02-8906-08-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
METHODE ELECTRONICS, INC.
WILLINGBORO, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8906-08
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

SEPTEMBER 8, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

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240409

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. **Site Name/Alias** Methode Electronics, Inc.

   Street One Industrial Park

   City Willingboro **State** New Jersey **Zip** 08046

2. **County** Burlington **County Code** 005 **Cong. Dist.** 13

3 **EPA ID No.** NJD048608897

4. **Latitude** 40° 01' 50" N **Longitude** 74° 54' 48" W

   USGS Quad. Beverly, PA-NJ

5. **Owner** Methode Electronics, Inc. **Tel. No.** 312-867-9600

   Street 7447 W. Wilson Ave.

   City Chicago **State** Illinois **Zip** 60656

6. **Operator** Methode Electronics **Tel. No.** 609-871-3500

   Street One Industrial Park

   City Willingboro **State** New Jersey **Zip** 08046

7. **Type of Ownership**

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other _____

8. **Owner/Operator Notification on File**

   ☒ RCRA 3010 Date 8/7/80 ☐ CERCLA 103c Date _____
   ☐ None ☐ Unknown

9. **Permit Information**

Permit	Permit No.	Date Issued	Expiration Date	Comments
NJPDES/SIU	0054135	Unknown	Unknown	Allows Discharge as SIU to Willingboro MUA.

10. Site Status

☒ Active ☐ Inactive ☐ Unknown

11. Years of Operation December 15, 1969 to Present

12. Identify the types of waste units (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Management Areas

Waste Unit No.	Waste Unit Type	Facility Name for Unit
1	Drums	Drum Storage Area
2	Tanks	Spent Etchant Tanks

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

On March 20, 1980, an inspection by New Jersey Department of Environmental Protection (NJDEP) personnel was made as a follow-up to a complaint which alleged that unknown liquids were being discharged from the facility to nearby storm sewers. The investigation concluded that there was no discharge, but badly corroded drums were observed.

On December 16, 1988, the NJDEP reported that grain filler, which is 81 percent methyl chloride; and lacquer thinner, which contains 100 ppm toluene, 200 ppm methyl ethyl ketone, and 750 ppm acetone, was being evaporated improperly to dispose of these wastes. A subsequent investigation, on December 28, 1988, verified that these evaporation activities were occurring. A Notice of Violation (NOV) was presented for this violation during the December 28, 1988 inspection. The violation consisted of evaporating 3 to 4 gallons per month of the material. By January 20, 1989, the activity had ceased and Methode returned to compliance.

Treatment tanks are used for pretreatment of wastewater prior to discharge to the Willingboro Municipal Utility Authority sewer system. This system is regulated by NJPDES Permit No. 0054135.

On July 6, 1989, NUS Corporation Region 2 FIT personnel observed some pallets and debris on the perimeter of the parking lot during an off-site reconnaissance inspection. While unsightly, these materials did not appear to have any environmental significance.

13. Information available from

Contact Amy Brochu Agency U.S. EPA Tel. No. (201) 906-6802

Preparer James C. Frost Agency NUS Corp. Region 2 FIT Date August 31, 1989

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 1 - Drums, Drum Storage Area

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

While no copy is currently available, Methode apparently filed a Part A Permit application on November 17, 1980. The exact age of the waste unit is unknown; however, it is assumed that the unit has been in operation since 1964, when the facility opened. Observations of drums have been made as early as March 20, 1980. Methode, a manufacturer of printed circuit boards, has had a long history of activities concerning its RCRA regulated facilities. On September 16, 1981, an inspection by the NJDEP cited Methode for: not providing the date of accumulation for wastes stored in drums; not submitting an exception report for a missing manifest; not submitting a contingency plan to local authorities; and not providing a written closure plan. A copy of the missing manifest was submitted the same day, thus correcting that problem. A NOV was recommended; whether it was sent is unknown. A January 25, 1982 inspection did not indicate that there were any violations and the NJDEP apparently was waiting for Methode to revise its permit application.

On July 7, 1982, Methode informed the U.S. EPA of changes it intended to make in its permit application. The revisions had to do with classifications made in the regulations at to what constituted hazardous wastes from plating bath solutions. This resulted in significant changes in the volume of hazardous wastes claimed to be generated. On July 14, 1982, Methode requested a 60 day extention of time to submit its documentation on compliance with financial and liability requirements.

On January 7, 1983, Methode was sent an NOV for failure to submit an annual report. Since no follow-up records appear in the file, it is presumed that Methode submitted the report and met the requirements for report submission. On February 9, 1983, Alexander and Alexander (Methode's insurance underwriter), submitted documentation supporting Methode's compliance with financial and liability requirements. On February 14, 1983, Methode submitted further documentation of compliance. An August 2, 1983, an inspection by the NJDEP indicated problems with closure plans and financial responsibility requirements. On October 20, 1983, Methode sent further information regarding its financial and liability compliance efforts. The August inspection resulted in an NOV from the NJDEP on November 16, 1983, which cited failure to provide financial assurance for closure and post-closure of the facility and fianancial responsibility for claims from sudden and non-sudden occurrences. On February 23, 1984 the NJDEP sent a letter to Methode stating that financial requirements had been met; except that an endorsement had to be revised to reflect compliance with appropriate state regulations.

On December 13, 1983, Methode filed a formal revised permit application with the U.S. EPA , which was similar to its July, 1982 filing, except more complete. This revision significantly changed the types and quantities of hazardous wastes claimed to be generated by the facility.

On May 17, 1985, the NJDEP indicated that Methode was no longer in compliance with liability requirements since Methode's insurance policy had expired. Compliance could be attained by providing evidence of current coverage.

On June 18, 1986, another NJDEP inspection of Methode's facilities was conducted. No problems could be found and the inspector did not issue any NOV's during his visit.

On May 21, 1987, the NJDEP informed Methode that it must submit an entire new Part A permit application to reflect revisions in the regulations made by the State of New Jersey. As a result of this letter, a phone call to the NJDEP was made by Methode to file the application. The call resulted in an inspection by the NJDEP on June 18, 1987. During the inspection, Methode indicated that it would be filing a delisting request. The NJDEP informed Methode that a closure plan and compliance documentation for generators would have to be submitted.

The closure plan was submitted on October 15, 1987 and resulted in an inspection by the NJDEP on November 25, 1987. The inspection noted the following violations: signs for no smoking and warning signs were not posted; sufficient aisle space was not provided in the drum storage area; and many of the drums were not appropriately labeled. A RCRA Land Disposal Restriction Inspection conducted by the NJDEP on January 29, 1988, concluded that Methode stopped using and eliminated certain solvents replacing them with water based products.

