ECKENFELDER
ENGINEERING P.C.

PRETREATMENT PLANT
ADDENDUM TO
RFI TASK I REPORT
CIBA-GEIGY SITE
GLENS FALLS, NEW YORK

Prepared for:

Hercules Incorporated
Hercules Plaza
Wilmington, DE 19894

Prepared by:

ECKENFELDER Engineering P.C.
1200 MacArthur Boulevard
Mahwah, New Jersey 07430

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9072

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

A RCRA Facility Assessment (RFA) of the Pretreatment Plant Solid Waste Management Unit (SWMU) at the CIBA-GEIGY Site in Glens Falls, New York (Figure 1-1) was conducted pursuant to the 6 NYCRR Part 373 Hazardous Waste Management (HWM) Permit and the Hazardous Solid Waste Amendments (HSWA) Permit for the site. Based on the findings of the RFA as presented in the report entitled "RFA Sampling Visit, Pretreatment Plant, CIBA-GEIGY Site, Glens Falls, New York" (ECKENFELDER Engineering P.C., July 1992) (referred to hereafter as the "RFA-SV Report"), the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (USEPA) determined that a RCRA Facility Investigation (RFI) was required for the Pretreatment Plant SWMU. This addendum report is submitted in fulfillment of Task I of the Pretreatment Plant RFI as required by the HWM and HSWA Permits for the site.

Task I of the RFI requires the Permittee to submit a report containing relevant and available information and data on the Pretreatment Plant SWMU's background, characteristics, waste characteristics, and environmental monitoring; potential releases of hazardous constituents from the Pretreatment Plant and potential receptors of impact from the releases; and remedial activities undertaken at the Pretreatment Plant (if any). A significant portion of the information required for this SWMU was presented in the previously submitted Task I report for the main plant portion of the CIBA-GEIGY Site, entitled "RCRA Facility Investigation (RFI) Task I Report, CIBA-GEIGY Site, Glens Falls, New York" (ECKENFELDER Engineering P.C., December 1991) (referred to hereafter as the "Site Task I Report"). Accordingly, this addendum to the Site Task I Report provides the additional information required for the Pretreatment Plant SWMU. Information pertinent to the Pretreatment Plant SWMU that is contained in the Site Task I Report is referenced where necessary.

Section 2.0 of this addendum report describes the background of the Pretreatment Plant, including its location, history, and operations. Section 3.0 discusses the waste

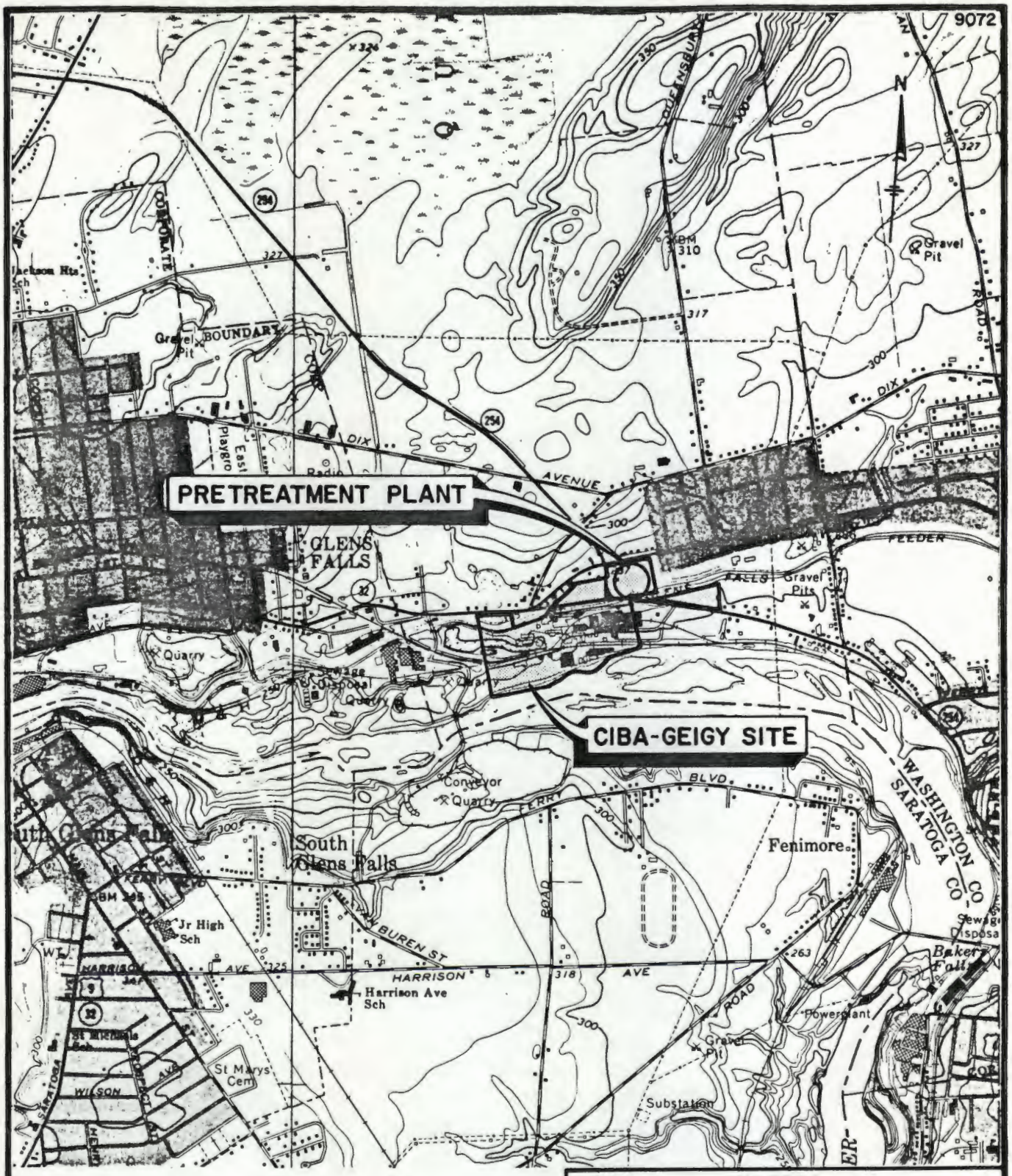
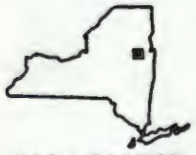


