermixed with some medium gravel, overlying approximately 2 feet of black granular cinders and chunks of slag. Railway tracks adjacent to the site are situated on beds of crushed limestone rip-rap.

2.2 Hydrogeology

Previous studies have indicated that the aquifer beneath the site consists generally of 20 to 100 feet of coarse sand and outwash gravel that underlies the valleys of the Allegheny River and its tributaries. These deposits form an extensive and high yielding aquifer that has provided millions of gallons a day to industrial and municipal wells. At some locales, relatively thin lenses of silt and clay occur between depths of 30 to 50 feet.

These fine grained materials act as a localized semi-confining bed that separates the aquifer into an upper and lower layer.

The United States Geological Survey (USGS) has monitored the water levels of 50 to 95 wells in the Olean area since the early 1970s. According to one study (Water Resources Investigation Report 87-4043, 1988), the upper 50 feet of the aquifer is more permeable than the lower 30 feet, and has yielded up to 500-1000 gal/min. The USGS recorded transmissivity values between 1700 and 200,000 ft^2/day, and the hydraulic conductivity is between 300 and 1500 feet/day for the uppermost aquifer material. The coefficient of storage value was calculated to be 0.015.

In 1984, the ground water flow was to the south and southwest -- toward the Allegheny River, and radially toward cones of depression created by localized industrial pumping (USGS, 1985). The localized pumping includes production wells at the Felmont-Oil well field and a purge well at the Agway property. The pumping of these wells had created a cone of depression of up to 30 feet vertically and extending laterally as far away as Olean Creek to the east. Hydraulic conductivity values were calculated by the USGS from pumping tests at the Felmont production wells and were found to range from 300 to 1500 ft/day (USGS, 1985).

Ground water is recharged by infiltration of precipitation and underflow from the Olean Creek and Allegheny River valleys. Recharge to the aquifers is estimated to be 19 inches per year (USGS, 1988) and is probably greater through induced infiltration in areas where pumping lowers water levels near surface-water bodies. The USGS estimated that when pumping was to cease at the Felmont well field the cone of depression would be lost after 4 to 8 months, after which static and natural ground water conditions would resume. The USGS also estimated that, if this should happen, ground water flow to the south-southwest would occur at a rate of 375 feet per year, making it approximately 6 years before the point source contamination would reach a potable well field located 1 mile to the south of Plant No. 1.

ERM supervised the installation of fifteen monitoring wells between May and June, 1989, at the locations illustrated in Figure 2-2. The shallow wells (i.e., MW-1S) were drilled into the upper section of the aquifer, whereas the deep wells (i.e., MW-1D) penetrated the lower aquifer level. The wells were installed for the purpose of delineating the ground water flow direction and providing ground water sampling locations. Through the use of slug tests at each well, it was also possible to determine the hydraulic conductivity of the aquifer. The hydraulic conductivity gives an indication of the rate of ground water movement through the aquifer material adjacent to the well screen.

A comparison between the water-table elevations measured at the shallow and deep wells within each of the monitoring well clusters shows that these elevations are similar, and that the shallow and deep wells penetrate different levels of the same aquifer. This supports the observations that were made during the installation of all of the deep monitoring wells, as in no instance were any potentially confining units (i.e., clay, till, etc.) encountered.

The local water-table aquifer displayed a gradual lowering of approximately four feet between early July and late August (1989), and stabilized thereafter (December, 1989). This lowering of the water table's surface was probably a typical seasonal adjustment that results from the accelerated aquifer recharge that occurs during the Spring thaw, followed by the extensive reduction in recharge and removal of ground water by evapotranspiration during the summer months. Since the precipitation during the Spring/early Summer of 1989 was near a record high, it would seem reasonable to infer that the average seasonally fluctuation of the local water table's surface is usually somewhat less than the four-foot lowering that was measured during 1989.

On the average, hydraulic conductivities were found to be slightly larger for the shallow wells (3.6×10^{-3}) than for the wells screened at a greater depth (1.7×10^{-3}). All values (deep and shallow) are roughly within one order of magnitude, showing that there are only slight lateral and vertical variations within the aquifer material. This supports the observations and conclusions generated by the USGS in a study at the nearby Felmont Oil property.