On March 4, 1988, the NJDEP sent a Closure Plan Review Letter to Methode outlining several areas of concern. Those concerns were: the volume of hazardous waste stored in the storage tanks; the design specifications for each storage tank; provision of automatic cut-off valves for those tanks that store ignitable or reactive wastes; provision for secondary containment; provision for draining or direct pumping of at least 99 percent of the tank's volume; provision to empty the tanks every 90 days; and informaiton on the wastewater treatment facilities. The requested information was submitted to the NJDEP on March 30, 1988 as a revised Part A permit application.

On March 16, 1988, Methode sent simultaneous letters to the NJDEP and the Willingboro Fire Department indicating the status of inspections, and requesting semi-annual inspections by the Fire Department. The NJDEP responded on March 21, 1988, indicating that Methode was deficient on local fire company inspections but that certain exemptions were available. On May 10, 1988, Methode confirmed that inspections had been arranged with the Willingboro Fire Department.

On December 28, 1988, an NJDEP inspection revealed that Methode was evaporating about 3 to 4 gallons of waste lacquer thinner per month, and that this operation was in violation of hazardous waste regulations. A NOV was written by the inspector at the time of the inspection. Methode indicated during the inspection that they would immediately drum this waste and manifest it with the rest of the waste from the facility. On January 4, 1989, Methode confirmed that arrangements had been completed to comply with applicable regulations for handling of this waste . A January 11, 1989, NJDEP inspection revealed that Methode was still using the evaporation method to dispose of its waste lacquer thinner. The system previously purchased to replace the evaporator was found to be defective and had to be returned to the manufacturer. For corrective action a follow-up inspection was planned by the NDJEP. The follow-up inspection was conducted on January 20, 1989 and Methode was found to be in compliance with the requirements cited in the NOV. On January 30, 1989, the NJDEP recommended no further action against Methode based upon its compliance with the NOV.

On May 11, 1989 Methode requested inspections by local fire authorities for 1989. No response to this request is currently on file.

2. Describe the location of the waste unit and identify clearly on the site map.

According to Methode, drums are stored in the storage area located at the northern corner of the building. Drums were also observed on the northern edge of the parking lot. The location of the drums is shown on the site map.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

Since 1980, the NJDEP has made 5 inspections of the facility and has observed many different kinds and quantities of wastes at the site. Quantities have ranged from 45 to 75 drums. On the following dates, the following quantities of drums have been observed:

Date of Inspection	Drums observed
March 20, 1980	75
September 16, 1981	45
January 25, 1982	*
August 2, 1983	46
June 18, 1986	73

* This inspection did not identify the number of drums on site, only the quantity of wastes generated per month, which amounted to about 17 drums per month.

Methode first estimated its drum storage process design capacity as 6,800 gallons in its December 13, 1983 revised permit application. In the March 30, 1988 application, Methode revised this figure to 3,850 gallons. There were 8-10 drums which were observed during the NUS Corp. Region 2 FIT off-site reconnaissance, on the perimeter of the parking lot.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

Wastes in this unit were usually liquids; however, solids and sludges from the wastewater pretreatment facilities and copper sulfate crystals have been observed.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

On June 18, 1986, NJDEP personnel observed 10 gallons of 1,1,1-trichloroethylene (TCE), 1 drum of waste oil, 9 drums of copper sulfate crystals, 3 drums of isopropyl alcohol with lead, 4 drums of alkaline cleaning solution, 2 drums of citric acid, 2 drums of fluorboric acid, 1 drum of ammonium bichloride (glass etch), 2 drums of dilute sulfuric acid, 1 drum of alkaline stripping solution, 4 drums of hydrochloric acid, 14 drums of acid copper plating bath, 6 drums of nitric acid, 13 drums of sulfuric acid and peroxide, 3 drums of pyrophosphate copper plating bath, 4 drums of 90 percent sulfuric acid, and 4 drums of hydrochloric acid and stannous chloride. Also, spent peanut oil, alkaline ammonium solution, solidfied copper/carbon solids, metal hydroxide sludge, spent 1,1,1-trichloroethane, wastewater treatment plant sludge, fuse coat, and pyrocopper have been observed. The contents of the drums observed during the NUS Corp. Regin 2 FIT off-site reconnaissance are unknown.

It should be noted that in its 1983 Part A Permit application, that Methode had listed the following coded wastes: D000 (unknown), F006 (wastewater treatment plant sludges), F007 (spent cyanide plating bath solutions), F009 (spent stripping and cleaning bath solutions from electroplating operations), U002 (acetone), U122 (formaldehyde), U220 (methyl benzene), and U226 (methyl chloroform or 1,1,1-trichloroethane). In 1988, when resubmitting its Part A permit application for the second time, Methode stated it had the following wastes: D002 (corrosives), F006 (wastewater treatment plant sludges), F007 (spent cyanide plating bath solutions), X726 (unknown), D008 (lead), and D001 (ignitables).

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

The drum storage area is located on a concrete pad outside of the building. It is unknown whether this pad has any retaining walls to hold the contents of the drums. Drums on the perimeter of the parking lot were not provided with any containment. These drums sat on the ground. Badly corroded drums have been observed. However, no spills or leaks have been reported.

Ref. Nos. 1 through 36, 42

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 2 - Tanks, Spent Etchant Tanks

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   The RCRA status and history of this unit consisting of four tanks, is nearly identical to that of waste unit number 1. Due to the lengthy history, if will not be repeated here. Only the differences will be presented here. Some of the tanks currently hold raw materials and have been included for the purposes of completeness of the discussion.

   The age of the tanks is unknown, but they are presumed to have been placed in operation in 1969 when the plant opened. The tanks have been included in all of Methode's permit applications. Methode claims that two of the four tanks identified in 1980, have been removed from service. According to a March 30, 1988 letter and permit application, Methode had taken Tank No. 1 out of service, but had not removed it from the building. Tank No. 2, with a capacity of 6,000 gallons, was taken out of service in 1981 according to NJDEP personnel. The other two tanks which are identical have a capacity of 4,500 gallons each. Tank No. 3 holds fresh ammoniated etchant and Tank No. 4 holds spent etchant.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The tanks are located inside of the building near the back wall furthest from Beverly-Rancocas Road. During the off-site inspection, 2 tanks were observed on the perimeter of the parking lot. It is believed that the observed tanks were tanks No. 1 and No. 2, both of which had been finally removed from the building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The four tanks had the following capacities: Tank No. 1 had a volume of 4,000 gallons; Tank No. 2 had a volume of 6,000 gallons; Tank No. 3 had a volume of 4,500 gallons; and Tank No. 4 had a volume of 4,500 gallons.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The wastes contained in this unit are sludges and liquids.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   Each tank has apparently been used for different materials at different times. Tank No. 1 was reported to hold fresh chlorothene for use in sludge dewatering in August, 1983. In March, 1980, tank No. 2 was reported to be used for sludge storage and in August 1983, it was reported to be sealed and empty. Tank No. 3 reportedly held peanut oil, and since 1983, it has reportedly held fresh ammoniated etchant. Tank No. 4 held peanut oil in 1980, and from 1983 to the present, it reportedly held spent ammoniated etchant. According to Methode's letter and permit application of March 30, 1988, tank Nos. 3 and 4 are never filled with more than 3,000 gallons of liquid. The spent etchant contains an ammonium hydroxide solution and is manifested as a corrosive liquid.

6. Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.

Tanks Nos. 3 and 4 are located inside the building and secondary containment for tank No. 4 is estimated to hold a little more than 6,000 gallons. A sump is provided in the containment area to recover any spilled materials. The tanks observed on the perimeter of the parking lot sit on gravel or grass. Although believed to be empty, no containment of any kind is provided for them. The outside tanks are rusted but not seriously corroded. The inside tanks are described by NJDEP personnel in their June 1986 inspection as in good condition.

Ref. Nos. 1 through 36, 42

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

   There is a slight potential for release of contaminants to groundwater. There is no containment provided for the tanks and drums which are stored in the parking lot. However, there is a possibility that the tanks are empty.

   Ref. No. 1, 2, 4, 10, 13, 17, 20, 22, 27, 29, 32, 33, 36, 39, 41, 50

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

   The site lies on the Magothy and Raritan Formations which are late Cretaceous in age and are composed of unconsolidated sand, clay, silt and small amounts of gravel. In the outcrop area on which the site is located, the Raritan is about 200 feet thick and the Magothy ranges from 0 to 45 feet in thickness. In the Delaware Valley, the outcrop area of both formations are almost completely covered by permeable sand and gravel and semi permeable silt and clay deposits of Pleistocene age.

   Northeast of Trenton the outcrop area of the Magothy and Raritan Formations typically attain altitudes greater than 100 feet and this area is considered the major recharge area for the aquifer system. Groundwater has historically flowed radially away from this area from northeast to southwest, discharging into Raritan Bay to the northeast and into the Delaware river to the southwest. In response to pumpage, some induced recharge from the Delaware River enters the aquifer system through silt and clay in the river bed. Lowered water levels have undoubtedly induced additional recharge from surface waters in the outcrop area. These sources of recharge have not altered the long term regional trend of declining water levels.

   Soils at the site have been determined to be Galestown sand (classification Ga A on soil maps). The Galestown series consists of excessively drained, nearly level soils that are sand down to the seasonal high water table which is 5 feet below the surface. These soils provide no protection to the groundwater due to their high permeability.

   Ref. Nos. 39, 41, p. 6; 50

3. **Is a designated sole source aquifer within 3 miles of the site?**

   There is a designated sole source aquifer within 3 miles of the site. It is the New Jersey Coastal Plain Aquifer System.

   Ref. No. 47

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

   The depth to the aquifer of concern is 15 feet although it has been reported to be less than 5 feet.

   Ref. Nos. 39, 41, 50

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

   The permeability value of the least permeable continous intervening stratum which is sand and gravel estimated to be 10^{-3} to 10^{-5} cm/sec.

   Ref. No. 52

6. **What is the net precipitation for the area?**

The net precipitation is estimated to be 10.0 inches.

Ref. No. 52

7. **Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).**

Groundwater within 3 miles of the site is used for public water supply, commercial and industrial purposes. The nearest well is at Holiday Lake. Several orchards appear on topographic maps of the area and there is a report to indicate that groundwater is also used for irrigation purposes. Whether any specific orchards use this groundwater, is unknown.

Ref. Nos. 39, 41, 46, 51

8. **What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?**

Distance 4000 feet **Depth** 198 feet

Ref. Nos. 36, 39, 41, 46, 51

9. **Identify the population served by the aquifer of concern within a 3-mile radius of the site.**

The entire area receives its drinking water from wells . The nearest community using surface water is Philadelphia which is over 5 miles away. Population data indicates that there are about 74,400 persons residing within 3 miles of the site. Willingboro, has an estimated population of over 40,000. Therefore, it may be assumed that more than 10,000 persons receive their drinking water from groundwater within 3 miles of the site.

Ref. Nos. 38, 46, 53

SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.**

The potential for a release from the drum storage area is low. Methode claims that the drums are on a concrete pad. Verification of the pad and any other containment features could not be made during the NUS Corp. Region 2 FIT off-site inspection. The potential for the tanks and drums on the perimeter of the parking lot to release to the environment, is also unknown. If the tanks are empty, no potential exists for them to release to the environment. The potential for a release to surface waters from the tanks inside the building is none. Secondary containment and provisions for pumping the secondary containment area are provided for these tanks.

The potential for flooding of the site is unknown. A HUD floodplain insurance map has apparently not been prepared for Willingboro. The site sits at an elevation of 22 feet and Holiday Lake, which is less than a mile away and at about the same elevation, is in a Zone B floodplain. A Zone B floodplain is designated as one between the 100-year and 500-year flood or an area that would be flooded by less than 1 foot of water in the 100 year flood. It is a natural assumption to say that the site would also be in the same zone but this may be erroneous due to constrictions in stream flow, differing drainage patterns, and the like.

Ref. Nos. 36, 49

11. **Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest surface water is Mill Creek, a tributary of Rancocas Creek, a tributary of the Delaware River. Drainage from the site flows about 500 feet to the southeast, into Mill Creek.

Ref. Nos. 48, 51

12. **What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)**

The facility slope is estimated to be less than 1 percent.

Ref. Nos. 36, 48, 51

13. **What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water.)**

The slope of the intervening terrain is estimated at about 4 percent.

$$\frac{22 \text{ ft. MSL} - 0 \text{ ft. MSL}}{500 \text{ ft. MSL}} \times 100 = 4.4\%$$

Ref. Nos. 36, 48, 51

14. **What is the 1-year 24-hour rainfall?**

The 1-year 24-hour rainfall is estimated to be 2.75 inches.

Ref. No. 52

15. **What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The nearest surface water, Mill Creek, is about 500 feet to the southeast of the site.

