TES V

Final Draft RCRA Facility Assessment

Bovano

Cheshire, Connecticut

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.:	R01023
EPA Region:	I
Site No.:	CTD001179316
Contract No.:	68-W9-0002
Document No.:	TESV-R01023-RT-CKPK
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Date Prepared:	April 1, 1992

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has requested CDM FEDERAL PROGRAMS CORPORATION (CDM FPC) to conduct a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) of the Bovano facility located at 830 South Main Street in Cheshire, Connecticut under the Technical Enforcement Support (TES V) Contract Number 68-W9-0002, Work Assignment Number R01023.

The purpose of an RFA is to identify and gather information on potential and actual releases from Solid Waste Management Units (SWMUs) and other areas of concern (AOCs) at the facility and to evaluate their potential for future impact to human health and to the environment.

This RFA utilizes the National Corrective Action Prioritization System (NCAPS) ranking model developed for EPA Region V and distributed by EPA headquarters to collate and manage information about each RCRA facility. A booklet with this information is attached as Appendix D. Background information was utilized from the EPA Region I Integrated Environmental Management (IEM) work assignment.

2.0 FACILITY DESCRIPTION

2.1 Site Location and Owner/Operator History

The Bovano's of Cheshire facility (Bovano) (EPA Identification Number CTD001179316) is located at 830 South Main Street in Cheshire, Connecticut, in New Haven County (approximate location of facility centroid: Latitude: 41° 28′ 52″, Longitude: 72° 54′ 20″) (1). The facility is approximately 2.7 acres and is located on Connecticut Route 10, which is South Main Street (2). Bovano is bordered on the south by McDonald's Restaurant and Jinny Hill Road. On the west, the site is bounded by South Main Street and on the east by the Mill River (with adjacent wetland). There is a Shell Service Station and other commercial activity located across the street (i.e., Dunkin Donuts). The area to the north of the facility is a partly wooded residential area. The nearest residence is located on site. The site is also occupied by a commercial ice cream shop (2).

Bovano was established in 1954 and began manufacturing operations in 1955. Mr. David Flood is the current owner of the facility. He leased the property from the former owner from 1954 to 1967, when he purchased the property. The facility contact is his son, Mr. Jim Flood (2).

2.2 Facility Processes/Waste Management Practices

The Bovano facility has been producing gifts and ornamental glass objects since 1955. These objects include glass enameling on copper ornaments for items such as jewelry and figurines. The facility also produces brass sculpting and pottery. The manufacturing operations at the facility since 1955 have included pickling, solvent cleaning and degreasing of metal parts, applying lacquer to metal parts and then glass enameling by applying glass powder and baking it onto metal. Since 1955, the facility has modified some of the processes (2,3). The initial and most recent Part A Permit Application, dated November 5, 1980, lists waste codes D002 and F001 (4).

METAL PREPARATION

Bovano representatives have reported that the facility no longer has a degreasing operation. The former degreaser was dismantled circa 1981/82 and the area where the machine was is now covered with a metal cover. Bovano had used trichloroethylene (TCE) here since 1964 but discontinued the use of it as of June 1, 1982 (5,6). Bovano reportedly uses the area as a drying area (7). The contact could not recall if hazardous waste was stored in this area. At one time, the facility reportedly did stamping of metal parts (8). The Mr. Jim Flood stated that there are no stamping activities at the facility now.

ETCHING

Etching is done at the Bovano facility in a self-contained etching machine. Around 1982-83, the facility purchased a small etching machine. At that time, the etching was done with ferric

chloride, and the facility generated approximately 10 gallons per week of spent ferric chloride. The waste was collected in drums and stored in the former Chemical Storage Area until approximately 1986. This Former Chemical Storage Area is currently pending closure awaiting approval of the closure plan submitted to the Connecticut Department of Environmental Protection (CTDEP) in May of 1991 (7,8). Prior to the Former Chemical Storage Area, the facility stored waste in the barn on an earthen floor, herein referred to as the Old Chemical Storage Area.

After approximately four years using the small etching machine, the facility purchased another larger etching machine (1986). At that time, the facility changed from using ferric chloride to using cupric chloride. Generally, the cupric chloride waste is regenerated. Overgeneration results in 7 to 8 gallons per week, which the facility claims is sent out with a D002 and D007 waste listing. This waste is currently shipped off site via Environmental Waste Resources (EWR) (7).

There is an internal sensor to bleed off the wastewater from the etching process, which is sent to the two 1,000-gallon storage tanks for holding until it is picked up. The current generation rate is approximately 1,500 to 1800 gallons of rinsewater (which generally contains about 300 gallons of etchant) every 90 days (7,19).

BRIGHT DIP

The facility utilizes a sulfuric and nitric acid bright dip to clean the parts after the etching procedure. The waste from the bright dip rinsewater is discharged into one of two 1,000-gallon treatment/holding tanks (since around 1988-89), where it is stored until it is picked up by EWR for disposal.

Prior to the installation of the two 1,000-gallon storage tanks, the facility utilized an indoor open concrete tank with a capacity of 1,500 gallons. The bright dip wastewater was sent to the concrete tank and treated with sodium hydroxide. The treated wastewater in the indoor concrete pit was picked up by a waste hauler from 1981 to circa 1985-86 (7). After 1985-86, the treatment of the wastewater ceased; the wastewater (including etchant) was held in the open concrete tank until EWR picked it up.

From 1976-77 until 1981-82, the Bovano facility was collecting the wastewater in the concrete tank treating (or neutralizing) it with sodium hydroxide, and discharging the copper hydroxide sludge to an in-ground sludge lagoon and the upper layer supernatant to a dry well. The outdoor in-ground pit (lagoon) was constructed of cinder blocks and was lined with limestone. The system was reportedly designed with the help of the CTDEP and TRC Environmental Consultants. The sludge was classified as copper hydroxide (F006). The facility reportedly never drummed the copper hydroxide sludge (2,3,7).

ENAMELING

The facility currently has nine active booths (ten total) where the glass powder (referred to as glass frit - see Material Safety Data Sheet attached to VSI in Appendix B) is applied by hand to copper or brass parts which have been sprayed with a film of a type of food-additive substance which acts as a glue (same material which is used to gel gelatin) (19). The parts are then baked in one of three ovens. The glass powder is applied by sifting it onto the parts in the booth areas (these booths were formerly used to spray the glass powder onto the parts). Formerly, the excess spray (glass frit and glue) was directed through a series of filters to a wooden baffle box located outside the building to the north on the ground surface (see Figure 4-1, AOC #14). The area was discovered during a Compliance Enforcement Inspection. Shortly thereafter, the soil in the area was tested using Toxicity Characteristic Leaching Procedure (TCLP) and the results showed the area to be contaminated primarily with lead, cadmium, and arsenic. The CTDEP issued an order and the area was excavated in 1990, and the removed contaminated soil was placed on the pavement in the parking lot, covered with plastic, until it was disposed of off site in January 1992 (2,7,19). The removal and disposal was conducted by Excavation Technologies, Inc. of Cheshire.

Currently, each of the nine active (activities include spraying gel and sifting glass frit) booths is now attached to a new baghouse, which is located on the roof. The baghouse collector is a series of long filter tubes which filter the exhaust. The baghouse system was designed by D.C. Dust Control, as a sub-consultant to the facility (2,19).

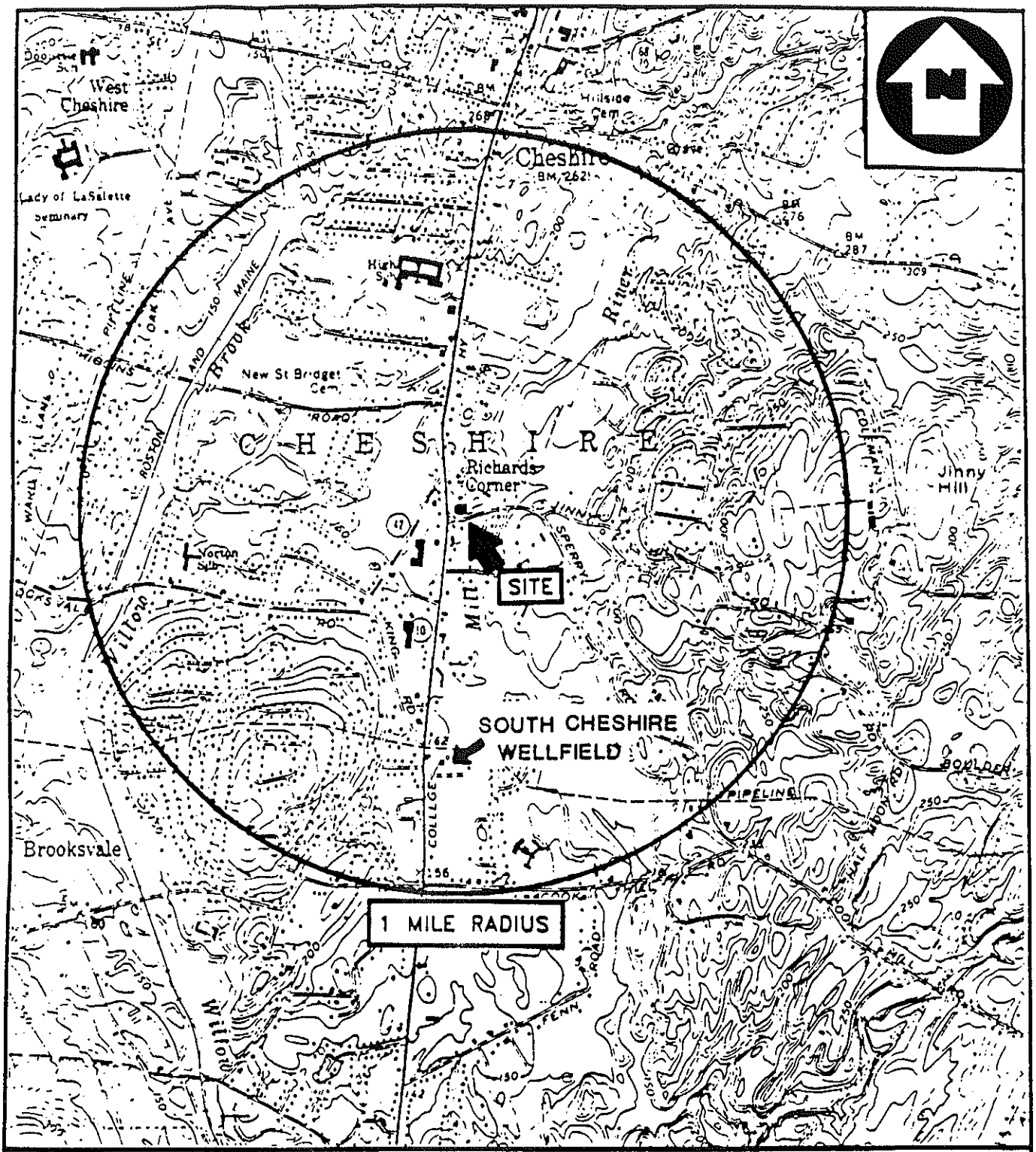
LACQUERING

The facility applies lacquer as a protective coating for the metal parts. The lacquer is applied with a paint brush. The process only occurs once a week for about 30 minutes and does not generate any waste because there is no gun cleaning required (3).