FIGURE I-I

PRETREATMENT PLANT LOCATION MAP

HERCULES INCORPORATED
CIBA-GEIGY PLANT SITE
GLENS FALLS, N.Y.

SOURCE: GLENS FALLS, N.Y. (1966)
HUDSON FALLS, N.Y. (1966)
N.Y. 7.5' QUADRANGLE



MAP LOCATION

2000 0 2000
scale feet

ECKENFELDER INC.
Nashville, Tennessee
Mahwah, New Jersey
Rochester, New York

characteristics. Section 4.0 summarizes the existing environmental monitoring data for the Pretreatment Plant, as well as potential migration pathways for constituents from the plant. Section 5.0 discusses the potential receptors of constituent releases from the Pretreatment Plant.

2.0 PRETREATMENT PLANT BACKGROUND

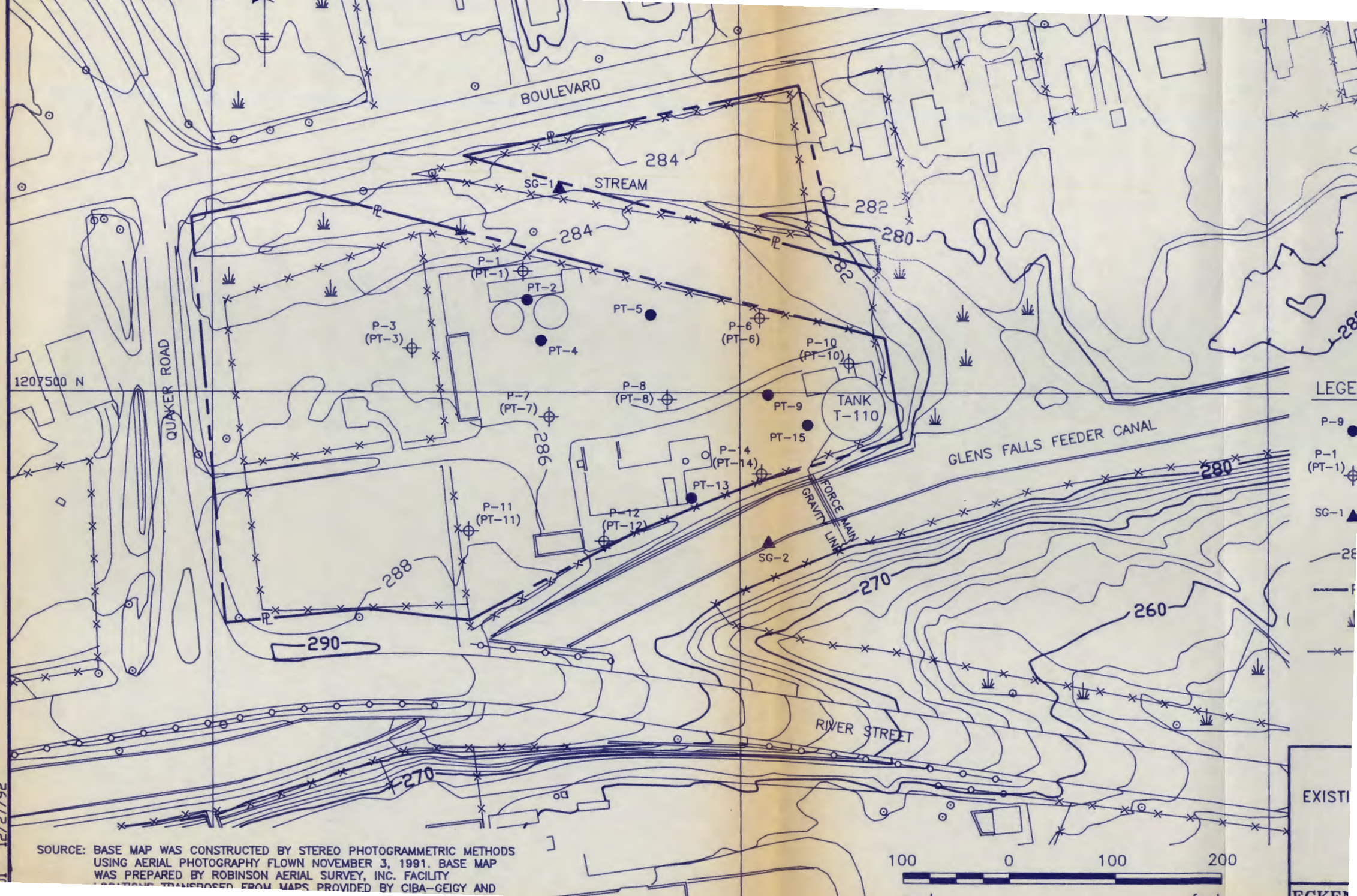
The following sections provide a general description and location of the Pretreatment Plant SWMU, as well as a history of the plant, including current and former operations and facilities. The map(s) included in this report show the property boundaries around Pretreatment Plant, sample locations, piezometer and staff gauge locations, and past and present locations of storage tanks and other plant facilities. Also depicted on the map(s) are the topography of the site and adjacent areas which indicate drainage patterns and local surface water bodies. The former and existing underground utility lines [Town of Queensbury water line, mill unit (river water) lines, and steam lines] are depicted on Plate 3 of the Site Task I Report.

2.1 DESCRIPTION

The Pretreatment Plant SWMU is part of the CIBA-GEIGY Site, which is located in the Town of Queensbury in Warren County, New York, just east of the City of Glens Falls (Figure 1-1). It occupies approximately four acres of the site, situated north of the Glens Falls Feeder Canal and River Street and east of Quaker Road (Figure 2-1).

The topography of the Pretreatment Plant SWMU is generally flat (see Figure 2-1) and consists of both paved and unpaved surfaces. Remnant foundations mark the locations of several former structures. Several operating structures exist, including a treatment building and an above-ground wastewater storage tank. In general, the grade drops gently away from the plant area in all directions. Directly to the north and east are vegetated and marshy areas that grade gently away from the plant. A small stream exists just north of the plant and flows into a marshy area east of the plant. This marsh area drains to the Feeder Canal. The Feeder Canal is situated directly adjacent to the Pretreatment Plant area and comprises much of its southern boundary. Paved roads, River Street and Quaker Road, comprise the remainder of the southern and western boundaries of the plant area, respectively.

The Pretreatment Plant SWMU is underlain by approximately ten or more feet of unconsolidated overburden material. The overburden consists of clean fill overlying a lacustrine sand, silt, and clay unit with a more massive lacustrine clay unit below.