Ref. No. 48

16. **Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).**

Mill Creek and Rancocas Creek appear to be tidally influenced within 3 miles of the site. The State of New Jersey has designated the following uses of the two creeks: maintenance, migration and propagation of the natural and established biota; primary and secondary contact recreation; industrial and agricultural water supply; public potable water supply after such treatment as required by law or regulation; and any other reasonable uses. During the NUS Corp. Region 2FIT off-site inspection, recreational boats, docks, and fishing were observed within 3 miles of the site, on Rancocas Creek. Mill Creek, due to its small size and sluggish flow, does not appear to be used for much other than drainage purposes.

Ref. Nos. 37, 44

17. Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.

An area near the mouth of Mill Creek, which appears to be several acres in size, has been designated a wetland by the U.S. Department of the Interior. The wetland, which is about 1,500 feet downstream from the site, is classified as a palustrine, broad-leaved, deciduous, forested emergent wetland, riverine system.

Ref. Nos. 43, 48

18. Describe any critical habitats of federally listed endangered species within 2 miles of the site along the migration path.

According to the Atlantic Coast Ecological Inventory, "Several anadromous species, including shortnose and Atlantic sturgeon ... migrate along the entire length of the Delaware river during spring spawning runs. The endangered shortnose sturgeon is distributed throughout the estuary, below Trenton. The upstream portion of the estuary from Trenton, New Jersey..., south to Wilmington, Delaware,... provides spawning and nursery areas for anadromous species." Rancocas Creek qualifies as part of the Delaware estuary. Therefore, there is a critical habitat within 2 miles of the site.

Ref. Nos. 40, 44

19. What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?

The distance to the nearest sensitive environment, which is a coastal wetland, is estimated to be 1,500 feet.

Ref. Nos. 40, 44, 48

20. Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).

There are no known surface water intakes used for irrigation or drinking water purposes within 3 miles of the site. The nearest intake is the City of Philadelphia's Torresdale Water Plant, which is a little over 5 miles downstream.

Ref. Nos. 44, 46, 48

21. What is the state water quality classification of the water body of concern?

Rancocas Creek and Mill Creek are both designated as FW2-NT which means the general surface water classification applied to those fresh waters that are not designated as FW1 or Pinelands Waters. The "NT" means that these are non-trout waters not suitable for trout production or maintenance because of their physical, chemical or biological characteristics.

Ref. No. 37

22. Describe any apparent biota contamination that is attributable to the site.

No biota contamination has been observed or reported.

Ref. No. 36

AIR ROUTE

23. Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.

The likelihood of an air release is rated as none. The units which are indoors should not cause any environmental hazards and any releases would be contained by the building. However, the units which are outdoors present a greater danger. There are no containment facilities for these units. However, it is possible these units may be empty. It should also be noted that Methode was observed evaporating waste lacquer thinner inside the building. According to NJDEP reports, about 3 to 4 gallons per month were evaporated. Methode has apparently stopped this practice and now drums this waste for disposal.

Ref. Nos. 32, 33, 36

24. What is the population within a 4-mile radius of the site?

The population within a 4-mile radius is estimated to be 31,700.

Ref. No. 38

FIRE AND EXPLOSION

25. Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.

The potential for fire or explosion always exits; however, Methode reported in its 1988 Part A permit application that it does have small amounts of ignitable material at the site. This material, increases Methode's chances of fire. Methode does have portable firefighting equipment and sprinklers, according to a drawing in its Part A Permit application. Also, at one time Methode evaporated lacquer thinner which is quite flammable. This practice has been stopped.

Ref. Nos. 2, 4, 10, 13, 54

26. What is the population within a 2-mile radius of the hazardous substance(s) at the facility?

The population within a 2-mile radius is estimated to be 31,740.

Ref. No. 38

DIRECT CONTACT/ON-SITE EXPOSURE

27. Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.

The potential for direct contact by unauthorized personnel is rated differently for various portions of each unit. Only employees are capable of entering the No. 3 and 4 tank areas. The facility operates over 3 shifts, 6 and a half days per week, and according to NJDEP inspections, security provisions have been made at the plant. The potential for direct contact with the contents of the fenced drum storage area by unauthorized personnel is also rated low.

The chain link fence is about six feet high and appeared to be in satisfactory condition during the NUS Corp. FIT 2 off-site reconnaissance. The potential for contact with the tanks and drums observed on the perimeter of the parking lot must be rated as high. There does not appear to be any provision to keep unauthorized personnel from reaching them. There are "no trespassing signs" posted around the facility.

Ref. No. 36

28. How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?

Since there is no known contamination, there are no properties which have been contaminated by the site. There are no residential properties which abut the facility.

Ref. Nos. 36, 51

29. What is the population within a 1-mile radius of the site?

The population within a 1-mile radius is estimated to be 6,200.

Ref. No. 38

PART IV: SITE SUMMARY AND RECOMMENDATIONS

Methode Electronics Inc. is a maker of printed circuit boards, and thus generated hazardous wastes from its plating operations. The facility is located at the intersection of Industrial Drive and Beverly-Rancocas Road in Willingboro, New Jersey (Block 13, Lot 8-2, 8-3). The facility occupies a lot about 250 by 500 feet or about 3 acres. It is estimated that the waste units cover about 1,000 to 1,500 square feet (0.02 to 0.03 acres). The facility is located in an area of a very low population density, however, within 0.25 mile of the site, dense residential development areas begin.

The facility, which is currently active, has had a long history of RCRA regulated activities. The facility began operation in 1969 and filed a Part A Permit application on November 17, 1980 and listed itself as a TSD facility. The problems the facility has had with attaining compliance has dealt mostly with paper violations, i.e, those that deal with the submission of reports, posting signs, providing financial assurances, and the like. Methode has been issued Notices of Violation for these violations; however, no penalties have ever been assessed against them. The record does not indicate that there have been any environmental problems with the facility and, thus, there is no affected media. Methode has had other "paper" problems. Due to revisions in interpretations of what consistutes hazardous waste from plating operations, Methode has made three permit applications. On June 15, 1987, Methode informed the NJDEP that it would be filing a delisting request. A closure plan and supporting documents have been submitted but the status of whether Methode is a generator-only or a TSD is unknown.