WASTEWATER TREATMENT SYSTEM

As of 1985/1986, Bovano ceased treating the wastewater generated by the Bright Dip operation and etching process. The wastewater treatment system in the indoor open concrete tank (using sodium hydroxide) had formerly discharged to the lagoon; and more recently the untreated waste was picked up by EWR for disposal off site. The company now collects all rinses from the bright dip operation, tumbling and etching processes in the two 1,000-gallon aboveground storage tanks located inside the building in the former concrete holding tank. The waste in the tanks is reportedly removed in less than 90 days (2,3).

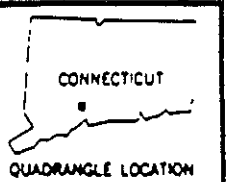
Under a CTDEP order, the former sludge lagoon (discontinued in 1984) along with material from the dry well and 3 cubic yards of soil from the Old Chemical Storage Area were excavated and removed in December of 1985 (6). At that time, TRC collected samples of the lagoon area. Analytical results determined that the soil was still contaminated. In 1986, more soil was removed from the lagoon area, after which TRC collected more samples. These samples still



BASE MAP IS A PORTION OF THE FOLLOWING 7.5' U.S.G.S. QUADRANGLE(S):
MOUNT CARMEL, CONN. 1967, PHOTOREVISED 1984

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET



LOCATION MAP

BOVANO'S
CHESHIRE, CONNECTICUT

NUS CORPORATION

FIGURE 2-1: BOVANO SITE LOCATION

revealed 1.13 parts per million (ppm) of copper and 1,570 parts per billion (ppb) of TCE (2). It is unclear if further recommendations were made by TRC or if another excavation attempt was made. Mr. Jim Flood maintains that the area was properly excavated and approved by the CTDEP (7).

There is an on-site water supply well which is used for drinking water as well as process water for the facility. Reportedly, the well is a bedrock well, which was tested by the New Haven Water Company on at least one occasion. According to Mr. Jim Flood, the results indicated the water is potable (7). The analytical results were not available for review.

2.3 Regulatory History

The Bovano facility is listed in the May 8, 1991 RCRA database as a Treatment/Storage/ Disposal (TSD) facility with a Permit Withdrawal Candidate status. The facility submitted its Notification of Hazardous Waste Activity on August 18, 1980 and its Part A Permit Application on November 5, 1980. The facility is also listed in the May 8, 1991 Comprehensive, Environmental Response, Compensation, and Liability Act Information System (CERCLIS) database (page 11) with the following information: a Discovery date of May 15, 1986 (State); a Preliminary Assessment date of August 18, 1986 (State); Site Inspection date of December 20, 1989 (EPA). The facility originally notified as a TSD facility on November 5, 1980, but reportedly did not meet the criteria to file. The facility had petitioned for a status change to generator in 1987. The files at CTDEP indicate that in late 1988, the EPA rejected the status change. The facility recently submitted a closure plan for the Chemical Storage Area, and Mr. Flood was under the impression that after the closure plan was approved and closure occurred, the facility's status could be changed. He neglected to pay the 1991 "facility fee" to the state (7).

In 1982, TRC was retained by the facility to conduct a preliminary investigation in response to an Order from the Water Compliance Section at CTDEP. TRC concluded that there was evidence of site environmental impact and recommended further investigation (5).

In January 1983, the CTDEP Water Compliance Section requested, after reviewing the TRC report, that a Phase II investigation be undertaken, including installing three additional, deeper wells. No evidence of the Phase II report was found, although according to the Mr. Jim Flood there are two deep wells at the site (7).

In February 1984, the Hazardous Waste Management Section at CTDEP notified Bovano that the copper hydroxide sludge generated by the process of sulfuric acid etching of copper was not a listed hazardous waste; however, the EP Toxicity test needed to be conducted on the sludge before a final determination could be made. In March 1984, after reviewing results of EP Toxicity testing of Bovano's copper hydroxide sludge, the CTDEP notified Bovano that the sludge was in fact not characteristic. Therefore, at the time, the Hazardous Waste Management Section at CTDEP did not require Bovano to implement ground water monitoring for the copper hydroxide sludge lagoon. At the time, due to the high copper leachate results, the CTDEP could

not authorize the disposal of the material in a solid waste disposal area (11,12). However, the most recent shipment of copper hydroxide sludge was manifested as D006 by EWR (3).

2.4 Previous Work On Site

In December of 1989, NUS Corporation (NUS/Field Investigation Team (FIT) was retained by the EPA to perform a Screening Site Inspection (SSI) of Bovano. This SSI was initiated as a result of conclusions in the Preliminary Assessment by NUS/FIT done in August of 1986. The SSI recommended that a Listing Site Inspection be conducted based on the following conclusions: the analytical results of soil and groundwater samples collected on site indicated that inorganic elements commonly used in metal-finishing operations (chromium, copper, lead, nickel, and zinc) were detected at elevated levels in all soil samples. Also, the highest levels of contaminants were detected in the samples collected east of the former lagoon area and within a few feet of the factory building. Arsenic, cadmium, copper, lead, and zinc were also detected in the soil at concentrations higher than background. Inorganic elements were also detected in groundwater from the monitoring well between the dry well and the chemical storage area. No volatile organics were detected in the soil samples. TCE was detected at the quantitation limit of 5 parts per billion (ppb) and copper at 1.3 parts per million (ppm) in the well situated between the dry well and the Chemical Storage Area. (Previous investigations by TRC in September of 1982 revealed TCE at 1,220 ppb and copper at 10.2 parts per million (ppm) in groundwater from this same well) (2).

As a result of a CTDEP inspection in November of 1989, Bovano was issued an order requiring a hazardous waste determination of the white powder sprayed on the soil to the north of the facility from the baffle boxes associated with the application booths. Bovano recently excavated 20 cubic yards of contaminated soil. The soil results (via TCLP) showed the soil to be contaminated with lead, arsenic, and cadmium. After a 12-inch deep excavation, more testing revealed that the soil, at an additional 12 inches below ground surface, was still contaminated and that additional excavation was required (9). Mr. Flood stated that all areas of contaminated soil were removed and disposed of off-site in accordance with CTDEP. He anticipates having the order removed (19).

Bovano also removed two 1,000-gallon and one 500-gallon underground oil storage tanks in 1989 from the area of the storage barn behind the house/ice cream shop (7,19). Excavation Technologies conducted this work and CTDEP was aware of the activity (19).

3.0 ENVIRONMENTAL SETTING AND MIGRATION PATHWAYS

3.1 Groundwater

There was an environmental study of the facility conducted in 1982 by TRC which provides general geological information. The topography of the Cheshire area is hilly, gently sloping south. The area is located within the Central Lowland of Connecticut. Land use is commercialized in the area near the Bovano site. Locally, the bedrock surface is 100 feet below the ground surface. The underlying bedrock is New Haven Arkose. Bedrock surface contours indicate that the bedrock surface slopes gently to the west (2).

Groundwater at the site flows in a southeasterly direction. Groundwater in the area is classified as GB/GAA. Municipal supply wells are located within 4 miles north and 0.9 miles south. These two interconnected wells are known as the North Cheshire and the South Cheshire wellfields, respectively, and serve a population of approximately 20,000 people in Cheshire alone. In 1982, the Chesprocott Health District detected TCE at a concentration of 270 ppb, as well as lower concentrations of other volatile organic compounds, in the South Cheshire wellfield. The facility was being investigated as a potential contributor to this contamination. Reportedly, the levels of contamination in the wellfield have decreased since 1982 (2).

The Bovano site is located in the Mill River Drainage Basin which flows south and ultimately discharges to New Haven Harbor approximately 8 miles south of the site. Given the site's setting, depth to groundwater is likely to be less than 10 feet. No information on depth to groundwater was found from any of the sampling results (5). However, according to a CTDEP Inspection, the GW-2 well is 15 feet deep. Therefore, a depth of less than 10 feet is a reasonable approximation (3).

See Appendix C for further geology description. See Appendix D: Model Booklet, and Appendix E: PA Summary Scoresheets for further groundwater migration pathway explanation and information.

3.2 Surface Water

The nearest surface water body to the site is the Mill River, which forms the eastern property boundary. According to the Community Water Systems in Connecticut Map (1984 Inventory), the Mill River flows south into Lake Whitney approximately 6 miles south of Bovano. From Lake Whitney, the Mill River continues south for approximately 2 miles and discharges into New Haven Harbor which merges with Long Island Sound.

The Mill River is used for recreation such as canoeing and fishing. The Mill River is classified as B/AA by the State. Lake Whitney is used as a public drinking water supply for a portion of the Town of Hamden (per the Community Water Systems in Connecticut Map, 1984).

See Appendix C for further information. See Appendix D: Model Booklet and Appendix E: PA Summary Scoresheets for further surface water migration pathway explanation and information.

3.3 Air

The facility recently changed the exhaust discharge procedure from the application booths and potentially eliminated this release pathway. The operations now utilize a new baghouse, installed in October of 1988, which is located on the roof (7).

See Appendix D: Model Booklet and Appendix E: PA Summary Scoresheets for further air migration pathway explanation and information.

3.4 On-Site/Soil Exposure

Access to the site is essentially unlimited. There is a McDonald's restaurant located adjacent to the facility to the south (7).

The lagoon mentioned in Section 2.2 was located outside the southern portion of the building near the parking lot and reportedly contained copper hydroxide (CuOH) sludge (See Figure 4-1). The dry well associated with the lagoon was located around the corner to the west of the building. The dry well is still located there but contaminated material was reportedly removed from the location. The lagoon was excavated in 1985 and again in 1986 because samples revealed an incomplete removal of the contaminated soil. Even after the second removal, results indicate elevated levels of contaminants in soils (see Section 2.4) (2).

Recently (1990 and 1991), soils were excavated up to 12 inches below grade from the north side of the facility, which borders a wooded residential area. The TCLP result soil results contained up to 31.6 milligrams per liter (mg/L) of lead as well as arsenic and cadmium (9,20,21,22,23,24). These excavated soils were situated (8/91) in the rear of the property on the pavement, covered by plastic sheeting held at the corners with boulders (7). The excavated soil pile was disposed of off-site by Excavation Technologies of Cheshire in January 1992 (19).

In addition, the facility utilized a septic system which leached contaminants collected from a trough utilized to discharge cooling water. This trough would catch TCE dragout spills. The septic tank in this system was found to contain 6 inches of metallic grey sludge. This contaminant disposal via the septic system was reportedly discontinued circa 1982 (5). Reportedly, the septic system included three leachfields in total (exact configuration unknown) of which two were used for sanitary wastes. Two leachfields were discontinued when treatment system was installed (8). The third is still used for sanitary wastes from two bathrooms in the office/lacquering/ welding building.