BOULEVARD
QUAKER ROAD
STREAM
SG-1
SG-2
284
282
280
286
288
290
270
260
P-1 (PT-1)
PT-2
PT-4
PT-5
P-3 (PT-3)
P-6 (PT-6)
P-7 (PT-7)
P-8 (PT-8)
P-10 (PT-10)
PT-9
PT-15
TANK T-110
P-14 (PT-14)
PT-13
P-11 (PT-11)
P-12 (PT-12)
GLENS FALLS FEEDER CANAL
GRAVITY MAIN
FORCE MAIN LINE
RIVER STREET
1207500 N
LEGE
EXISTI
100 0 100 200
SOURCE: BASE MAP WAS CONSTRUCTED BY STEREO PHOTOGRAMMETRIC METHODS USING AERIAL PHOTOGRAPHY FLOWN NOVEMBER 3, 1991. BASE MAP WAS PREPARED BY ROBINSON AERIAL SURVEY, INC. FACILITY
12/27/92

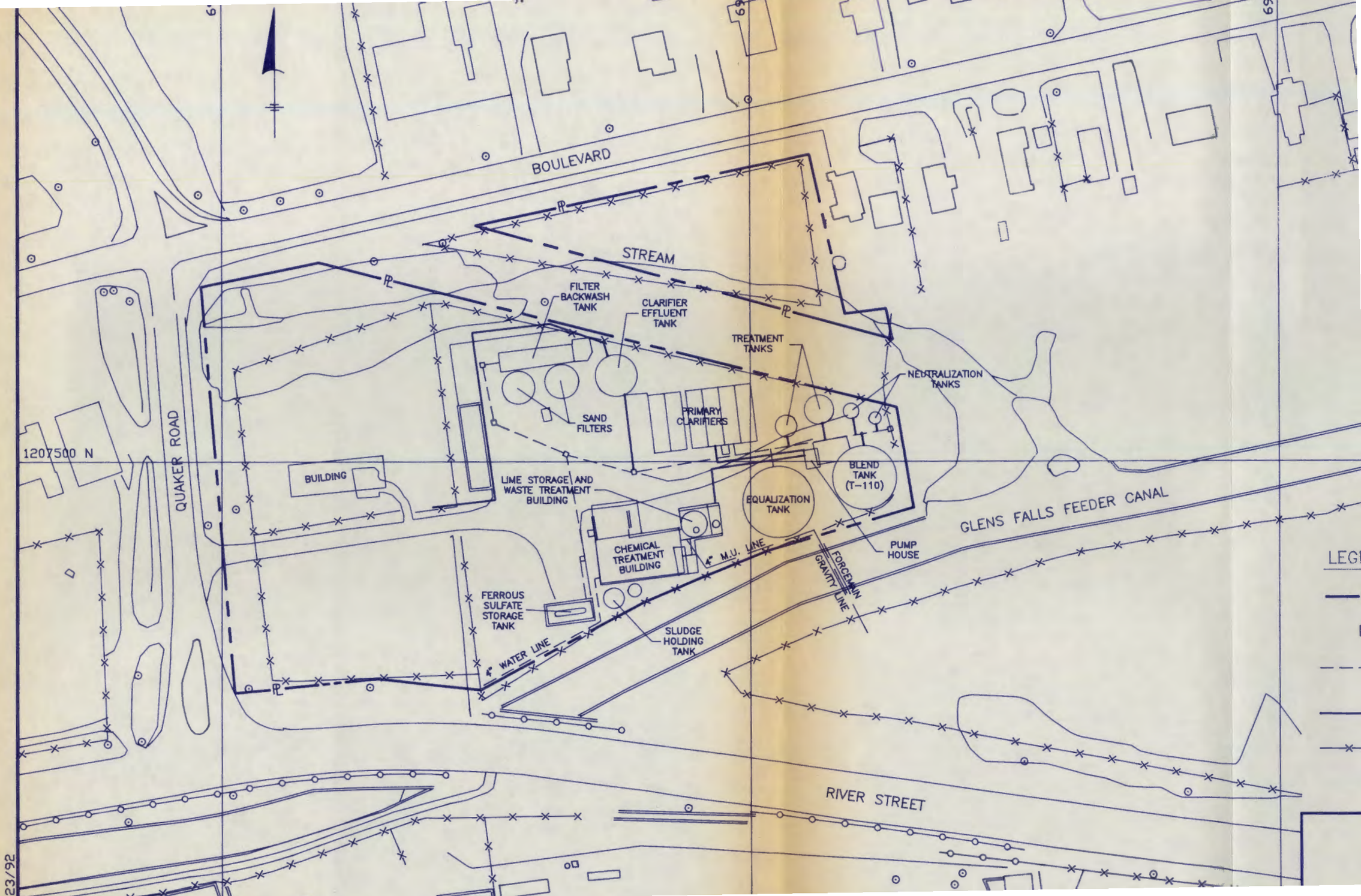
In most places, the massive lacustrine clay unit directly overlies carbonate bedrock. (see RFA-SV report for a further description of the site geology).