Hazardous substances which have been identified by Methode or the NJDEP to have been present on site include: waste oil, copper sulfate crystals, isopropyl alcohol with lead, alkaline cleaning solution, citric acid, fluoroboric acid, ammonium bichloride, sulfuric acid, alkaline stripping solution, hydrochloric acid, acid copper plating bath, nitric acid, sulfuric acid and peroxide, pyrophosphate copper plating bath, 90% sulfuric acid, hydrochloric acid and stannous chloride, spent peanut oil, alkaline ammonium solution, solidfied copper/carbon solids, metal hyroxide sludge, spent 1,1,1-trichloroethane, wastewater treatment plant sludge, fuse coat, and pyrocopper. It is believed that not all of these materials are actually wastes. Some of these materials are believed to raw product or process materials. As many as 75 drums have been observed on-site at one time; and 4 tanks with a total capacity of 19,000 gallons have been used. Currently, only 9,000 gallons of tank capacity are in use; two other tanks, with 10,000 gallon capacity between them have been placed on the perimeter of the parking lot.

The potential exists for direct contact with the tanks and drums observed on the perimeter of the parking lot. However, these tanks could be empty. The potential for contact with the drums in the fenced storage area and the tanks in the building is rated as none. No cleanup or enforcement actions are pending against Methode. It does not appear that any actions are planned against Methode. Based upon the lack of any serious environmental problems, the recommendation is **NO FURTHER REMEDIAL ACTION PLANNED.**

ATTACHMENT 1

METHODE ELECTRONICS
WILLINGBORO, NEW JERSEY

CONTENTS

Figure 1: Site Location Map
Figure 2: Site Map
Exhibit A: Photograph Log

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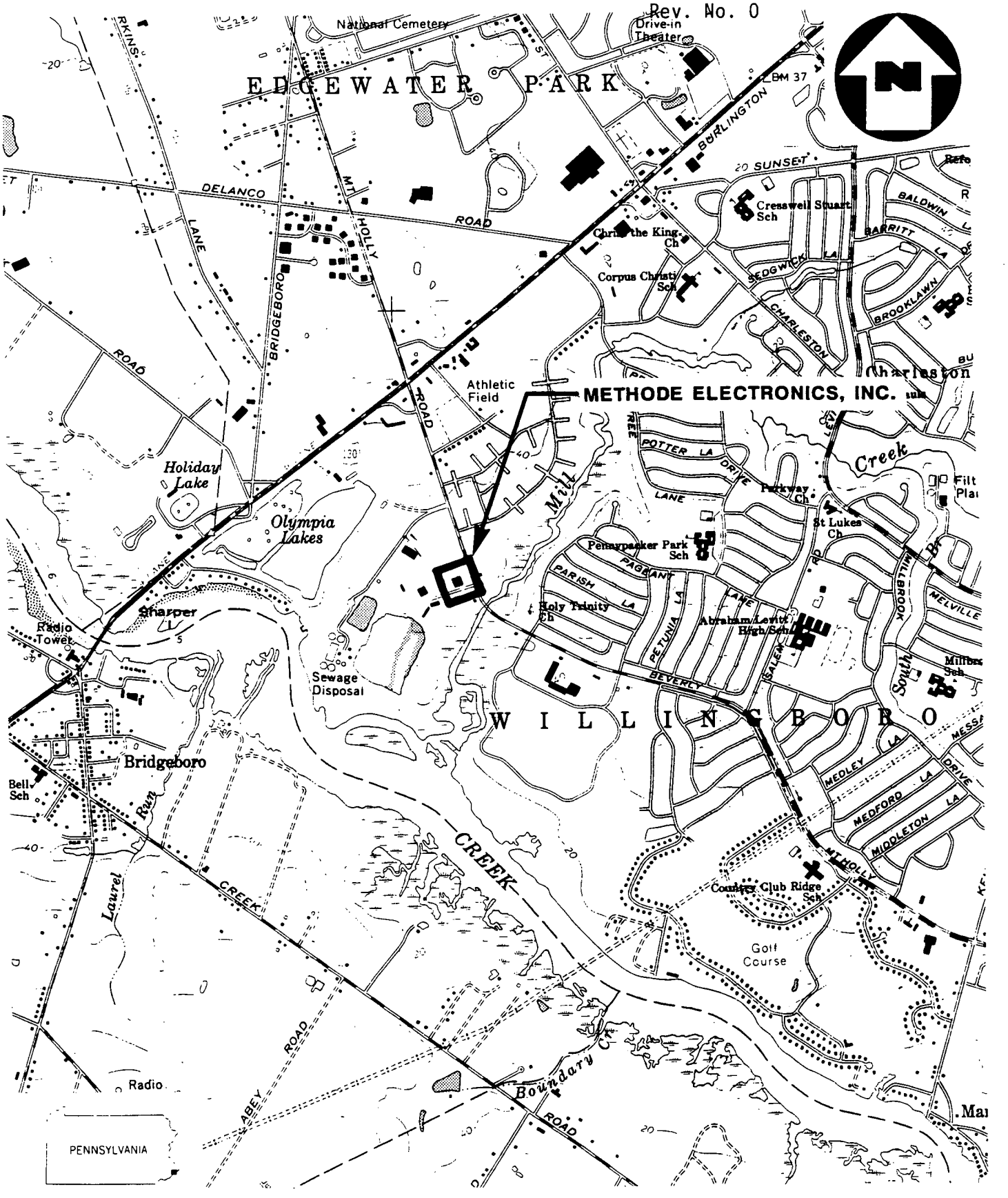

(QUAD) BEVERLY, PA.

FIGURE 1

SITE LOCATION MAP
METHODE ELECTRONICS, INC.,
WILLINGBORO, N.J.

SCALE: 1" = 2000'