3.5 Off-Site Migration

There is potential for off-site migration from the Bovano facility via surface water runoff to the Mill River and via groundwater. Evidence of such migration may be found in the fact that the South Cheshire wellfield, located approximately 0.9 miles south was found to be significantly contaminated with TCE in 1982, at the same time the Bovano property was evaluated as having high levels of TCE in the soil and groundwater. Bovano discontinued TCE in 1982 and since then the levels of TCE at both the wellfield and the site have dropped to 5 ppb at both areas (2,5).

4.0 SOLID WASTE MANAGEMENT UNITS

A Solid Waste Management Unit (SWMU) is any unit at which solid waste has been placed from which hazardous constituents may have or might migrate regardless of whether the unit was or is intended to manage hazardous waste. An Area of Concern (AOC) refers to any area at a facility where hazardous waste or hazardous constituents might have been managed or have come to be located and from which releases might occur. Examples of AOCs include but are not limited to: landfills, disposal locations, surface impoundments, waste piles, storage tanks, land treatment units, incinerators, injection wells, tanks (including 90-day accumulation tanks), container storage areas, transfer stations, and waste recycling operations. For the purposes of this RFA, SWMUs and AOCs have not been differentiated and are referred to collectively as AOCs.

This section consists of an AOC chart for the facility which delineates waste sources and releases and details the available supporting information. The chart consists of three subsections:

4.1 AOC Sizes and Locations (Table 4-1),
4.2 AOC Periods of Operation and Management Practices (Table 4-2), and
4.3 Site Environmental Contamination Data.

AOC CHART

4.1 AOC Sizes and Locations

Based on information reviewed and currently available to the EPA and the CTDEP and gained during the Visual Site Inspection, there are at least 14 AOCs located at the facility (See Figures 4-1 and 4-1a: AOC Location Map). The dimensions and locations of these AOCs are listed in Table 4-1.

TABLE 4-1
AOC Sizes and Locations

AOC(#)	Approximate Size or Capacity	Name and Location
1	(2) 1,000-gallons each	Wastewater Holding Tanks (for treatment with NaOH) located inside the factory building in the etching area.
2	1,500 gallon	Former Concrete Holding (Treatment) Tank in the etching area, now used as secondary containment for AOC #1.

TABLE 4-1 (Continued)

AOC(#)	Approximate Size or Capacity	Name and Location
3	8′ X 8′ floor area	Former Chemical Storage Area currently on concrete in the assembly room in the factory building - awaiting closure.
4	unknown	Old Chemical Storage Area in the Barn, circa 1982, was located in the barn on earthen floor.
5	reported capacity: 12,000 gallons/day	Septic System and Subsurface Leachfields situated under building and to the east of the property, 100 feet from Mill River.
6	60 gallon (approx.) at a given time	Former Degreaser with trough of TCE for dipping parts.
7	10′ x 7′ x 4′	Former Copper Hydroxide Sludge Lagoon located outside the factory building to the south.
8	reported capacity: 1500 gallons/10 days	Former Leaching Catch Basin/Dry Well located to the west of the factory building.
9	(2) machines: (approx.) 800 gallon total capacity	Two Etching Machines located in the etching area in the factory building.
10	(approx) 400 gallon total at a given time	Bright Dip Process Line with vats located in the rinse area.
11	(9) booths: (approx) 1,000-gallon total	Former Application Booths (former spraying) for lacquering and enameling located in the rinse area.
12	10′ x 10′ (approx) area	Former Loading Dock east of the factory building and north of the dry well.

TABLE 4-1 (Continued)

AOC(#)	Approximate Size or Capacity	Name and Location
13	20 cubic yards	Area of Excavated Contaminated Soil Pile from the area north of the factory building which was located to the east of the office building on the pavement under plastic sheeting, while awaiting disposal.
14	unknown	Former Baffle Box associated with application booths.

4.2 AOC Periods of Operation and Waste Management Practices

Each of the above areas were utilized for waste management during the approximate periods listed below:

TABLE 4-2
AOC Periods of Operation
and Waste Management Practices

AOC(#)	Approximate Period of Use	Description
1	1988 - present	Two double lined plastic holding tanks situated in the former concrete holding tank (for containment) which receive wastewater from the etching and bright dip processes.
2	1976 - 1982	Former concrete pit used for treatment (NaOH) of copper hydroxide sludge prior to discharge to lagoon and dry well (AOCs #6 and #7).
3	factory building: 1982 - 1988	Former chemical storage area with concrete floor used to store spent ferric chloride etchant and TCE.
4	barn: 1964 - 1982	Old chemical storage area in barn on earthen floor used to store spent ferric chloride etchant and TCE. Contaminated soil in area was reportedly excavated.
5	(#1,#2) 1964 - 1976 (#3) 1964 - present	At one time, the septic system included three leachfields (exact configuration unknown) of which two were used for sanitary wastes. The leachfield and catch basin reportedly may have received acid wastes and degreaser trough wastes (potentially TCE). Two leachfields were discontinued when treatment system was installed (8). The third is still used for sanitary wastes from two bathrooms in the office/lacquering/welding building.
6	1964 - 1982	Former degreaser which held heated TCE for dipping parts.

TABLE 4-2 (Continued)

AOC(#)	Approximate Period of Use	Description
7	1976 - 1982	Former cement-walled, limestone lined, in-ground,lagoon which received copper sludge treated with sodium hydroxide. Reportedly removed in 1985, required more excavation in 1986. Reports indicate high levels of contamination in soil even after second excavation. Bovano claims lagoon was clean closed in accordance with CTDEP.
8	1976 - 1982	Former leaching catch basin/dry well which received wastewaters from treated copper sludge process and bright dip rinsewater. May have received TCE from degreaser trough (8).
9	1982 - present	Two etching machines: one purchased in 1982, the other in 1986. Formerly used ferric chloride, now use cupric chloride. Wastewaters automatically bleed off to one of two 1,000-gallon holding tanks.
10	1964 - present	Bright dip process line for dipping metal parts after etching (currently).
11	1964 - 1990 (spray) 1990 - 1992 (sift)	Nine application booths: formerly for application of glass frit by spraying; currently for application of glass frit by sifting. Spray activities were decommissioned in 1990, after an CTDEP inspection (1989) determined the exhaust to be hazardous and to have contaminated surface soils on site.
12	1964 - 1982	Former loading dock which reportedly received shipments of chemicals.

TABLE 4-2 (Continued)

AOC(#)	Approximate Period of Use	Description
13	1990 - 1992	Area where excavated contaminated soils containing lead, arsenic and cadmium, were located while awaiting disposal off site.
14	unknown-1990	Former baffle box used to collect excess spray from spraying application of glass frit for enamel (see AOC #11).

4.3 Site Environmental Contamination Data

The chronological listing which follows includes the sampling data in which contaminants were detected, along with a list of AOCs which are hydraulically upgradient of, or otherwise associated with, the sampling point. The data include the following:

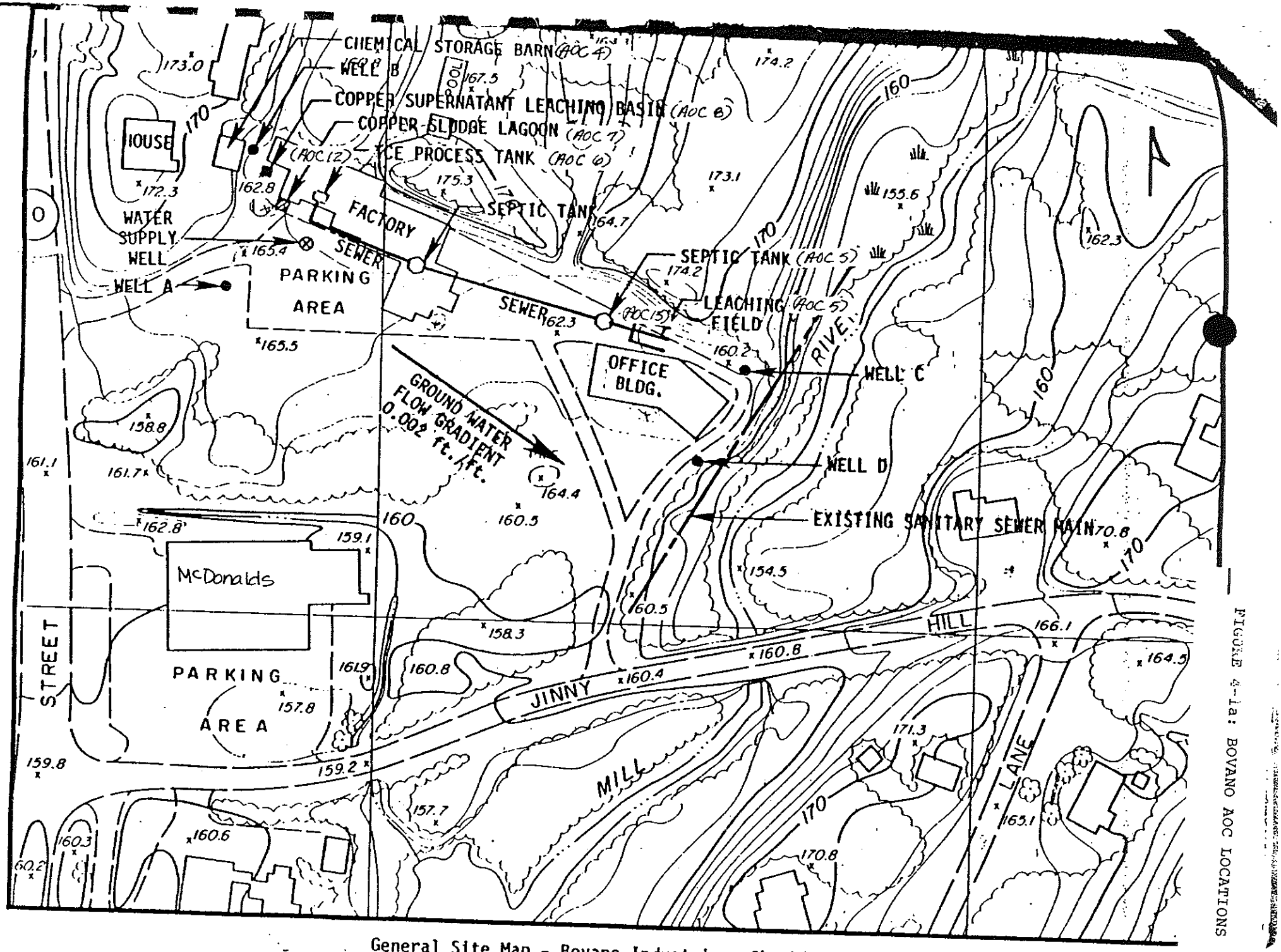
a) Groundwater samples were collected from on-site wells for Bovano by TRC in 1982 in response to an order by CTDEP Water Compliance (10). Results indicated levels of groundwater contamination of copper (up to 10.2 ppm) and TCE (up to 1,220 ppb) in GW-02. In 1984, TCE was detected at 50 ppb in groundwater collected from location GW-03 (See Figure 4-1) (5).