2.3 Local Surface Water

Olean Creek is a tributary of the Allegheny River, which locally flows west and drains the Allegheny Plateau. The confluence of the stream and the river is located in the southeastern section of the City of Olean. In 1980, the city obtained 80% of its water from Olean Creek, at a filtration plant 1.9 miles upstream of the mouth (Acres International, 1980). The filtration plant is located upstream of the storm sewer discharge for Penn Avenue and therefore the Van Der Horst Plant No. 1 activities did not affect the local water supply. The city's storm sewer system discharges into Olean Creek approximately 1.2 miles upstream of the creek's confluence with the Allegheny River. The creek is located near Plant No. 1 and was the site of a previously reported fish kill attributed to the plant facility. The storm sewer system which was utilized for Plant No. 1 waste discharge at the time of the fish kill remains intact.

Olean Creek is classified as a "flashy" stream, in that the discharge of the stream varies dramatically as a result of seasonal runoff differences. Also, storm events result in a rapid and extreme increase in discharge volume. In 1975, flows ranged from 45 cfs to 1180 cfs between June and October. The average summer flow for that year was greater than 150 cfs, but this flow value was exceeded only 19% of the time during the study period (Acres International, 1980). There is little or no storage of runoff within the Olean Creek drainage basin because the relatively steep stream valley drains the bedrock hills to the north. The stream bed is composed primarily of gravel and cobbles, and the channel is occasionally dredged by the U.S. Army Corps of Engineers (USACE). This dredging is carried out as part of the maintenance of an elaborate flood-control system.

The Allegheny River and its tributaries comprise the extensive drainage system of southwestern New York State. The river is not used as a drinking water source in the Olean area, and the POTW discharges water into the river near its junction with Olean Creek. In this region, Allegheny River flows exceed 210 cfs during 97.8% of the summer (Acres International, 1980). Human interference with the river has included elaborate USACE flood control systems along all stretches of the river that pass through urban areas.

3.0 PHASE III RI: PLANT BUILDING INTERIOR INVESTIGATION

3.1 Overview

Based on the information presented in the previous sections, the Phase III RI will include the following tasks:

- Review of Existing Facility and EPA Data
- Sampling for Asbestos Containing Materials
- Sampling of Building-Interior Surfaces
- Subsurface Investigation (Ground Water and Soils)
- Surveying of Phase III RI Monitoring Wells and Sampling Locations
- Ground Water Modelling
- Final Risk Assessment

The samples of building materials, ground water and soil that are collected will be analyzed for chemical parameters that are reflective of the results of previous sampling by ERM, the CCDOH and NYSDEC.

Proposed analyses are summarized on Table 3-1. The chemical analyses will be performed by a laboratory that is technically accepted by the NYSDEC. NYSDEC-mandated sampling, analytical procedures, and sampling protocols will be followed. These procedures are presented within the NYSDEC approved QA/QC Plan for this RI/FS.

3.2 Review of Existing Facility and EPA Data

There are numerous files and drawings within the Van Der Horst Plant No. 1 building that would aid in assessing environmental conditions at the site. For example, during our January 11, 1991 site visit, we observed air permits, spill reports, utility location drawings and underground storage tank permits. While on-site ERM will review this information and select appropriate documents for copying. This information will be copied and returned in a timely manner, if necessary. Additionally, drawings of the plant, that are appropriate for inclusion in the RI/FS report, will be digitized by ERM for use with Autocadd version 10. Note that our ability to complete this review is contingent upon the NYSDEC obtaining legal access for ERM to the plant files.

ERM will also review and copy the data collected by the USEPA during its remedial program. These data include wipe and

TABLE 3-1
SUMMARY OF PROPOSED SAMPLE ANALYSES

BUILDING-INTERIOR MATERIAL SAMPLES (i.e., INSULATION)

50 Asbestos

BUILDING-INTERIOR SURFACE SAMPLES

Wipe Samples
20 Cr, As, Pb
Dust Samples
15 Cr, As, Pb

Subtotal= 45

GROUND WATER SAMPLES FROM NEW WELLS NEAR BUILDING (MW-15 - MW-18)

4 TCL Volatile Organics
4 TAL Metals & Hex Cr

Subtotal = 8

ANALYTICAL SOIL SAMPLES FOR MONITORING WELLS (MW-15 - MW-18)