NUS CORPORATION

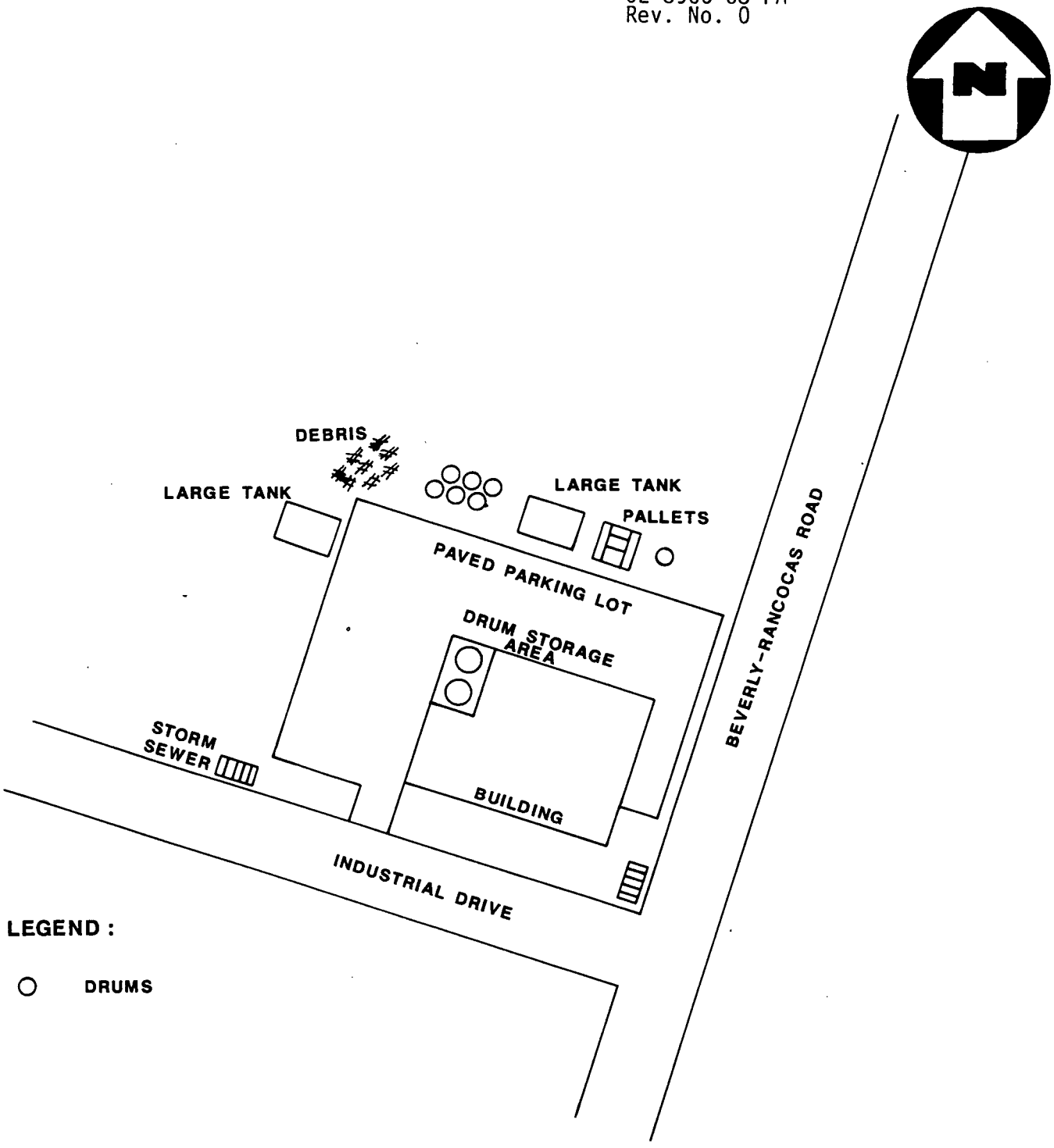

FIGURE 2

SITE MAP
METHODE ELECTRONICS, INC.,
WILLINGBORO, N.J.

(NOT TO SCALE)

NUS CORPORATION

EXHIBIT A

PHOTOGRAPH LOG

METHODE ELECTRONICS
WILLINGBORO, NEW JERSEY

OFF-SITE RECONNAISSANCE: JULY 6, 1989

METHODE ELECTRONICS, INC.
WILLINGBORO, NEW JERSEY
JULY 6, 1989

PHOTOGRAPH INDEX

Photo Number	Description	Time
P1S1	Looking NNW at large tank on rear of property.	1208
P2S2	Looking NNW at drums near large tank at rear of property.	1210
P3S3	Looking at tanks, drums and debris at rear of property.	1215
P4S4	Looking west towards second large tank and dumpster.	1222
P5S5	Looking west at front of building.	1223

All photographs taken by James Frost of NUS Corp.

NUS CORPORATION

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Rev. No. 0

METHODE ELECTRONICS, INC., WILLINGBORO, NEW JERSEY

P5S5 July 6, 1989 1223
Looking west at front of building.

P3S3 July 6, 1989 1215
Looking at tanks, drums, and debris at rear of property.

P4S4 July 6, 1989 1222
Looking west towards second large tank and dumpster.

P1S1 July 6, 1989 1208
Looking NNW at large tank on rear of property.

P2S2 July 6, 1989 1210
Looking NNW at drums near large tank at rear of property.

ATTACHMENT 2

REFERENCES

1. Hazardous Waste Investigation Report, Prepared by Steve Carfora of NJDEP, March 20, 1980.

2. RCRA Inspection Review Sheet, Prepared by Wayne Howitz of NJDEP, September 16, 1981.

3. Letter from R.C. McFarland, Purchasing Agent, Methode Electronics, Inc., East, to EPA Region II, Manifest Section, September 16, 1981.

4. RCRA Generator Inspection Form, Prepared by Angela Morales of USEPA, January 25, 1982.

5. Letter from Dennis Olejniczak, Process Engineer, Methode Electronics, Inc., East, to EPA Region 2, July 7, 1982.

6. Letter from Mary Kelly, Secretary, Methode Electronics, Inc., East, to USEPA Region 2, July 14, 1982.

7. Letter from David J. Shotwell, Chief, Bureau of Compliance and Enforcement, NJDEP, to Joseph Mulcahy, Processing Engineer, Methode Electronics,. January 7, 1983.

8. Letter from Charles J. O'Neill, Assistant Vice President, Alexander and Alexander, to Helen Beggun, Chief, Grants Administration Branch, USEPA, February 9, 1983.

9. Letter from Kevin J. Hayes, Methode Electronics, Inc. to Helen Beggun, Chief, Grants Administration Branch, USEPA, February 14, 1983.

10. NJDEP Inspection Form, Prepared by C. Elemendorf of NJDEP, August 2, 1983.

11. Letter from Kevin J. Hayes, Vice President and Treasurer, Methode Electronics, Inc., to Helen Beggun, Chief, Grants Administration Branch, USEPA, October 20, 1983.

12. Letter from David J. Shotwell, Chief, Bureau of Compliance and Enforcement, NJDEP, to Joseph Mulcahy, Methode, November 16, 1983.

13. U.S. Environmental Protection Agency, Hazardous Waste Permit Application, EPA Form 3510-3 (6-80), December 13, 1983.

14. Letter from Frank Coolick, Chief, Bureau of Hazardous Waste Engineering, NJDEP, to Michael A. Greco, Corporate Controller, Methode Electronics, Inc., February 23, 1984.

15. Letter from Frank Coolick, Chief, Bureau of Hazardous Waste Engineering, NJDEP, to Kevin J. Hayes, Vice President and Treasurer, Methode Electronics, Inc., May 17, 1985.

16. Memorandum from Frank Coolick to Kenneth Goldstein (both of NJDEP), Subject: Methode Electronics, Willingboro, NJ, NJD048608897, March 17, 1986.