The Pretreatment Plant is situated in an area of mixed development consisting of industrial, commercial and residential properties. The property adjacent to the northern boundary of the plant is owned by the Niagara Mohawk Power Corporation as a corridor for electrical power lines. The strip of property directly east of the plant is denoted in the Town of Queensbury Tax Assessment Office as being residential, but no property owner is listed. The strip is very narrow and vegetated, with no residences or structures present. Immediately beyond this strip to the east is property associated with the Feeder Canal and owned by the State of New York.

The Pretreatment Plant SWMU is secured by a chain-link fence surrounding the entire property, with access gates on the western and northern fences. Additionally, there are operators at the site on a 24 hour basis.

2.2 HISTORY AND OPERATION

In 1972 through 1973, Hercules constructed a wastewater treatment plant (now the Pretreatment Plant) to treat the wastewater generated at the site prior to discharge to the Hudson River. The treatment process removed solids by settling and neutralized acidity with slaked lime. A second treatment stage was added in 1974 through 1975, which removed heavy metals by closer control of pH in addition to utilizing fine sand and press filtration. Wastewater from the industrial sewer was fed into a 420,000 gallon holding tank (Tank T-110). From the holding tank, the water was then piped to the neutralization tanks for pH adjustment. The water was then transferred to the clarifiers. The top water from the clarifiers was passed through sand filters. Water passing through the sand filters was discharged to the Hudson River until 1983, when it was diverted to the effluent pump station and pumped to the City of Glens Falls Wastewater Treatment Plant (City WWTP) via a dedicated pipeline. Sludge from the sand filters was transferred to the press holding tanks, and subsequently pressed to remove water. The water removed by the presses was transferred back to the holding tank. The tanks at the plant were cleaned annually. Solids in the tanks, as well as press filter cakes, press cloths, and filter media were disposed in a secure landfill. Figure 2-2 depicts the location of former and existing plant facilities. (Personal Communication, 1991 and 1992)


BOULEVARD
STREAM
FILTER BACKWASH TANK
CLARIFIER EFFLUENT TANK
TREATMENT TANKS
NEUTRALIZATION TANKS
SAND FILTERS
PRIMARY CLARIFIERS
QUAKER ROAD
1207500 N
BUILDING
LIME STORAGE AND WASTE TREATMENT BUILDING
BLEND TANK (T-110)
EQUALIZATION TANK
CHEMICAL TREATMENT BUILDING
4" M.U. LINE
PUMP HOUSE
GLENS FALLS FEEDER CANAL
FORCEMAIN
GRAVITY LINE
FERROUS SULFATE STORAGE TANK
SLUDGE HOLDING TANK
4" WATER LINE
RIVER STREET
LEGE
23/92

Subsequent to the construction of the Pretreatment Plant, measures were taken to control stormwater runoff. A curb was installed around the entire Pretreatment Plant area. Storm sewers and catch basins were then installed which conveyed stormwater to the holding tank. (Personal Communication, 1992)

A major portion of the Pretreatment Plant was decommissioned in 1990 in conjunction with the decommissioning and demolition of the site. A scaled down version remains in operation to treat water collected in the site's industrial and sanitary sewer systems. Currently, the wastewater is mixed with a ferrous sulfate solution to precipitate and flocculate heavy metals and is piped to the holding tank. The water is then pumped through filters and gravity fed to the effluent pump station, from where it is pumped to the City WWTP. Sludge from the holding tank and filter bags are disposed in a secure landfill. (Personal Communication, 1992)

In 1991-1992, a RFA Sampling Visit (RFA-SV) was conducted at the Pretreatment Plant SWMU pursuant to the HWM Permit and HSWA Permit issued for the site. The purpose of the RFA-SV was to characterize the soil and groundwater conditions to determine environmental impacts, if any, from plant operations. The RFA-SV included collection, laboratory analysis, and evaluation of soil samples and the installation of piezometers to determine the direction of groundwater flow (see Figure 2-1 for soil boring and piezometer locations). The results of the RFA-SV are presented in the RFA-SV report. Using this data, monitoring wells have been proposed to characterize groundwater quality at the Pretreatment Plant SWMU. The proposed locations for these wells are currently under review by the NYSDEC and USEPA. Based on the results of the RFA, the NYSDEC and USEPA determined that a RFI is required for the Pretreatment Plant. Notice of this determination was received by Hercules on November 4, 1992 in a letter from the agencies dated October 29, 1992. In the letter, it was stated that the development of the RFI work plan could be postponed until the results of groundwater sampling from the proposed monitoring wells are available.