Associated AOCs: Concrete Holding Tank (AOC #2), Old Chemical Storage Area in the Barn (AOC #4), Septic System and Subsurface Leachfields (AOC #5), Former Degreaser (AOC #6), Former Copper Hydroxide Sludge Lagoon (AOC #7), Former Leaching Catch Basin/Dry Well (AOC #8), Former Loading Dock (AOC #12).

Note: The CTDEP paperwork for the Water Compliance Order #3242 suggests that it is likely that when the New Haven South Cheshire wells are pumping, the groundwater gradient is to the south and not towards Mill River (east) (10). Figure 4-1a demonstrates the only information on groundwater flow found in the Bovano file research.

b) Surface and subsurface (0 to 2 feet below grade) samples were collected on the northern wall of the factory building (See Figure 4-1) by Excavation Technologies, Inc. of Cheshire in 1990, and 1991; the samples were analyzed using Toxicity Characteristic Leaching Procedure (TCLP). The results revealed levels of arsenic (up to 3.47 ppm), lead (up to 31.6 ppm), and cadmium (up to 0.81 ppm) (16,20).

Associated AOCs: Application Booths (AOC #11), Area of Contaminated Soil Pile (AOC #13), Former Baffle Box (AOC #14).

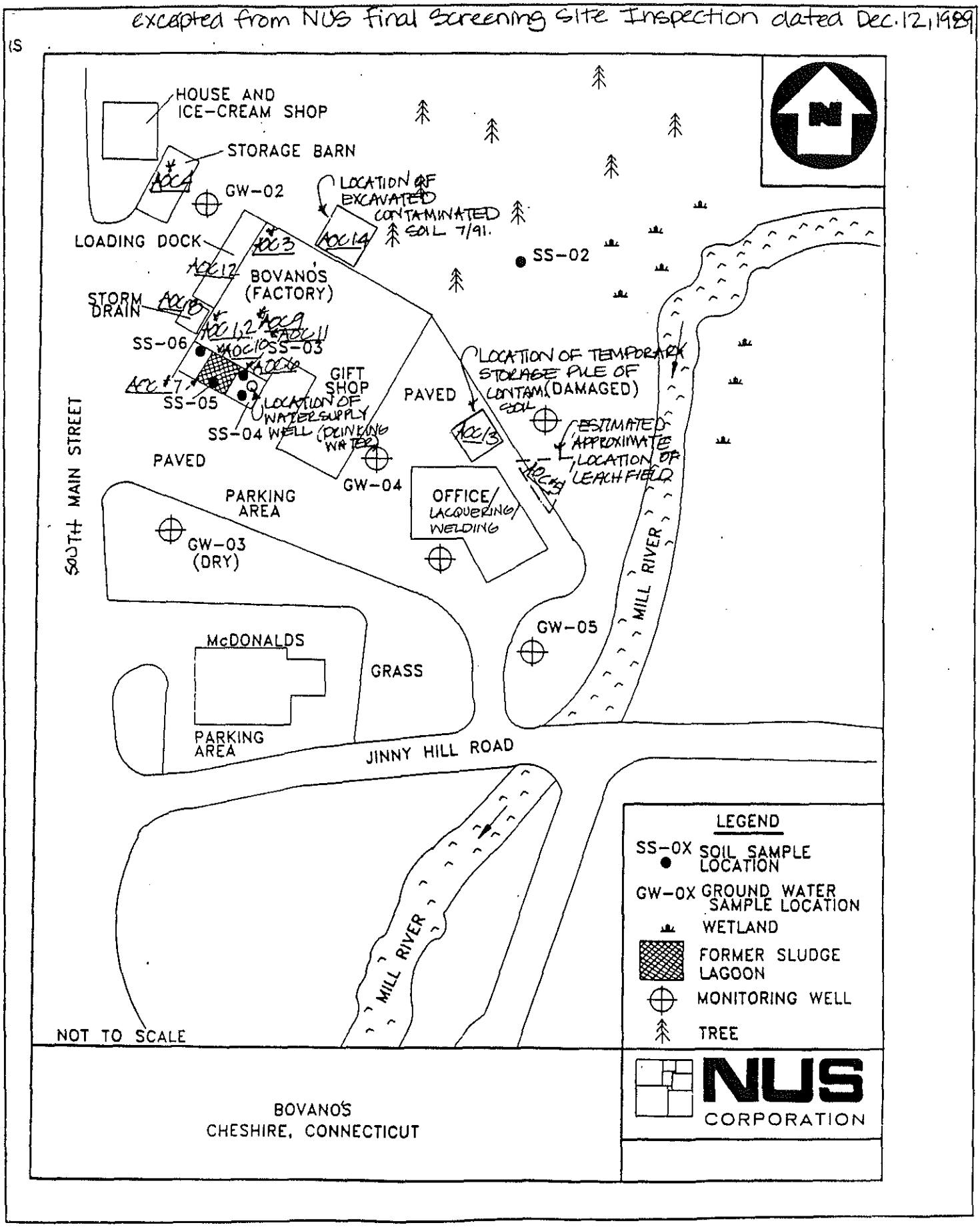


General Site Map - Bovano Industries, Cheshire, Connecticut.

FIGURE 4-1a: BOVANO AOC LOCATIONS

FIGURE 4-1: BOVANO AOC LOCATIONS

excapted from NUS final Screening Site Inspection dated Dec. 12, 1989



5.0 SUMMARY OF VISUAL SITE INSPECTION

CDM FEDERAL PROGRAMS CORPORATION (CDM FPC) and the U.S. Environmental Protection Agency (EPA) field teams conducted a Visual Site Inspection (VSI) of the Bovano site on August 29, 1991. CDM FPC's field team consisted of Mary Pothier, Environmental Engineer (Site Manager), Tara Abbott Taft, Environmental Scientist, and Joe Tarantino, Program Manager. The EPA field team consisted of David Guest. As required by the CDM FPC's Site Health & Safety Plan, an HNu was used to monitor levels of organic vapors in ambient air.

CDM FPC and EPA field team met with Jim Flood, General Manager for Bovano.

Following an introductory and informational meeting, a facility tour and site inspection were conducted. During the VSI, CDM FPC gained information to complete data gaps, visually inspected identified AOCs where possible, and documented each area with photographs.

Information obtained during the VSI is presented in Appendix B. Photographic documentation is presented in Appendix F.

The VSI supported the information found in the files. However, the dates of some of the facility modifications in waste management could only be approximated by Mr. Flood. Mr. Flood was clearly frustrated with the task of escorting the inspection. He has been an employee of the facility since the 1970s. He is the son of the owner.

The facility is awaiting a status change to generator, once the closure plan for the chemical storage area is approved. The plan was submitted to the CTDEP in May of 1991.

The facility appears to be located in a commercial/residential area in Cheshire. The building was of fair construction quality. The office is located in the back building on site above the lacquering and welding areas.

The assembly room and finishing room are located in the factory building along with the enamel room, the chemical storage area (to be closed), the etching area and the rinse area, which also is the location of the former application booths and degreaser (dismantled and removed).

The copper sludge lagoon was excavated in 1985 along with contaminated material from the dry well. The concrete tank which formerly held wastewater prior to its discharge to the lagoon was superseded circa 1988 with two 1,000-gallon double walled storage tanks. The concrete tank was left in place and reportedly serves as containment. It appears to be in fair condition.

The drinking water well on site is reportedly a bedrock well and is still used by the employees at the facility. Mr. Flood stated that he had the water tested once by the New Haven Water Company, analyzed for primary drinking water parameters. He reported that the results were "fine" and the water was potable.

Contaminated soil from the excavation of the baffle box location was piled on the pavement in the parking lot and covered with plastic sheeting. The soil has been there since approximately May 1991. Mr. Flood claimed that he was obtaining bids for off-site disposal. [The soil was removed in January 1992. (19)]

There are six monitoring wells on site, four shallow wells installed by TRC in 1982 and an additional two deep wells as required by the CTDEP under Order #3242 - Water Compliance Section - circa 1982/83.

The Mill River, which is used for recreational purposes, is located at the rear of the property to the east, less than 100 feet from the office/lacquering/welding building.

The facility had two 1,000-gallon underground oil storage tanks removed and disposed of in 1989.

6.0 DATA GAPS

The information contained within this RFA was gathered by CDM FPC from EPA Region I RCRA and CERCLA files, CTDEP Waste Management and CTDEP Water Compliance files and from the facility.

Based on a review of the information obtained from these sources, the following information is needed in order to provide more background assist in drawing conclusions regarding past contamination and possible migration resulting from the identified AOCs:

- Further documentation of contaminant levels in remaining soils in the lagoon since the second excavation in 1986.
- Investigation of the Old Chemical Storage Area in the barn to ensure complete removal. The Former Chemical Storage Area in the production area is in the process of closure by CTDEP. It would be recommended to follow up on this closure and review the documentation.
- Further investigation of the potential for contamination in the drinking water well used by the facility, which is downgradient of the former lagoon and dry well. Locate results of analysis by New Haven Drinking Water Company for the on-site drinking water well.
- Verification of CTDEP's documentation of complete removal and status of area where contaminated soil was stored.
- Locate TRC's 1984 report entitled "Groundwater Investigation of Bovano Industries, Cheshire, Connecticut", which is the Phase II report dated November (5).
- Locate NUS's 1986 report entitled "Preliminary Assessment of Bovano's", memo to D. Smith, EPA, from S. Kasten, NUS/FIT, dated August 13 (5).

7.0 CONCLUSION/RECOMMENDATIONS

7.1 Summary

The Bovano site is located at 830 South Main Street in Cheshire, Connecticut. The Bovano facility has manufactured glass enamel products and other gift items, including jewelry since 1955. The facility is listed in the May 8, 1991 Resource Conservation and Recovery Act database as a Treatment/Storage/Disposal facility with a Permit Withdrawal Candidate status.

The Bovano facility has been producing gifts and ornamental glass objects from glass enameling on copper ornaments for items such as jewelry and figurines, and some brass sculpting and pottery since 1955. The manufacturing operations at the facility since 1955 have included pickling, solvent cleaning and degreasing of metal parts, applying lacquer to metal parts and then glass enameling by applying glass powder and baking it onto metal.

As of July 1989, the use of the wastewater treatment system has been discontinued. The company now collects all rinses from the bright dip operation, tumbling and etching processes in two 1,000-gallon aboveground storage tanks located inside the building in the former concrete holding tank.

In December of 1989, NUS Corporation, as contracted by the U.S. Environmental Protection Agency (EPA), conducted sampling during a Screening Site Inspection (SSI) of Bovano. The analytical results of soil and groundwater samples collected on site indicated that inorganic elements (chromium, copper, lead, nickel, and zinc), were detected at elevated levels in all soils samples. Arsenic and cadmium were also detected in the soil at concentrations higher than background. Inorganic elements were also detected in groundwater.