17. NJDEP Inspection Report, Prepared by Kenneth Cloutman of NJDEP, June 18, 1986.

18. Letter from Jeffrey A. Holmes, Wet Process Engineer, Methode Electronics, Inc. East, to Kenneth Cloutman, NJDEP, November 6, 1986.

19. Letter from Ernest Kuhlwein, Jr., Acting Chief, Bureau of Hazardous Waste Engineering, to John Wilkinson, Methode Electronic, May 21, 1987.

REFERENCES (CONT'D)

20. NJDEP memorandum from Ali Chaudry through William Sharples to File, Subject: Methode Electronics (Willingboro) Site Visit, July 14, 1987.

21. NJDEP memorandum from Ali Chaudry to William Sharples (both of NJDEP). Subject: Methode Electronics, Inc., Willingboro, January 6, 1988.

22. RCRA Land Disposal Restriction Inspection, Prepared by Peter Taylor of NJDEP, January 29, 1988.

23. Letter from Ernest J. Kuhlwein, Jr., Chief, Bureau of Hazardous Waste Engineering, NJDEP, to John L. Glasser, Vice President/General Manager, Methode Electronics, Inc., March 4, 1988.

24. Letter from John E. Wilkinson, Waste Treatment Manager, Methode Electronics, Inc. East, to Linda Jordan, NJDEP, March 16, 1988.

25. Letter from Linda Z. Jordan, Pr., Environmental Specialist, NJDEP, to John E. Wilkinson, Methode Electronics, Inc. East., March 21, 1988.

26. Letter and Hazardous Waste Permit Application from John Wilkinson, Methode Electronics, Inc. East, to Ernest J. Kuhlwein, Jr., Chief, Division of Hazardous Waste Management, NJDEP, March 30, 1988.

27. NJDEP memorandum from Ernest J. Kuhlwein to William Boehle (both of NJDEP) Subject: Methode Electronics, Inc., Willingboro, April 22, 1988.

28. Letter from John Wilkinson, Environmental Manager, Methode Electronics, Inc. East, to Linda Jordan, NJDEP, May 10, 1988.

29. RCRA Inspection Tracking Form, Prepared by Taylor of NJDEP, December 28, 1988.

30. NJDEP Notice of Violation: Methode Electronics, December 28, 1988.

31. Letter from John Wilkinson, Environmental Manager, Methode Electronics, Inc. East, to Peter Taylor, NJDEP, January 4, 1989.

32. RCRA Inspection Tracking Form, Prepared by Taylor, January 11, 1989.

33. RCRA Inspection Tracking Form, Prepared by Taylor, January 20, 1989.

34. NJDEP memorandum from Linda Jordan to File through Vince Krisak, Bureau Chief (both of NJDEP), Subject: Case Clsoure, January 30, 1989.

35. Letter from John Wilkinson, Waste Treatment Manager, Methode Electronics, Inc. East, to David Andrade, Willingboro Fire Department, May 11, 1989.

36. Preliminary Assessment Off-Site Reconnaissance Information Reporting Form, Methode Electronics, TDD No. 02-8906-08, NUS Corp. Region 2 FIT, Edison, New Jersey, July 6, 1989.

37. Surface Water Classifications, Surface Water Quality Standards, N.J.A.C. 7:9-4.1 et seq., NJDEP/Division of Water Resources, May 1985.

REFERENCES (CONT'D)

38. General Sciences Corporation, Graphical Exposure Modeling System (GEMS), Landover, Maryland, 1986.

39. Rush, F. Eugene. Records of Wells and Groundwater Quality in Burlington County, New Jersey. Water Resources Circular No. 7. New Jersey Department of Conservation and Economic Development, Division of Water Policy and Supply in cooperation with the U.S. Department of the Interior, Geological Survey, 1962.

40. U.S. Fish and Wildlife Service, Atlantic Coast Ecological Inventory, "Newark, New Jersey and New York", 1980.

41. Langmuir, Donald, Iron in Groundwaters of the Magothy and Raritan Formations in Camden and Burlington Counties, New Jersey, U.S. Geological Survey in cooperation with the State of New Jersey, 1969.

42. Wagner, Travis. The Complete Handbook of the Hazardous Waste Regulation Brunswick, Maine and Washington, D.C., Perry-Wagner Publishing Co., Inc., Date Unknown.

43. U.S. Department of the Interior, Fish and Wildlife Service, Atlas of National Wetlands Inventory Maps for New Jersey, 1984.

44. Delaware River Basin Commission, Delaware River Water Quality Assessment, 1986-87, 305(b) Report.

45. N.J. Department of Environmental Protection, Bureau of Geology and Topography, Land Use Overlay, Sheet 27, 1976.

46. N.J. Department of Environmental Protection, Bureau of Geology and Topography, Water Supply Overlay, Sheets 27 and 31, 1976.

47. Federal Register, Vol. 53, No. 122, New Jersey Coastal Plain Aquifer System, New Jersey Sole Source Aquifer; Final Determination, June 24, 1988.

48. Three-Mile Vicinity Map based on the U.S. Department of the Interior, U.S. Geological Survey Topographic Maps, 7.5 minute series, "Beverly, PA-NJ" Quadrangle, 1966, photorevised 1973; "Moorestown, NJ" Quadrangle, 1966, photorevised 1981; "Mount Holly, NJ" Quadrangle, 1967, photorevised 1981; and "Bristol PA-NJ" Quadrangle, 1955, photorevised 1981.

49. U.S. Department of Housing and Urban Development, Federal Insurance Administraion, Flood Insurance Rate Map (FIRM), Township of Delanco, New Jersey, Burlington County, community panel No. 3400930001B, September 28, 1979.

50. U.S. Department of Agriculture, Soil Conservation Service in cooperation with New Jersey Agricultural Experiment Station, Soil Survey Burlington County, New Jersey, October, 1971.

51. Field Note: prepared by J. Frost of NUS Corp. July 6, 1989.

52. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.

REFERENCES (CONT'D)

53. Population Estimates, Office of Demographic and Economic Analysis, Division of Planning and Research, Department of Labor, September 1983.

54. Fire Protection Guide on Hazardous Materials, 9th edition, National Fire Protection Association, Quincy, Massachusetts, 1986.

REFERENCE NO. 1

Waiting?