The history of ownership for the Pretreatment Plant SWMU is the same as for the rest of the site, as described in Section 2.2 of the Site Task I Report.

2.3 SPILL HISTORY

A review of CIBA-GEIGY and Hercules files for the site did not indicate any spills of waste, product, or raw material at the Pretreatment Plant. Additionally, a review of the NYSDEC Spill Listing for Warren County did not indicate any spills for the Pretreatment Plant.

3.0 WASTE CHARACTERISTICS

Wastewater reaching the Pretreatment Plant currently originates from several sources. Sources of water collected by the industrial sewer include the north lagoon, catch basins at the drum storage pad and the decontamination pad, the seep sumps along the Hudson River bank, the pretreated groundwater collected from the area south of Building 56 (Seep 3 Interim Corrective Measures), and other areas of the site. Inspections of sections of the industrial sewer during the integrity evaluation (see "Report on Phase II Industrial Sewer Integrity Evaluation, CIBA-GEIGY Plant Site, Glens Falls, New York" ECKENFELDER Engineering P.C., August 1992) indicated groundwater seepage into the sewer was within acceptable limits to the NYSDEC. The sanitary sewer system at the site is no longer in use, but has not been decommissioned. Stormwater flows into the sanitary sewer through disconnected pipelines, and it is likely that groundwater infiltrates into some of the piping. The water in the sanitary sewer is combined with the flow from the industrial sewer at the Industrial Lift Station and pumped to the Pretreatment Plant. The stormwater sewer system discharges to the stormwater impoundment basin and is subsequently drained to the Hudson River, pursuant to a State Pollution Discharge Elimination System (SPDES) permit. However, water can be directed from the stormwater impoundment to the Pretreatment Plant for subsequent discharge to the City WWTP.

The volume of wastewater reaching the Pretreatment Plant is variable depending upon site operations, rainfall, and snowmelt. The capacity of the holding tank is 420,000 gallons.

Currently, sampling of wastewater from the site is conducted downstream of the Pretreatment Plant, prior to discharge to the City WWTP and as such is not representative of the wastewater entering the Pretreatment Plant. A wastewater characterization study was conducted in 1990 and is presented in a report entitled, "Pretreatment Evaluation for CIBA-GEIGY's Glens Falls, New York Facility" (Roy F. Weston, Inc., September 1990). In this study, water samples collected from the industrial lift station wet-well, sanitary sewer wet-well, and seepage sumps 1, 2, and 3 were analyzed for chemical properties and constituents. The results of this characterization are presented in Appendix A. The effluent from the treatment system for the groundwater collection system south of Building 56 (Seep 3 Interim

Corrective Measures) is sampled for volatile organic compounds. The results of these analyses are presented in the monthly progress reports submitted to the NYSDEC and USEPA. These analyses typically indicate non-detected or very low concentrations of volatile organic compounds.

The constituents present in the wastewater have also been detected in soil and groundwater samples from the main plant site (see Table 4-1 of the Site Task I Report). The characteristics of these constituents which pertain to the potential migration and dispersal are described in Appendix A of the Site Task I Report.

4.0 NATURE AND EXTENT OF CONTAMINATION

In this section, relevant information regarding the nature, extent, and potential migration of hazardous constituents at the Pretreatment Plant SWMU is summarized. This section is divided into two subsections. The first subsection (4.1) summarizes the existing monitoring data. The second subsection (4.2) summarizes potential migration pathways of hazardous constituents from the Pretreatment Plant.

4.1 SUMMARY OF MONITORING DATA

The monitoring data for the Pretreatment Plant consists of analytical and geological data from soil borings, water level data from piezometers and staff gauges, and ambient air quality monitoring data. These data are discussed in the following sections.

4.1.1 Soil

Soil samples were collected from borings in the Pretreatment Plant SWMU as part of the RFA-SV. The data from these borings are presented and discussed in the RFA-SV Report.

The borings were drilled to bedrock or to a depth two feet below the top of the lacustrine clay layer (if present) which overlies the bedrock. Clean fill material was encountered over most of the site. The fill typically overlies a unit of lacustrine sand, silt and thin clay interbeds, which in turn overlies the more massive lacustrine clay unit.