40 Total Cr & Pb analyses
4 TCLP Metals
4 TCL Volatile Organics

Subtotal = 8

ANALYTICAL SOIL SAMPLES FOR BORINGS

110 Total Cr & Pb analyses
11 TCLP Metals
23 TCL Volatile Organics
8 PAHs

Subtotal= 152

TOTAL NUMBER OF SAMPLES: 263

soil/waste sample analyses. We will compile and summarize these data to supplement the findings of the RI/FS. Additionally, since no figure exists showing the locations of the various wipe and soil/waste samples, we will conduct an on-site inventory of the USEPA sampling locations for the purpose of preparing such a figure. Any additional technical information (e.g. product testing of exterior underground storage tanks) will also be sought.

This info will be used to locate appropriate locations for additional sampling activities

3.3 Sampling for Asbestos Containing Materials

Identification of potential asbestos materials within the plant is necessary, particularly in the event that the building is demolished. The potential presence of asbestos would impact building demolition and subsequent disposal of materials. Approximately 50 samples will be taken of pipe insulation, mudded elbow insulation, roofing materials and other materials suspected of containing asbestos. These grab samples will be analyzed using polarized-light microscopy for identification of the asbestos fibers. After potential asbestos is identified ERM will estimate the cost to remove and dispose of the asbestos containing materials (ACM). This will include a site assessment to locate and measure the ACM and to evaluate possible removal strategies. The removal strategy will be presented in the Final FS.

3.4 Sampling of Building-Interior Surfaces

Wipe and dust samples will be collected and analyzed to assess the extent of chemical contamination inside the plant building. Approximately 20 wipe samples will be collected from various areas including inside the ductwork that exhausted fumes from the process tanks, the pit in the lead room located in the western section of the plant, and in the north area of the plant near the chromic acid and caustic soda tanks (TK1, 2, 9 and 10; Figure 3-1). Approximately 15 dust samples will be collected from various areas including the roof, inside the air pollution control equipment (cyclones) and from the main work area floor. Both the wipe (20) and dust (15) samples will be analyzed for total concentration of the following metals: chromium, arsenic and lead.