Historically, Bovano used a copper hydroxide sludge lagoon and an associated dry well to dispose of waste. The contaminated soils in the dry well and the old chemical storage area in the barn were reportedly excavated in 1985. No analytical data was found to document complete removal. The lagoon was also excavated in 1985 and again in 1986, because sampling indicated an incomplete removal of the contaminated soil. Even after the second removal, results indicate elevated levels of contaminants in remaining soils.

In 1990, soils were excavated from the north side of the facility, which borders a wooded residential area. The soils were contaminated from exhaust of the application booths which the facility used for applying glass frit to metal parts during the enamel process. The Toxicity Characteristic Leaching Procedure (TCLP) results for these soils indicated up to 31.6 milligrams per liter (mg/L) of lead as well as arsenic and cadmium. These excavated soils were situated in the rear of the property on the pavement, covered by plastic sheeting, from 1990 until they were disposed off-site in January 1992. Currently, the facility applies the glass frit by a sifting technique in the same booth areas. The booths now discharge to a baghouse on the roof.

Depth to groundwater beneath the site is anticipated to be shallow (less than 10 feet), although no information was available from the sampling data. The nearest surface water body is Mill River, which flows to Lake Whitney, and then to New Haven Harbor.

The following table and sections indicate conclusions and recommendations of CDM FEDERAL PROGRAMS CORPORATION to the U.S. Environmental Protection Agency regarding Solid Waste Management Units (AOCs) identified at the site. Conclusions and recommendations are based on information reviewed for this report; however, if additional information becomes available, the results may change.

7.2 Release Determinations

The potential for release from each AOC has been identified according to each media type for purposes of determining the need for further investigation during the RCRA Facility Investigation. In the following table, **release** refers to a documented release of hazardous constituents to the indicated environmental medium. Determination of a release does not consider one time or accidental spills but releases which are routine and systematic in nature. **Potential** refers to whether there is a potential for a release. **None** is specified only when there is sufficient information to document and confirm containment. **Unknown** indicates that the potential for or likelihood of a release is unknown.

TABLE 7-1
MEDIA IMPACT MATRIX

AOC (#)	Groundwater	Surface Water/ Sediments	Soil	Air	Subsurface Gas
1	none	none	none	none	none
2	release	potential	release†	none	unknown
3	release	potential	release	none	unknown
4	potential	potential	release†	none	unknown
5	release	potential	release	unknown	potential
6	unknown	unknown	unknown	none	unknown
7	release	potential	release†	unknown	potential
8	release	potential	release†	unknown	potential
9	unknown	unknown	unknown	none	unknown
10	unknown	unknown	unknown	unknown	unknown
11	potential	unknown	release†	potential	unknown
12	potential	potential	potential	none	unknown
13	potential	potential	potential	none	unknown
14	potential	potential	release†	none	unknown

* Used to indicate when additional evidence was found that documents off-site migration from a particular AOC to an environmental medium.

† *Some form of remediation/stabilization has been attempted for this environmental* medium.

7.3 Recommendations for Further Action

The Bovano facility's analytical data confirms releases from the facility to the environment. Existing data confirming contaminated soil at the site indicates the likelihood of off-site migration via the groundwater and surface water pathways.

Based on information gathered during the file review and the VSI, CDM FPC recommends that further investigations regarding this facility consider the following:

AOC #1 Wastewater Holding Tanks. These two 1,000-gallon tanks are located inside the factory building in the etching area. They are double-lined plastic holding tanks situated in the former concrete holding (treatment) tank (for containment). Wastewater from the etching and bright dip processes are discharged to these tanks, which hold the wastewater until it is picked up by EWR. No further investigation is recommended.

AOC #2: Former Concrete Holding (Treatment) Tank. This former concrete holding (treatment) tank is located in the etching area and is currently used as secondary containment for the newer wastewater holding tanks (AOC #1). Formerly, this concrete tank was used for treatment (with sodium hydroxide) of copper hydroxide sludge prior to discharge of the sludge to an in-ground lagoon and dry well. Further investigation of containment is recommended to ensure discharge to the former lagoon area is not possible. Also, the tank and piping system should be checked for leaks.

AOC #3: Former Chemical Storage Area. This former chemical storage area is approximately 8 feet square and is located on the concrete floor in the assembly room in the factory building. The facility has submitted a closure plan for this AOC. Further work recommended includes completing the closure and review of closure documentation.

AOC #4: Old Chemical Storage Area. This old chemical storage area was used prior to the former chemical storage area. This chemical storage area was located in the barn on an earthen floor. Spent ferric chloride and TCE were reportedly stored in this area. Further investigation of the area and of the potential downgradient pathway (i.e., well GW-2 sampling or borings just east of the barn) is recommended to determine if contamination exists from possible past releases.

AOC #5: Septic System and Subsurface Leachfields. This former septic system reportedly had three leachfields. Historically one leachfield used to receive acid wastes, and the degreaser trough may have been discharged here. Discharge was discontinued when the treatment system was installed. Of the other two leachfields which receive only sanitary effluent, one is still active. This active leachfield receives

sanitary waste from the office/lacquering/welding building and is located to the north of the building, approximately 100 feet from the Mill River. Further investigation of area to determine extent of leachfield contamination and potential for continued contaminants is recommended.

AOC #6: Former Degreaser. This 60-gallon degreaser was reportedly a trough containing heated TCE used for dipping parts. Further investigation of the degreaser area and the integrity of the floor it was located on is recommended to determine potential of release.

AOC #7: Former Copper Hydroxide Lagoon. This former cement-walled, limestone-lined, in-ground lagoon received copper hydroxide sludge from the concrete holding (treatment) tank (AOC #2). This lagoon was reportedly removed in 1985 but required more excavation in 1986. Reports indicate high level of contamination in soil even after second excavation. Further investigation is recommended to determine the rate and concentration of remaining contamination.

AOC #8: Former Leaching Catch Basin/Dry Well. This former leaching catch basin/dry well was located to the west of the factory building near the loading dock. This AOC received wastewater from the treatment of copper hydroxide sludge and rinsewater from the bright dip tanks. The dry well was reportedly excavated. Further investigation to determine effectiveness of excavation, and testing of the groundwater downgradient is recommended.

AOC #9: Two Etching Machines. These two etching machines are located in the etching area of the factory building. One of these was purchased in 1982, the other in 1986. The machines formerly used ferric chloride and now use cupric chloride. Wastewaters automatically bleed off to one of the two 1,000-gallon tanks. Further investigation of the concrete is recommended to determine whether releases could have occurred.

AOC #10: Bright Dip Process Line. This bright dip process line is a series of vats located in the rinse area. The current process line is used for dipping metal parts after etching. Further investigation of concrete is recommended to determine whether releases could have occurred.

AOC #11: Former Application Booths. These former application booths were located in the rinse area. They are used in the enameling process and formerly discharged to the baffle box, which had been located on the north of the factory building. Currently the booths are used for a sifting application as opposed to the former spraying technique. Further investigation of the area is recommended to confirm that the booths are now properly discharging to the baghouse on the roof. In addition, air sampling of exhaust from the baghouse is recommended to verify proper filtration is occurring.

AOC #12: Former Loading Dock. This former loading dock was located north of the dry well. Further investigation of area is recommended to determine extent of loading dock contamination and potential to continue leaching contaminants.

AOC #13: Area of Excavated Contaminated Soil Pile. This excavated contaminated soil was removed from the ground area north of the factory building. The soil pile is now located to the east of the office/lacquering building on the pavement under plastic sheeting. The facility is planning disposal of this material. Future work recommended for this AOC is removal of the waste pile and follow up to determine the complete and proper disposal of pile and clean up of parking area. Further testing should be performed to determine whether contaminants have migrated from the pile.

AOC #14: Former Baffle Box. This former baffle box was located on the north side of the factory building and is the cause of the contamination of soil in the area. The soil was excavated (See AOC #13). This baffle box reportedly received excess spray from the enameling application booths. Further excavation and testing is recommended to remove contaminated soil and confirm cleanup.

The National Corrective Action Prioritization System (NCAPS) ranking model developed for EPA Region V, and distributed by EPA headquarters, and the Preliminary Assessment (PA) Summary Model Scoresheets were utilized during this RFA.

8.0 REFERENCES

1. Bovano. November 5, 1980. Part A Permit Application.

2. NUS Corporation, under contract to U.S. Environmental Protection Agency (EPA). December 12, 1989. Final Site Screening Inspection.

3. Chernauskos and Harder, CTDEP. November, 29, 1989. Compliance Enforcement Inspection (CEI) Report of Bovano.

4. TRC, to Flood, Jim, Bovano. September 17, 1986. Letter.

5. TRC Environmental Consultants. August 31, 1982. Untitled report of initial field investigation with analytical results.

6. Flood, David, Bovano, to Dana, Mark, EPA. August 22, 1985. Letter.

7. Flood, James, Bovano, Guest, David, EPA, and Pothier, Mary, CDM FEDERAL PROGRAMS CORPORATION (CDM FPC). August 29, 1991. RCRA Facility Assessment Visual Site Inspection (VSI) of Bovano.

8. Hassler, Paul, CTDEP. August 22, 1983. CEI report of Bovano.

9. Clune, Lynn, CTDEP, with, Pothier, Mary, CDM FPC. June 14, 1991. Personal Communication.

10. Harrison, Ellen, CTDEP Water Compliance, to Winterbottom, Wes, CTDEP Water Compliance. January 21, 1983. Interdepartmental message.

11. Vidmar, Kevin, CTDEP Hazardous Waste, to Flood, David, Bovano. February 24, 1984. Letter.

12. Vidmar, Kevin, CTDEP Hazardous Waste, to Flood, David, Bovano. March 13, 1984. Letter.

13. Pac, Stanley, CTDEP Commissioner, to Flood, David, Bovano. July 5, 1983. Letter.

14. Cochran, Margaret, CTDEP, Hazardous Waste Section, with Pothier, Mary, CDM FPC. June 6, 1991. Personal communication.