The soil samples were analyzed for a select group of "targeted" metals, and screened for volatile and semi-volatile organic compounds. Approximately five percent of the samples were analyzed for an "expanded" list of inorganic constituents based on the results of the target metal analysis. Samples were subjected to an expanded analysis for volatile or semi-volatile organics if concentration values measured during screening were above the method detection limit for the screen.

The results of the soil sample analyses from the Pretreatment Plant SWMU are presented in Appendix B of the RFA-SV Report. The constituents detected have also been detected in soil samples from other portions of the CIBA-GEIGY site (see Table 4-1 in Site Task I Report). Based on the results of the analyses, the NYSDEC and USEPA determined that soil ingestion action levels for lead (500 mg/kg) and hexavalent chromium (400 mg/kg) were exceeded in two samples; one sample from PT-10 (0.0-2.0 feet) and one from PT-15 (0.0-2.0 feet). However, the analysis for chromium was conducted for total chromium only. The exceedance of the action level was conservatively determined by the regulatory agencies assuming all chromium present in the sample was hexavalent.

4.1.2 Groundwater

Water level monitoring of the overburden has been conducted at the Pretreatment Plant SWMU using the piezometers and staff gauges installed during the RFA-SV. Potentiometric surface maps for three dates were presented in the RFA-SV report. These maps indicate that the water table configuration is seasonably variable. However, in general, groundwater flow beneath the Pretreatment Plant is from west to east, with components of flow to the north towards the small stream described in Section 2.1, and to the south, towards the Feeder Canal.

Three proposed monitoring well locations for the Pretreatment Plant SWMU have been submitted to the NYSDEC and USEPA for approval; one upgradient, and two downgradient. Upon approval and installation, the wells will be sampled and analyzed to assess the impact of the Pretreatment Plant SWMU on groundwater quality. Currently, no groundwater quality data exists for the Pretreatment Plant SWMU.

4.1.3 Air

CIBA-GEIGY and Hercules operated several ambient air quality monitoring stations at the site from 1976 through 1989, as described in Section 4.2.4 of the Site Task I Report. One of the monitoring stations, designated NWTP, was situated in the northwestern portion of the Pretreatment Plant SWMU. The ambient air concentration of the monitored parameters, as well wind speed and direction data

from Warren County Airport, were compiled into a report and submitted on a monthly basis to the NYSDEC.

4.2 SUMMARY OF MIGRATION PATHWAYS

Several potential pathways exist for the migration of hazardous constituents from the Pretreatment Plant area. These are as follows:

- Air: Potential air emissions may have occurred from the Pretreatment Plant facilities during past and present operations. Migration in air may also occur by volatilization (organic compounds) or by fugitive dust emissions when the contaminated soils are disturbed during excavation. However, fugitive dust control measures are followed at the site during excavation and drilling operations to prevent fugitive dust emissions.

- Groundwater: The percolation of water through the soil may leach hazardous constituents from the soil and transport them via groundwater flow.

- Surface Water: Surface water runoff can dissolve or entrain hazardous constituents from the soil and transport them away from the Pretreatment Plant area.

- Mass Movement of Solids: This can occur where solid materials containing hazardous constituents are positioned on steep slopes. This is not considered a potential migration pathway for hazardous constituents at the Pretreatment Plant SWMU since the land surface grades are very gentle.

The potential airborne migration of hazardous constituents from the CIBA-GEIGY Site, inclusive of the Pretreatment Plant SWMU, and their subsequent deposition on adjacent off site land, is addressed in the work plan entitled, "RFI Work Plan for Adjacent Off Site Land (Off Site Air Emissions Directed Soil Sampling) CIBA-GEIGY Plant Site, Glens Falls, New York (ECKENFELDER Engineering P.C., November 1991), which is currently under revision as per NYSDEC and USEPA comments dated December 9, 1992. The potential migration of hazardous constituents via groundwater is being addressed in

the RFA for the Pretreatment Plant. As discussed in Section 4.2.2, upgradient and downgradient monitoring wells will be installed as part of the RFA to determine the impact of the Pretreatment Plant on groundwater quality. The potential migration of hazardous constituents by surface water runoff will be addressed pursuant to the "RFI Work Plan for Adjacent Surface Water Sediments AOC, CIBA-GEIGY Site, Glens Falls, New York" (ECKENFELDER Engineering P.C., January 1992), which is currently under agency review, and the RFI Work Plan for the Pretreatment Plant, which will be developed upon receipt of the groundwater quality data from the proposed monitoring wells.