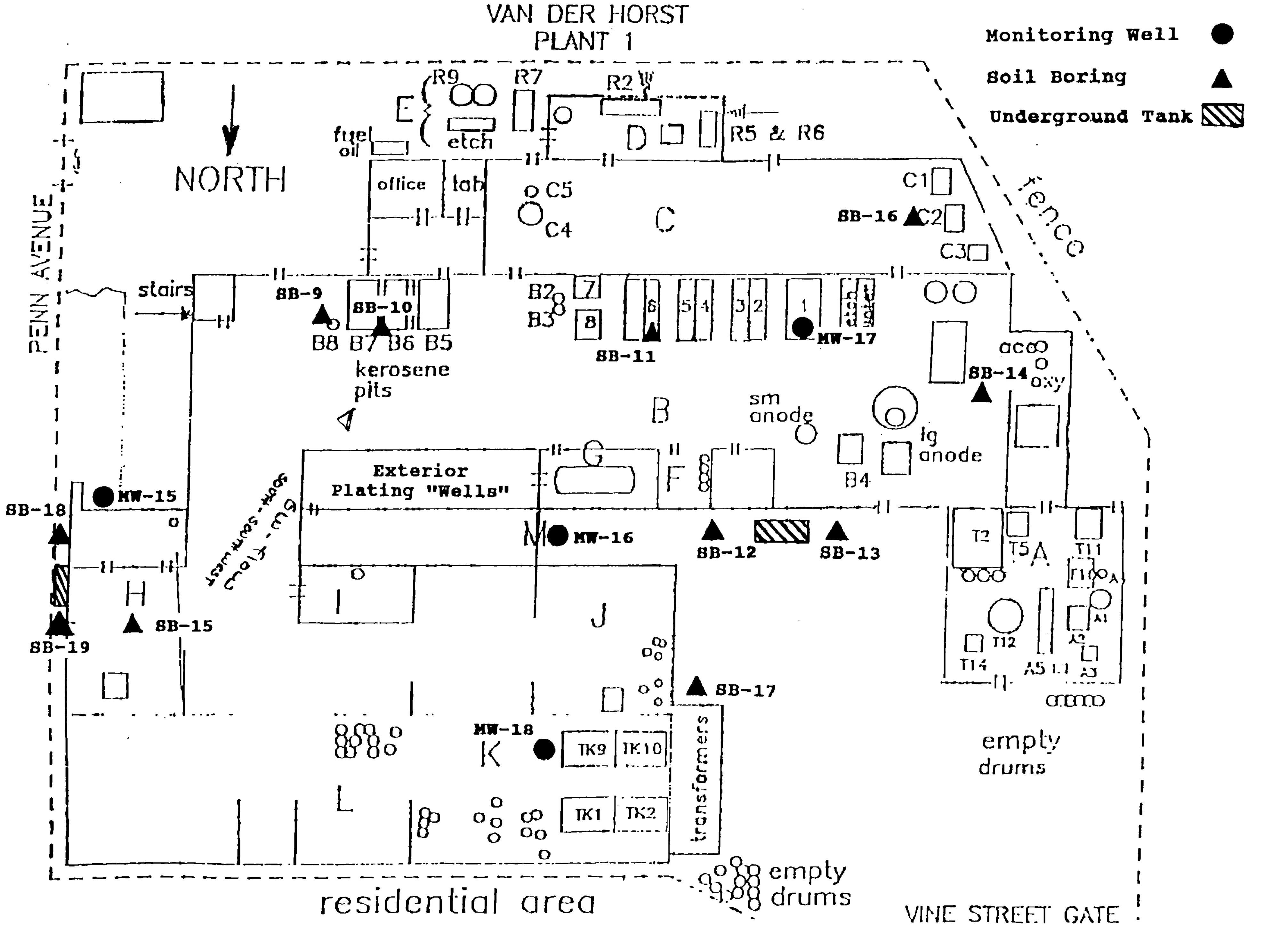
3.5 Subsurface Investigation

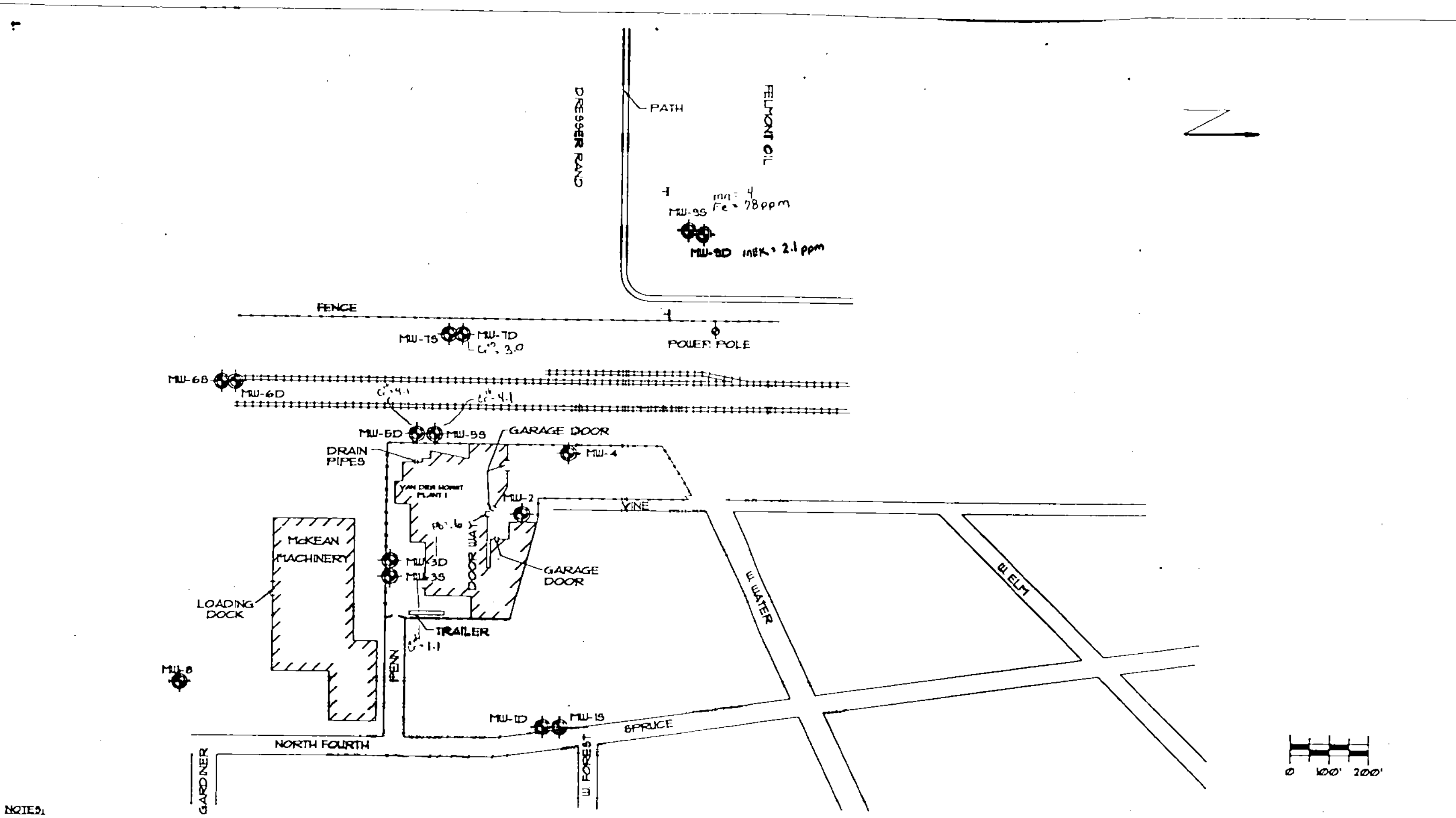
3.5.1 Ground Water Investigation

Four monitoring wells are proposed for the area inside and adjacent to the Van Der Horst Plant 1 building (see Figure 3-1). These wells will be installed to a depth of 30 feet and

Figure 3-1

Proposed Locations For Monitoring Wells and Soil Borings





NOTES:

1. THE BASE MAP WAS GENERATED BY ERM BASED ON TAPE MEASUREMENTS RELATIVE TO SITE LANDMARKS. THE BASE MAP SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

2. MONITORING WELL LOCATIONS AND SITE FEATURES WERE PLOTTED ON THE BASE MAP BY ERM NORTHEAST BASED UPON TAPE MEASUREMENTS RELATIVE TO SITE LANDMARKS. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

MONITORING WELL INSTALLED BY FENLEY & NICOL, MAY-JULY, 1989

N.Y.S.D.E.C.

VAN DER HORST PLANT NO. 1 RI/FS

ERM-Northeast
Environmental Resources Management

MONITORING WELL LOCATIONS

2-2

will be constructed in a manner similar to that described in Section 4.7 of the Plant 1 Work Plan Addendum, May 1990. Drilling will proceed via hollow stem augers. Split-spoon samples will be continuously collected for the first 20 feet of drilling, and obtained at 5-foot intervals thereafter. The specific wells and the rationale for their locations are outlined below:

1) MW-15 - to assess whether suspected spills in the loading dock area have contributed to ground water and soil contamination. This location is also upgradient of the exterior plating "wells". If G.W. flow is to S.SW as stated in phase I then this well will not be upgradient. suggest converted to boring