15. Maretsky, Gale. October 1, 1986. CTDEP Industrial Survey.

16. Flood, Jim, Bovano, to Cochran, Margaret, CTDEP Hazardous Materials Section. September 13, 1990. Letter.

17. Nash, D., CTDEP, to Parker, E., CTDEP. April 3, 1991. Interdepartmental Message.

18. HRP Associates, Inc., under contract to Bovano. December 31, 1987. Hazardous Waste Compliance Documents.

19. Flood, Jim, Bovano to Pothier, Mary, CDM FPC, March 27, 1992. Personal Communication.

20. Flood, James, Bovano, to Cochran, Margaret, CTDEP. July 30, 1990. Letter and Analytical Results - First Round.

21. Flood, James, Bovano, to Cochran, Margaret, CTDEP. June 6, 1991. Letter and Analytical Results - Second Round.

22. Flood, James, Bovano, to Cochran, Margaret, CTDEP. June 14, 1991. Letter and Analytical Results - Third Round.

23. Cochran, Margaret, CTDEP, to Flood, James, Bovano. June 13, 1991. Letter.

24. Flood, James, Bovano, to Guest, David, EPA. September 5, 1991. Letter with MSDS sheets.

Appendix A

CDM FPC Personal Communication
Contact Logs and Reports

RFA CONTACT LOG

Facility Name: Bovano
Facility ID: CTD001179316

Name	Affiliation	Phone #	Date	Information
Margaret Cochran	CTDEP Hazardous Waste (Enforcement)	203-566-8256	6/6/91	See Contact Report.
Jim Flood	Bovano, Vice President and General Manager	203-272-3208	6/14/91	See Contact Report.
Lynn Clune	CTDEP Waste Management Section	203-566-4869	6/14/91	See Contact Report.
Margaret Cochran	CTDEP Hazardous Waste (Enforcement)	203-566-8256	6/19/91	See Contact Report.
Clerk	CTDEP Maps & Publication Sales		7/3/91	Need to send money order to receive copies of classification maps.
David Flood	Bovano, Owner	203-272-3208	7/2/91	Would have his son call me back. His son, Jim Flood was the only capable person to host an inspection and he was at home, ill from mononucleosis. (Jim Flood did not call back.)
Margaret Cochran	CTDEP Hazardous Waste (Enforcement)	203-566-8256	8/30/91	Faxed information relative to recent soil excavation.
Secretary	HRP Associates	203-793-6899	9/3/91	Gave report number to look for. She would have someone get back to me.
James Flood	Bovano, Vice President and General Manager	203-272-3208	3/27/92	See Contact Report.

CONTACT REPORT

AGENCY/AFFILIATION: Connecticut Department of Environmental Protection		
DEPARTMENT: Waste Management Division, Site Enforcement		
ADDRESS/CITY: 18-20 Trinity Ave., Hartford		
COUNTY/STATE/ZIP: Hartford County, Connecticut		
CONTACT(S)	**TITLE**	**PHONE**
1. Margaret Cochran	CTDEP Hazardous Waste (Inspector/Contact for Bovano)	203-566-8256
2.		
CDM FPC PERSON MAKING CONTACT: Mary Pothier		**DATE:** 6/6/91
SUBJECT: Contacts at the state for other RFAs.		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

Ms. Cochran offered to go through CDM FPC's list of sites which are to have RFAs in order to determine who is the contact person for each facility. The list of sites was faxed to her and she faxed back a completed list identifying the contact for enforcement information at the state level for each facility, complete with telephone numbers.

The fax number at her office is 203-566-4924, the CTDEP Waste Bureau.

CONTACT REPORT

AGENCY/AFFILIATION: Bovano		
DEPARTMENT:		
ADDRESS/CITY: 830 South Main Street, Cheshire		
COUNTY/STATE/ZIP: New Haven County, Connecticut, 06795		
CONTACT(S)	**TITLE**	**PHONE**
1. Jim Flood	Vice President and General Manager	203-272-3208
2.		
CDM FPC PERSON MAKING CONTACT: Mary Pothier		**DATE:** 6/14/91
SUBJECT: RCRA Facility Assessment		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

An introduction was made to Mr. Flood of the project and the task at hand including information on the intended Visual Site Inspection. Mr. Flood was immediately not agreeable to hosting the inspection. He stated further that he was incorrectly listed as a facility. He said he is seeking a status change under RCRA from a Treatment Storage Disposal (TSD) to a Generator only. He said that he was very close to the Small Quantity Generator status. He informed me that he was working with his congressman to "put an end to this ridiculousness". He referred me to Lynn Clune or Margaret Cochran at CTDEP for the information I needed.

He stated further that he had recently submitted a closure plan ("a month and a half ago") to Ms. Clune and is awaiting approval. He stated that his lagoon was closed under the state code and he was not intending to pay the facility fee due July 1, 1991.

CONTACT REPORT

AGENCY/AFFILIATION: Connecticut Department of Environmental Protection		
DEPARTMENT: Waste Management Section		
ADDRESS/CITY: 18-20 Trinity Ave., Hartford		
COUNTY/STATE/ZIP: Hartford County, Connecticut		
CONTACT(S)	**TITLE**	**PHONE**
1. Lynn Clune	CTDEP Waste Management Section	203-566-4869
2.		
CDM FPC PERSON MAKING CONTACT: Mary Pothier		**DATE:** 6/14/91
SUBJECT: RCRA Facility Assessment		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

Ms. Clune was contacted to follow up on Mr. Flood's suggestion/request that I talk to her or Margaret Cochran at CTDEP. Ms. Clune informed me that she was the recipient of Bovano's closure plan for the chemical storage area. She stated that she hadn't had time to review the plan and did not expect that Bovano would be exempt from the July 1, 1991 facility fee in Connecticut. Ms. Clune said that Bovano had stored trichloroethylene for greater than ninety days on "at least two occasions" that she knew about. She stated that she had conducted an inspection at Bovano in 1989.

Ms. Clune also reported that, according to her files, Bovano had filed for the status change (to Generator only) in 1987. Shortly thereafter, they were sent a Notice of Violation (NOV) from an inspection. After several years, an Administrative Order was filed (May of 1990) for not responding to the NOV. She stated that the enforcement action may have held up the status change. (In late 1988, file notes that EPA rejected the status change.) She did not know what the violation was, only that it was likely minor because a four-month compliance schedule was all that was needed.

Also, she stated that CTDEP had failed to notify Bovano of the need to submit a closure plan for the chemical storage area. She believed that Bovano probably fell out of the universe of facilities needing status changes because of the enforcement action. In 1990, Bovano was exempted from the facility fee. Bovano has submitted the closure plan.

CONTACT REPORT

AGENCY/AFFILIATION: Connecticut Department of Environmental Protection		
DEPARTMENT: Waste Management Division, Site Enforcement		
ADDRESS/CITY: 18-20 Trinity Ave., Hartford		
COUNTY/STATE/ZIP: Hartford County, Connecticut		
CONTACT(S)	**TITLE**	**PHONE**
1. Margaret Cochran	CTDEP Hazardous Waste (Inspector/Contact for Bovano)	203-566-8256
2.		
CDM FPC PERSON MAKING CONTACT: Mary Pothier		**DATE:** 6/19/91
SUBJECT: Bovano compliance issues.		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

Ms. Cochran informed me that the closure plan for the chemical storage area was required because the facility had stored hazardous waste for greater than ninety days on two known occasions. She stated that she did not know anything specific to the status change denial. She did not know much about the site before 1990.

She stated that with respect to the May 1990 order, Bovano was in compliance with all of the steps. Basically, the order requested a hazardous waste determination for the enamel being discharged to ambient air with a noticeably gray patch of soil showing lead contamination. Bovano (although not required as part of the order) offered to clean up the soil. Bovano was given approval by the CTDEP to dispose of the 20 cubic yards at a local landfill to be used as cover material. When Bovano removed 10 cubic yards and had some testing conducted, the results showed higher contamination than the source material. She theorized that the process at the time previous was using a material with a much higher lead content. At any rate the whole enamel process was reorganized and it occurs inside.

She stated that traces of other metals were also found in soil contamination. She noted further that the site was reportedly on an old Barium mine and did not know what background concentrations were expected to be. She had referred the site to the Water Compliance and Site Remediation Divisions in CTDEP but that this site was not a priority for either section.

She stated that Bovano had four wells to her knowledge and they were not for monitoring. [There are actually six.] As far as she knew, the lagoon was never hazardous. She did not know anything of trichloroethylene (TCE) contamination coming from Bovano. She would fax a copy of the Inspection Report explaining the change in the enamel process.

CONTACT REPORT

AGENCY/AFFILIATION: Bovano		
DEPARTMENT:		
ADDRESS/CITY: 830 South Main Street, Cheshire		
COUNTY/STATE/ZIP: New Haven County, Connecticut, 06795		
CONTACT(S)	**TITLE**	**PHONE**
1. Jim Flood	Vice President and General Manager	203-272-3208
2.		
CDM FPC PERSON MAKING CONTACT: Mary Pothier		**DATE:** 3/27/92
SUBJECT: RCRA Facility Assessment		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

Spoke with Mr. Flood to follow up on some questions which arose after the preparation of the draft RFA Report.

Mr. Flood explained the difference between enameling and lacquering processes at the Bovano facility. The lacquer is a protective coating that is applied to the metal parts by a paint brush. He emphasized that there is no painting involved. The enameling process involves applying a food-additive substance, similar to that which is used to make gelatin gel, to the metal parts by spraying; then sifting glass powder on the parts which is adhered by the gel-like substance; then baking the product in an oven. Mr. Flood pointed out that the glass powder is purchased already colored, no coloring is done at the facility.

He stated that the current plastic wastewater holding tanks are two 1,000-gallon capacity tanks. However, the facility uses only 1,500 to 1,800 gallons total before EWR picks up the waste for disposal. The wastewater is not held over 90 days. Approximately 300 gallons of the 1,500 to 1,800 gallons is etchant wastewater.

He recalled that the office building was still discharging sanitary waste to the leachfield north of the building.

He stated that there is a Shell Gas Station across the street from his property.

He reported that he ships the overgenerated cupric chloride waste as waste codes D002 and D007.

He estimated that Bovano discontinued the treatment of wastewater with sodium hydroxide circa 1985/86.

He clarified that there were two spray booths in the area near the Bright Dip. One was being used currently and was hooked up to the baghouse on the roof. The other eight booths used in the Enameling Area are also hooked up to the baghouse on the roof. The baghouse collector was designed by D.C. Dust Control under contract to an engineering consultant for Bovano. He explained the system to be approximately 150 to 200 tubes, 10 to 12 feet long which served as filters for the exhaust prior to discharge to ambient air.

He confirmed that the contaminated soil pile in the parking lot was removed in January 1992. The removal was done by Excavation Technologies, Inc. and the CTDEP was aware of the results. He also confirmed that all of the contaminated soil was removed and the area was tested after the second excavation.

CONTACT REPORT

AGENCY/AFFILIATION: Chesprocott Health District		
DEPARTMENT:		
ADDRESS/CITY: Main Street, Cheshire		
COUNTY/STATE/ZIP: New Haven, Connecticut, 06795		
CONTACT(S)	**TITLE**	**PHONE**
1. Patrick Accardi	Director	203-272-2761
CDM FPC PERSON MAKING CONTACT: Tara Abbott Taft		**DATE:** 7/23/91
SUBJECT: Groundwater		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

The Chesprocott Health Department keeps files on all private wells within the Chesprocott area. The department was formed in 1976. The files are organized by street address.

The files are open Monday through Friday from 8:30 am - 4:30 pm. Mr. Accardi suggests starting a file search with a review of the 1984-1985 Groundwater Study before looking in the files.

A study was done on West Johnson Avenue due to the 10-acre Airpax Superfund site, which is located south of Bovano, approximately 8 miles away. Groundwater was found contaminated with trichloroethylene, tetrachloroethylene, benzene, toluene, and xylene.