5.0 POTENTIAL RECEPTORS

The environmental systems and human populations that may be exposed to potential releases of hazardous constituents from the main CIBA-GEIGY site are inclusive of those of the Pretreatment Plant SWMU. The available and relevant information on these potential receptors of environmental impact from the Pretreatment Plant SWMU was included in Section 5.0 of the Site Task I Report. This information includes:

- Local uses and possible future uses of groundwater.
- Local uses and possible future uses of surface waters draining from the facility.
- Human use of or access to the facility and adjacent land.
- A description of biota in surface water bodies adjacent to or potentially affected by the facility.
- A description of the ecology overlying and adjacent to the facility.
- A demographic profile of the people who use or have access to the facility and adjacent land.
- A description of endangered or threatened species near the facility.

REFERENCES

ECKENFELDER Engineering P.C., November 1991. RFI Work Plan for Adjacent Surface Water Sediments AOC, CIBA-GEIGY Site, Glens Falls, New York.

ECKENFELDER Engineering P.C., December 1991. RCRA Facility Investigation (RFI) Task I Report, CIBA-GEIGY Site, Glens Falls, New York.

ECKENFELDER Engineering P.C., January 1992. RFI Work Plan for Adjacent Surface Water Sediments AOC, CIBA-GEIGY Site Glens Falls, New York.

ECKENFELDER Engineering P.C., July 1992. RFA Sampling Visit, Pretreatment Plant, CIBA-GEIGY Site, Glens Falls, New York.

ECKENFELDER Engineering P.C., August 1992. Report on Phase II Industrial Sewer Integrity Evaluation, CIBA-GEIGY Plant Site, Glens Falls, New York.

New York State Department of Environmental Conservation (NYSDEC), November 1991. Spill Listing for Warren County, New York.

Personal Communication, 1991. Glen Schmiesing, Hercules Incorporated.

Personal Communication, 1992. Warren Cutler, Hercules Incorporated.

Town of Queensbury, 1991. Tax Map 8, Section 113.

APPENDIX A

WASTEWATER CHARACTERIZATION
(Table 2-2 of "Pretreatment Evaluation for CIBA-GEIGY's Glens Falls, New York Facility (Roy F. Weston, September 1990))

TABLE 2-2

WASTEWATER CHARACTERIZATION ANALYTICAL RESULTS

PARAMETER (mg/l)	METHOD DETECTION LIMIT (mg/l)	INDUSTRIAL LIFT STATION WET WELL			SANITARY SEWER WET WELL		SEEPAGE WELL #1		SEEPAGE WELL #2		SEEPAGE WELL #3	
		DAY 1	DAY 2	DAY 2 DUP	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2
pH (SU)	---	7.9	7.8	7.8	7.7	7.7	7.4	7.3	7.1	6.8	8.9	8.8
Acidity	1.0	4.4	2.4	ND	3.4	4.2	6.2	6.4	14	17	ND	ND
Alkalinity	1.0	230	240	240	240	240	120	130	150	150	440	450
BOD5	1.0	39	33	24	14	20	9	30	15	15	33	27
TSS	3.0	22	27	31	8.6	9.7	320	240	37	43	3.5	ND
TOC	1.0	12	11	14	16	9.5	12	11	8.5	7.4	7.6	11
Ammonia as N	0.010	3.2	3.4	3.3	2.8	3.1	11	10	3.4	4.0	0.13	0.20
Nitrate-Nitrite	0.020	12	12	14	19	12	49	15	49	24	9.2	8.0
TKN	0.10	3.0	2.8	2.7	2.4	2.1	8.2	5.7	ND	1.7	0.31	0.24
Sulfate	0.050	380	440	440	230	240	280	350	910	940	320	310
Sulfide	1.0	ND	ND	ND	2.4	ND	ND	ND	ND	ND	3.0	ND
Chromium, Total	0.010	6.6	5.4	6.3	0.15	0.13	1.4	1.4	1.2	1.1	6.8	6.8
Chromium, Hex.	0.0050	6.0	5.8	5.6	0.032	0.011	0.082	0.083	0.0050	0.016	6.8	6.6
Lead	0.0030	0.16	0.12	0.36	0.031	0.042	7.2	4.7	0.027	0.035	0.0054	0.0088
Mercury	0.0002	0.0025	0.0021	0.0018	ND	ND	0.030	0.0064	ND	ND	ND	ND

NOTES: DAY 1 COMPOSITE taken on 13-14 March 1990.
DAY 2 COMPOSITE taken on 14-15 March 1990.
Both days were warm weather, no precipitation.
ND means "Not Detected" at the specified detection limits.