2) MW-16 - to assess whether exterior plating "wells" in the courtyard area are a source of ground water contamination. Semi upgradient to plating wells. mostly downgradient of MW-18 area.

3) MW-17 - to assess whether potential leakage from the chromic acid plating tanks has resulted in ground water and soil contamination. I would suggest well located next to tanks. not in them.

4) MW-18 - to assess whether two tanks, one (1) chromic acid plating tank and one (1) caustic tank, are a source of ground water and soils contamination. Also, this area is where chlorinated solvents were stored. Problem - this building has a low ceiling will be difficult to install a MW - was this considered.

Ground water samples will be obtained from the 4 wells proposed for the Plant 1 building area. Each sample will be analyzed for TCL volatile organics, TAL metals and hexavalent chromium (see Table 3-1). Sampling protocol will be similar to procedures outlined in Section 2.9 of the Phase I Remedial Investigation Report, December 1989.

If slightly moved west MW-16 will serve same purpose as MW-18

3.5.2 Subsurface Soil Investigation

Ten subsurface soil samples will be collected from each of the four proposed monitoring well within the Plant 1 building (see Figure 3-1). All ten samples from each well will be analyzed for total chromium and lead. One of the 10 samples will also be analyzed for TCLP metals analysis to evaluate soil disposal criteria (see Table 3-1).