CONTACT REPORT

AGENCY/AFFILIATION: South Central Regional Water Authority		
DEPARTMENT:		
ADDRESS/CITY: 90 Sargent Drive, New Haven		
COUNTY/STATE/ZIP: Connecticut, 06511		
CONTACT(S)	**TITLE**	**PHONE**
1. Ken Scov		203-562-4020
2.		
CDM FPC PERSON MAKING CONTACT: Tara Abbott Taft		**DATE:** 7/23/91
SUBJECT: Drinking Water Supply		
SITE NAME: Bovano		**EPA ID#:** CTD001179316

The South Central Regional Water Authority has two wellfields which serve the Town of Cheshire. The North Wellfield consists of three wells; the South Wellfield consists of two wells.

Groundwater is pumped from the wells through aeration towers and back into a "clean well" (storage tank), then pumped into the system on demand. The system is blended and serves approximately 20,000 people in Cheshire only.

The treated water is tested twice per week for a variety of contaminants including bacteria, color, turbidity, etc. "Raw" water is tested on a daily basis. Both treated water (twice per week) and raw water (once per week) are also tested for volatile organics.

Due to 1,1,1-trichloroethane (TCA) contamination detected around 100 parts per billion (ppb) in the 1970s, aeration towers were installed in the early 1980s. TCA is detected in raw water (at 10 to 30 ppb) but not in treated water. (Note that TCE contamination was also found in the wellfield in the 1980s).

Appendix B

Visual Site Inspection Trip Report

TRIP REPORT
RCRA FACILITY ASSESSMENT
VISUAL SITE INSPECTION, AUGUST 29, 1991
BOVANO
CHESHIRE, CONNECTICUT

CDM FPC PERSONNEL CONDUCTING INSPECTION: MARY POTHIER, SITE MANAGER		
CDM FPC FIELD PERSONNEL: TARA ABBOTT TAFT, JOE TARANTINO		
EPA PERSONNEL IN ATTENDANCE: DAVID GUEST		
FACILITY NAME: BOVANO		**EPA ID#:** CTD001179316
FACILITY REPRESENTATIVE(S):	**TITLE:**	**PHONE:**
JIM FLOOD	VICE PRESIDENT	(203) 272-3208
WORK ASSIGNMENT: MULTI-SITE RFA/R01023		

CDM FEDERAL PROGRAMS CORPORATION (CDM FPC) conducted a Visual Site Inspection (VSI) of the Bovano facility in order to identify Areas of Concern (AOCs), to complete data gaps in facility operations, and to observe any potential areas for corrective action. Photographs were taken throughout the inspection; see Appendix F of the RCRA Facility Assessment (RFA).

The following AOCs were identified during the VSI: the two wastewater holding tanks, the former concrete holding tank, the former chemical storage areas, the former subsurface leachfields (3), the former degreaser, the former lagoon, the dry well, the two etching machines, the bright dip process line, the former application booths, the former loading dock, the excavated contaminated soil.

The following information was obtained during the VSI:

Processes at the facility have been modified in order to minimize waste and ultimately lower the cost of disposal. Bovano has been at this location since 1955. The Vice President of the facility, Mr. Jim Flood, escorted the field team for this inspection (reluctantly).

The facility's current status is that of a Treatment/Storage/Disposal facility. The facility applied for a status change to generator only in 1987. The CTDEP informed Mr. Flood that he would have to close the Chemical Storage Area. Mr. Flood submitted a closure plan and is awaiting approval.

We began the inspection downstairs from the office in the lacquer room where the products are lacquered. Next, the Welding Area was inspected. This is the area where the lacquer jobs are inspected using oxy-acetylene welding torches. We walked through the Buffing Area where a buffing machine was situated before entering the Old Machine Shop, where unused machinery is stored. This area was also the location for the pottery area before exiting the office building.

We visited the Assembly room and the Finishing room as we entered the factory building. The Enamel room is located in the factory building along the north wall. There are several booths along the wall for application of the glass powder prior to baking. The colored glass is purchased from Thompson Enamel, out of Cleveland, Ohio, and stored in small glass jars throughout this area. The glass powder is sifted onto the copper parts which have already been coated with a gelatin-like "glue" (reportedly, a food additive substance similar to the gel that makes gelatin) from a spray gun. This process used to be done with spray guns for the glass powder, but the facility recently changed to the sifting technique. The excess from the top application is recovered and applied to the bottom of the piece. The sifting technique is more expensive - takes longer to do - but less waste is generated.

The glass powder does have hazardous constituents. Mr. Flood believes that it contains lead and cadmium. A Material Safety Data Sheet (MSDS) sheet was requested by the field team (The MSDS is attached to this Trip Report). These processes use approximately one 55-gallon drum of gelatin-like "glue" per year.

We entered the Assembly area, which is the location of the Chemical Storage Area for which the facility submitted the closure plan. The facility submitted the closure plan in May of 1991. This area had a concrete floor in fair condition and cinder block walls, which were in fair condition. There were some drums of metal waste which were to be recycled. The chemical storage area used to store spent ferric etchant and spent degreaser trichloroethylene (TCE). The former storage location for chemicals was located in the barn. The ferric chloride waste was picked up by Environmental Waste Resources (EWR), out of Waterbury, Connecticut, on request by the facility (i.e. when there was enough to haul away). The spent TCE was retrieved by Hubbard Hall Chemical, also out of Waterbury. The former chemical storage area was used from 1981 to 1984 (1986?).

We entered the Etching area and inspected the two etching machines and the 1,500-gallon concrete tank now lined (not clear since when) and the two 1,000-gallon double-walled storage tanks located in the concrete tank (currently being used as secondary containment). Mr. Flood pointed out the location of the piping to the former lagoon and dry well (reportedly no longer in use).

Mr. Flood explained that prior to 1982, the concrete tank was used to collect the wastewater from the etching (ferric chloride) where it was treated with sodium hydroxide before the sludge was discharged to the lagoon while the wastewater was discharged to the dry well. After 1982, the waste was collected in the concrete tank where it was held and treated with sodium hydroxide. EWR pumped the contents of this tank, which included the bright dip waste water.

Since 1988, the waste has been piped to one of two 1,000-gallon holding tanks until it is picked up by EWR.

The etching machines formerly used ferric chloride. At one time the facility drummed the ferric chloride etchant and stored it in the chemical storage area before it was picked up by EWR. The machines currently use cupric chloride which is regenerated; any overgenerated waste is stored in the holding tanks where it is treated prior to pick up.

The sodium hydroxide is stored in the corner of the Etching area.

We entered the Rinse area next. The bright dip process line was along the south wall. This dip consists of sulfuric and nitric acid. These tanks are reportedly never cleaned out, merely added to. The rinsewater from this line had been going to the lagoon, then the tank, and now the storage tanks, similar to the etchant, (with the exception that records indicate that the acid baths were discharged to the leachfield behind the office prior to 1976.

Two former application booths are located near the Bright Dip area. There were formerly used for spraying associated with glass enameling. One is currently not used; the other is used for the sifting of glass frit for the enameling process. The booth used for sifting discharges to the new baghouse collector on the roof. As a result of emissions from these application booths, the facility had to excavate 20 cubic yards of material, which is now being stored on site and is awaiting removal (The pile was disposed off-site on January 1992). All the booths for current application of glass powder via sifting also discharge to the baghouse on the roof.

Next, we observed the former degreaser which held heated TCE. The degreaser was dismantled, and a metal bin was located on it. Mr. Flood could not recall if TCE was stored here.

Outside, we observed the lagoon area and the dry well area. The dry well still exists but appears to have been filled to some extent. The area of contaminated soil excavation was observed as was the location of the bedrock drinking water well. The well is still used by the facility and Mr. Flood claimed that he had the water tested and it was acceptable. New Haven Water Company did the collecting. We viewed the monitoring well locations and walked to the Mill River.

Mr. Flood informed the field team that he recently (1989) had two 1,000-gallon underground oil tanks removed.

At 1145, the CDM FPC field team exited the facility. A request was made for the MSDS sheets of the materials currently used at the facility. Mr. Flood agreed to send them. Mr. Flood also requested a copy of the photos. Mr. Guest informed Mr. Flood of the process by which he could request information about the RFA from the EPA.

Lead Free Frit

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)* CAS 65997-18-4*
Lead Free Jewelry Enamels (Frit)

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Thompson Enamel	Emergency Telephone Number 1-606/291-3800
Address *(Number, Street, City, State, and ZIP Code)* 650 Colfax Ave. Bellevue, KY 41073	Telephone Number for Information 1-606/291-3800
	Date Prepared June 5, 1986
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optional)*

Although these products contain some elements which have low LTV valves as soluble metal ions, these frits are formed at high temperatures and do not necessarily have any of the properties of their component oxides or metals.

Section III — Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H_2O = 1)	>2.0
Vapor Pressure (mm Hg.)	N/A	Melting Point	>850°F
Vapor Density (Air = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	0%

Solubility in Water 0%

Appearance and Odor
Odorless Glass

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
None	None	N/A	N/A

Extinguishing Media
None

Special Fire Fighting Procedures
None

Unusual Fire and Explosion Hazards
None

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid: None
	Stable	X	

Incompatibility (*Materials to Avoid*): None

Hazardous Decomposition or Byproducts: None

Hazardous Polymerization	May Occur		Conditions to Avoid: None
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Yes Skin? No Ingestion? Yes

Health Hazards (*Acute and Chronic*): Alkali boro silicate glass. 15 mg/M^3 for inert or nuisance dust.

Carcinogenicity: None NTP? N/A IARC Monographs? N/A OSHA Regulated? No

Signs and Symptoms of Exposure: Dust may irritate eyes. Prolonged exposure may cause irritation to respiratory track.

Medical Conditions Generally Aggravated by Exposure: Not known

Emergency and First Aid Procedures: Remove to dust free fresh air. If irritation develops, call a physician.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled: If not contaminated, scoop up and use. If contaminated, sweep up and discard in suitable container.

Waste Disposal Method: Dispose according to Federal, State, and Local regulations.

Precautions to Be Taken in Handling and Storing: Wear appropriate respirator if 15 mg/M^3 working conditions are exceeded.

Other Precautions:

Section VIII — Control Measures

Respiratory Protection (*Specify Type*): Use NIOSH approved dust respirator.

Ventilation	Local Exhaust: Adequate for dust control.	Special: None
	Mechanical (*General*): Vent dust to collector.	Other: None

Protective Gloves: Use judgement - use work gloves

Eye Protection: Use judgement - avoid getting enamel in eyes.

Other Protective Clothing or Equipment: Be clean and neat. Wear clean clothes.

Work/Hygienic Practices: No eating or smoking when using enamel.

★ U.S.G.P.O.: 1988-491-529/45775

Appendix C

Site Geology Description

* Excerpted from TRC Report: Untitled, investigation of Bovano, 1982 (5) and from NUS Report: Final Site Screening Inspection, 1989. (2)

2.0 SITE GEOLOGY

The underlying bedrock at the Bovano site is a coarse-grained variety of the sedimentary rocks known as the New Haven Arkose. The New Haven Arkose is typically a conglomeratic arkose and arkosic siltstone (Fritts 1963). The bedding of this bedrock unit all dip toward the east at an angle of between 10-20 degrees. Bedrock mapping of the Mt. Carmel Quadrangle (Fritts 1963) does not indicate any faults, intrusions or other unconformities in the vicinity (less than 1/2 mile) of the Bovano property.

Bedrock surface contours as mapped by Halni 1974 indicate that the bedrock surface slopes to the west at a slope of approximately 0.038 ft/ft in the vicinity of the site.

Depth to Bedrock maps of the Mt. Carmel Quadrangle (Handman et al, 1975) indicate the depth of unconsolidated sediment over bedrock increases in a westerly direction across the Bovano property from approximately 25 feet to over 100 feet.

Backhoe test pits conducted on site indicated that the unconsolidated sediments underlying the Bovano property consist primarily of a stratified drift of coarse sand and gravel with some alluvial deposits along the banks of the Mill River.

*TRC

In December 1985, Suburban Excavators of Cheshire removed the sludge lagoon and material from the drywell. EWR of Waterbury, Connecticut, transported the material offsite. Three cubic yards of soil from the chemical storage area was also removed by Suburban Excavators and disposed of at the Cheshire Landfill (Flood, 1985).

A summary of events pertaining to the facility after the excavation is listed chronologically below:

7/86-8/86	Additional soil from the former lagoon, drywell and storage area was excavated; composite soil samples were collected by TRC.
10/1/86	Personnel from the CT DEP conducted a follow-up inspection of the facility. Personnel were satisfied that all contaminated soil had been removed, but discovered approximately thirty 55-gallon drums of ferric chloride etchant waste improperly stored on a concrete base with no berm to contain potential spills. The drums were subsequently taken offsite by EWR (CT DEP, 1986a).
10/9/86	The CT DEP permitted the president of Bovano's to fill the former sludge lagoon with clean fill. The DEP also suggested that a containment berm be constructed around the concrete loading dock on which the drums were stored (CT DEP, 1986b).
2/87	A RCRA inspection of the facility was conducted by the CT DEP. The following violations were noted: insufficient contingency plan and inspection requirements, improper use and management of containers, and incorrect RCRA status (CT DEP, 1987a, 1987b).
6/87	Bovano's established inspection and waste-shipping logs, and moved all existing drums of waste ferric chloride etchant and acid from the loading dock to inside the factory building (Flood, 1987).
9/87	The CT DEP did not approve the contingency plan and felt that training was still inadequate (Zampaglione, 1987).
1/88	HRP Associates submitted a contingency plan, inspection plan and RCRA training documents to the CT DEP on behalf of Bovano's (HRP Associates, 1988). The DEP subsequently approved the plans and stated that an upcoming, unannounced compliance inspection would be conducted to verify proper management (Zampaglione, 1988). However, no inspection had taken place as of September 25, 1989 (Oliverio, 1989b).

* NUS report

ENVIRONMENTAL SETTING *

The topography of the Cheshire area is hilly, sloping gently south. The area is located within the Central Lowland of Connecticut (Flint, 1962). Land use in the area is primarily residential but is highly commercialized in the immediate vicinity of Bovano's (NUS/FIT, 1989).

Locally, the bedrock surface is approximately 100 feet below the ground surface (Halni, 1974). The underlying bedrock is a coarse-grained variety of sedimentary rock known as the New Haven Arkose. The New Haven Arkose consists of pinkish, gray and red arkosic sandstone and conglomerate, with interbedded layers of red siltstone. These rocks are variably and irregularly stratified. Associated with the arkose are bodies of Late Triassic Age diabase and basalt, which constitute igneous intrusions in the sedimentary rocks. The intrusive rocks are greenish black to bluish black and are massive with well developed columnar jointing (Flint, 1962).

The bedding of the New Haven Arkose unit dips toward the east at an angle of 10-20 degrees. Bedrock maps of the Mt. Carmel Quadrangle do not indicate any faults, intrusions or other unconformities within 0.5 miles of the Bovano's property (Fritts, 1963; TRC, 1982). Bedrock surface contours indicate that the bedrock surface slopes gently to the west (Halni, 1974; TRC, 1982).

The thickness of the unconsolidated sediment increases in a westerly direction across the Bovano's property from approximately 25 feet to over 100 feet (Handman et al, 1975; TRC, 1982). Backhoe test pits conducted on the property indicate that the unconsolidated sediments consist primarily of a stratified drift of coarse sand and gravel with some alluvial deposits along the banks of the Mill River (TRC, 1982).

Groundwater flows in a southeasterly direction underneath the Bovano's property (TRC, 1982). Groundwater in the area of Bovano's is classified as GB/GAA under the State of Connecticut Water Quality Standards. This class denotes groundwater that is not suitable for direct human consumption without treatment. The goal of the State is to restore the groundwater to drinking water quality (CT DEP, 1989). Within four miles of Bovano's, the groundwater is used as a drinking water supply for the towns of Cheshire, Prospect, and Hamden, Connecticut (Oliverio, 1989c). The majority of wells draw water from the bedrock (Flint, 1962). There are eleven private wells located on Hemlock Ridge and Oak Avenue which are approximately 2.5 miles northwest of the facility (NUS/FIT, 1988). Municipal supply wells are located within four miles north and 0.9 miles south of Bovano's. These two interconnected wells are known as the North Cheshire and South Cheshire wellfields, respectively, and serve a total population of approximately 19,000 residents (NUS/FIT, 1988; CT DEP, 1986c). In 1982, the Chesprocott Health District detected TCE at a concentration of 270 parts per billion (ppb), as well as lower concentrations of other volatile organic compounds, in the South Cheshire wellfield (DeNicola, 1985; Kasten, 1986). The wells were subsequently taken out of service; the wells were used for 20 days in 1982, 60 days in 1983 and 70 days in 1984. An air stripping aeration treatment system was installed on July 9, 1985 (Oliverio, 1989d). All wells in the South Cheshire wellfield are currently active (Oliverio, 1989e). Volatile organic data for the South Cheshire wellfield covering the period 9/82 -2/89 are presented in Attachment A. In addition, annual results of inorganic monitoring of the South Cheshire wellfield covering the period 1985-1988, are also included in Attachment A.

Other community wells located within four miles of the Bovano's property include the following:

COMMUNITY WELL	DISTANCE/DIRECTION	POPULATION SERVED
Crestview Apartments	0.7 miles/east	84
Mansion House Apartments	0.3 miles/southeast	80
Sleeping Giant Wellfield	3.0 miles/south	unknown
Harmony Acres Mobile Home Park	2.8 miles/west	395
Greenshire School	3.8 miles/northwest	unknown
Prospect Restorative Health Center	4 miles/west	150

(CT DEP, 1982b, 1986c)

In general, surface water drainage from the Bovano's property is to the southeast toward the Mill River. The Mill River, which forms the eastern property boundary, flows into Lake Whitney approximately six miles south of Bovano's. The Mill River is used for recreation such as canoeing; reportedly, people fish along the riverbank (Oliverio, 1989c). In addition, the Mill River is classified as B/AA under the State of Connecticut Water Quality Standards. This class represents surface water that is suitable for recreation and as a fish and wildlife habitat (CT DEP, 1989). Lake Whitney is used solely as a public drinking water supply for a portion of the Town of Hamden; no recreational activities are permitted (Oliverio, 1989c). From Lake Whitney, the Mill River continues on a southerly course for approximately two miles and discharges into New Haven Harbor. New Haven Harbor then merges with Long Island Sound.

Sensitive environments located downstream of the facility include two state forests and many wetlands (USGS, 1984a, 1984b, 1984c, 1984d). The majority of the wetlands are located along the Mill River and are less than one acre in size. The wetlands are generally classified as palustrine and either open water or forested (USGS, 1980). The closest wetland to Bovano's is located on the easternmost section of the property and is approximately 0.5 acres in size (NUS/FIT, 1989).

end

RESULTS

In September, 1982 TRC Environmental Consultants, Inc. (TRC), installed and sampled four groundwater monitoring wells on the Bovano's property. Both TCE and copper were detected in groundwater onsite. TCE was detected at 1,220 ppb and copper at 10.2 parts per million (ppm) in groundwater collected from location GW-02 (Figure 2; TRC, 1982). In June, 1984 two additional monitoring wells were installed and groundwater samples were collected. TCE was detected at 34 ppb in groundwater collected from location GW-02, and was detected at 50 ppb in groundwater collected from location GW- 03 (Figure 2) (TRC, 1984). Onsite groundwater samples collected by the Connecticut Department of Protection (CT DEP) on May 7, 1985, showed TCE levels had dropped to 6 ppb in groundwater from location GW-02 (Stevens, 1985). Weekly monitoring at the South Cheshire wellfield indicates that TCE levels have decreased from 250 ppb in September, 1982 to 5 ppb in January, 1989 (SCCRWA, 1989). The results of weekly monitoring at the South Cheshire wellfield covering the period 9/82 -2/89, are provided in Attachment A. In addition,annual results of inorganic monitoring of the South Cheshire wellfield covering the period 1985-1988, are also included in Attachment A.

In December 1985, the sludge lagoon, material from the drywell, and three cubic yards of soil from the chemical storage area were excavated and removed. At this time, TRC collected a composite soil sample from the remaining ground of the lagoon; copper was detected at 10.6 ppm (EP Toxicant method) (Zlotnick, 1986a). TRC collected samples again in 1986, after additional soil from the former lagoon, drywell and storage area was excavated. A composite soil sample was collected from the bottom and corners of the re-excavated sludge lagoon and was analyzed for copper. A composite sample was also collected from the storage area and was analyzed for TCE. Copper was detected at 1.13 ppm (EP Toxicant method) and TCE was detected at 1,570 ppb (Zlotnick, 1986b).

On May 10 and 11, 1989, NUS/FIT personnel conducted soil and groundwater sampling on the Bovano's property. A total of seven soil samples and five groundwater samples were collected, including one blank, one duplicate/replicate and one background sample for each medium (Table 1; Figure 2). All samples were analyzed for volatile organic compounds and inorganic elements. Groundwater samples collected for volatile organic analysis, were analyzed through the NUS/FIT Screening Program; these results are presented in Table 2 (Attachment B). Soil samples collected for volatile organic analysis and all samples collected for inorganic element analysis were analyzed through the Contract Laboratory Program (CLP). Results for these analyses are presented in Tables 3 through 5 (Attachment B). Sample detection limits for aqueous samples are presented on the analytical results tables; sample detection limits for soil samples are presented in Tables 6 and 7 (Attachment C). All soil sample results are reported on a dry weight basis.

Note that sample results qualified by a "J" on the tables are considered approximate due to limitations identified during the quality control review.

VOLATILE ORGANIC COMPOUNDS:

No volatile organic compounds were detected above the quantitation limit of 5 ppb in any of the aqueous samples collected. TCE was detected at the 5 ppb quantitation limit in the groundwater sample collected from location GW-02. The location of this monitoring well is upgradient of the

Appendix C

Site Geology Description

Note: No existing information could be found at this writing to document environmental settings.