Each subsurface sample collected during the monitoring well installation will be evaluated by PID field screening. The sample with the highest PID level from each well will be analyzed for TCL volatile organics. If no field PID readings are elevated for a boring, then, no samples will be submitted for TCL volatile organic laboratory analysis. Analytical soil

As we discussed I have spoke w/ J. Heumon EPA. and think EPA will not be invest. plating wells in near future. We need to excavate top of well casings - remove any tops - measure depth & analyze any contents sample collection will follow the guidelines described in Section 4.3 of the Work Plan Addendum.

Eleven soil borings (in addition to those involving monitoring wells) are proposed for the plant to further delineate the lateral and vertical extent of soil contamination beneath the building (see Figure 3-1). These borings will be drilled by hollow-stem augering to a depth of 20 feet (the approximate depth of the water table). Split-spoon samples will be continuously collected during drilling. All soil borings will be backfilled with cement/bentonite grout upon completion of drilling.

Site selection criteria for the soil borings are as follows:

1) SB-9 - to check for soil contamination beneath the steam cleaning area.

2) SB-10 - to assess whether there is contaminated soil beneath the kerosene pits (used for honing).

3) SB-11 - to assess the horizontal and vertical extent of chromium contamination in the soil beneath the chromic acid plating tanks.

4) SB-12 - to assess potential contamination adjacent to the underground storage tank on the west side of the plant building.

5) ~~SB-13~~ - same as SB-12. not needed

6) SB-14 - to assess potential soil contamination levels adjacent to the "Lead Room".

7) SB-15 - to assess potential soil contamination in the degreasing area. low ceiling area - don't believe boring possible if performed deep (20ft).

8) SB-16 - to assess potential contamination levels in the soil beneath the former Chromium Recovery System.

9) SB-17 - to assess potential soil contamination in a former exterior solvent storage area.

10) SB-18 - to assess potential contamination adjacent to the underground storage tank on the east side of the plant building.

11) ~~SB-19~~ - same as SB-18. not needed

3.5.3 - sample contents of UST on site and measure volume of material. Remediation should include the closure of these tanks

Ten subsurface soil samples will be collected from eleven soil borings (excluding tank borings SB-12, SB-13, SB-18 and SB-19) and will be analyzed for total chromium and lead (Table 3-1). Also from each soil boring, one sample will also be analyzed for TCLP metals for soil disposal purposes (see Figure 3-1). All soil samples will also be screened in the field with a PID. In soil borings SB-11, SB-14, and SB-16, the sample with the highest PID level will be analyzed for TCL volatile organics (i.e., one sample/boring). In soil borings SB-9, SB-10, SB-15 and SB-17 three samples will be analyzed for TCL volatile organics.

Our January, 11, 1991 site visit indicated the presence of two underground storage tanks (No. 2 Fuel Oil), shown on Figure 3-1. Four of the borings (SB-12, SB-13, SB-18 and SB-19) will be drilled to assess whether the tanks are contributing to the contamination present in the ground water near the plant. The borings will be situated adjacent to the probable tank locations. Two samples from each of the four borings will be analyzed for TCL Volatile Organics and PAHs. In the event that the proposed locations of SB-18 and SB-19 are not accessible with a drill rig, it may be necessary to offset these borings (approximately 10 feet) onto residential property. The borings will be drilled by hollow-stem augering to a depth of 20 feet (the approximate depth of the water table). Split-spoon samples will be continuously collected during drilling. All soil borings will be backfilled with cement/bentonite grout upon completion of drilling.

3.6 Surveying of Phase III Monitoring Well and Sampling Locations

ERM will retain a land surveyor, licensed in the State of New York, to survey the locations and elevations of the test borings and monitoring wells. The elevations and coordinates of each location will be referenced to the datum and coordinate system used for the Phase 2 RI investigation. These locations will be plotted on the base map using Autocadd version 10.

3.7 Ground Water Modelling

Further ground water studies are needed to evaluate present and future migration of chromium, lead and manganese contamination and the design of a potential ground water extraction system for the site. The Phase II RI includes: 1) continued water-level data collection; and 2) a ground-water modelling effort.

The hydraulic and chemical data collected from the Phase III monitoring wells will be compared with the results of the ground water model (Phase II RI). Although the Phase II model will not be redeveloped, the comparison of these additional data is important. For example, it is presently believed that: 1) piezometric surface depressions occur beneath the plant buildings because of the lack of local recharge, and 2) the highest magnitude of ground water contamination occurs beneath the buildings (i.e., the vats were a major source of contamination).

3.8 Final Risk Assessment

The risk assessment completed for the Phase II RI will be revised pending the findings of the Phase III RI. The purpose of the final baseline risk assessment is to evaluate risks to human health and the environment under existing conditions. It is an evaluation of the no action alternative as required in the U.S. EPA guidance documents. The baseline risk assessment is used as a benchmark against which the remedial alternatives are evaluated. In this way, risks associated with the remedial alternatives can be quantitatively compared to each other and to current conditions in order to best select an appropriate remedial action.

The final risk assessment will be performed in accordance with the U.S. EPA Superfund Public Health Evaluation Manual (1986) -- the EPA's guidance document for public health risk assessments. Other U.S. EPA guidance documents which will be used include the Superfund Exposure Assessment Manual (1985), Guidance on Remedial Investigations under CERCLA (1985), and Guidance on Feasibility Studies under CERCLA (1985). The stepwise procedure used to perform the baseline risk assessment and the remedial alternatives evaluation is presented below.

The final baseline risk assessment consists of five steps: 1) compilation of background information; 2) selection of indicator chemicals; 3) identification of exposure pathways; 4) estimation of exposure point concentrations and comparison to applicable standards or criteria; and 5) risk characterization. Each of these steps is briefly described below.

Selection of Indicator Chemicals

Chromium, lead and manganese will initially be used as indicator chemicals. However, if the remedial investigation identifies any other chemicals of concern, the methodology recommended in the Superfund Public Health Evaluation Manual will be used to identify the most toxic and mobile chemicals to be used as indicator chemicals.

Identification of Exposure Pathways

Based on currently available data, four major exposure points, or locations where exposure to site contamination by humans could occur, have been identified. These areas are: 1) ambient air in the site vicinity; 2) direct contact with on-site soils or contaminated off-site soils by fugitive dust; 3) Two Mile Creek; and 4) water supply and/or industrial wells.

Estimation of Exposure Point Concentrations and Comparison to Applicable Standards

Concentrations of indicator chemicals at each of the exposure points will be evaluated using data collected during the first phase RI. Where RI data is unavailable, models will be used to estimate concentrations. Exposure point concentrations will be compared to Standards, Criteria and Guidelines (SCGs) and other criteria, advisories, and guidance, as recommended in the SPHEM. Where SCGs do not exist, risks will be evaluated by estimating average daily intakes and comparing these intakes to established acceptable intakes. Procedures to be used to estimate and evaluate exposure point concentrations for each pathway are listed below.

1. Ambient air in the site vicinity - A wind rose will be generated to identify the downwind direction. Concentrations of the indicator chemicals in air in the downwind direction resulting from fugitive dust emissions will be evaluated using the U.S. EPA model presented in "Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites" (Cowherd, 1985).

2. Direct contact with on-site and off-site soils - Potential risks resulting from direct contact with both on-site and off-site soils will be evaluated using Hawley's (1985) model "Assessment of Health Risk from Exposure to Contaminated Soil" or other appropriate models depending on the projected uses of and frequency of contact with soils. The projected doses will be compared to acceptable average daily intakes (AICs) as presented in the Superfund Public Health Evaluation Manual.

3. Two Mile Creek - Site contaminants could potentially migrate off-site to Two Mile Creek through site surface water runoff or ground water discharge. Concentrations of the indicator chemicals in Two Mile Creek will be compared to SCGs. If the SCGs are exceeded, models will be used to estimate the contribution from the Van Der Horst site. The Superfund Exposure Assessment Manual

(U.S. EPA, 1988) includes an appropriate surface water runoff model and recommends several appropriate ground water models.

4. Water supply and/or industrial wells - Ground water quality data obtained in the remedial investigation will be compared to SCGs. If these standards or criteria are exceeded, ground water models will be used to estimate the potential impact on nearby water supply and/or industrial wells. Available existing data from nearby water supply wells will also be evaluated.

Risk Characterization

This characterization will include a quantitative evaluation of the risk associated with each pathway and a summary of the findings of the risk assessment.