HAZARDOUS WASTE INVESTIGATION

Inspector: Steve Carfora
Ron Varsaci

Date: March 20, 1980

Location: Methode Electronics Hw/Cr 03-44

St: One Industrial Park

Town: Willingboro

County: Burlington

Lot: 8-2, 8-3

Block: 13

Origin of Complaint:

Complaint: Investigate liquid running off property into storm sewer

Findings: On Thursday, March 20, Ron Varsaci and I conducted an investigation at Methode Electronics in Willingboro. Our initial contact was with Mr. Robert C. McFarland, manager of purchasing and production control. He explained to us the processes used by his firm, the types of waste produced, and how the wastes are treated or disposed of. We also inspected the special waste manifests he had available (copies of two manifests are attached). After our conversation we toured the plant with Mr. Ken Budden, Mainteance Supervisor. Finally, before leaving we spoke to Mr. McFarland again.

Methode is in the business of printing circuit boards. Part of their processing involves the use of electroplating baths. The four types of baths used are: 1) a 1500 G acidic copper sulfate bath 2) 500-800G acidic tin/lead bath 3) a 100G (est.) cyanide/gold bath 4) a 30G (est.) nickel bath. All spent plating solutions, except for the $CuSO_4$ are treated in an on site waste water treatment system. The effluent is discharged to the local sewer system and treated at the Willingboro Muncipal Utilities Authority (WMUA) WWTP. The resultant sludge, which contains metals from the plating baths, is stored in a 6000G holding tank located inside the building. SCA hauls away the sludge to its Earthline facility in Newark. The minumum load SCA will pick up is 3000G. We were told that SCA has made only two sludge pick-ups in the past two years.

The spent $CuSO_4$ plating solution is drummed and stored within a fenced area behind the plant. We observed approximately 75 such drums during our visit. The spent CuSo4 is hauled away by SCA and treated at Earthline. Again, the minimum amount SCA pick up is 3000G. During our inspection we also observed badly corroded drums which contained CuSO4 to be used in the plating baths.

As requested by a particular customer, Western Electric, Methode uses peanut out to reflow circuit boards after sottering them as a means of brightening the boards. The spent peanut oil is stored in bulk tanks within the building. SCA hauls away the oil for treatment at Earthline.

In another process Methode etches copper with an alkaline ammonium solution (trade name Ac-Cu-Guard) manufactured by Hunt Chemical of Palisades Park N.J. Methode has an agreement with Hunt whereby Hunt buys back the spent solution by crediting Methode's account on the next raw material shipment from Hunt (copy of agreement letter is attached). Hunt reclaims the copper (the spent solution contains 20 oz Copper/gallon) and regenerates the ammonium solution etching.

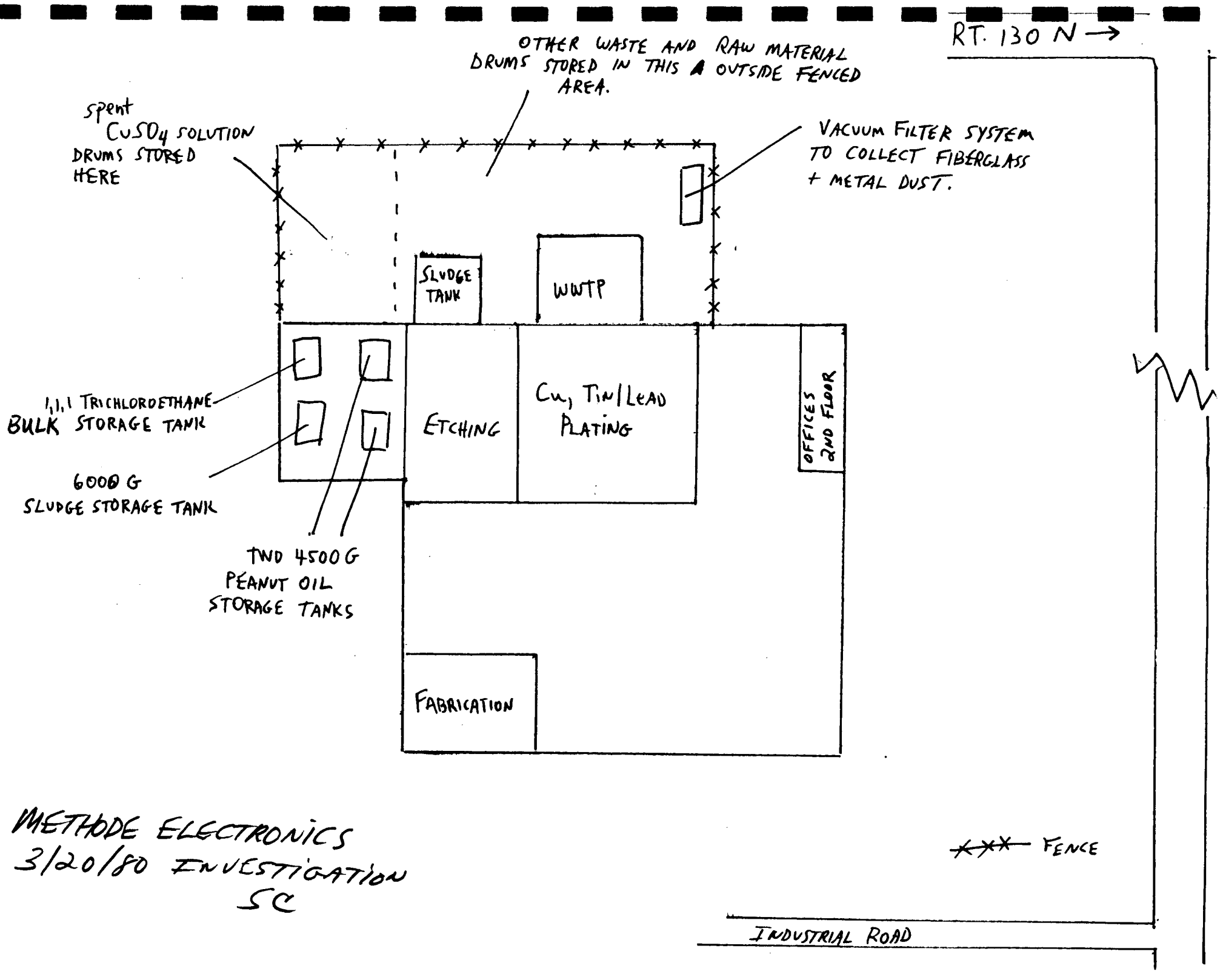
Two other wastes produced are spent 1,1,1 trichloroethane which is hauled away and reclaimed by Marisol Inc. of Middlesex N.J., and fiberglass and metal dust which is hauled away and reclaimed by Cabin Metals of Scotsville, N.Y.

Mr McFarland said that in the past Methode drummed its waste water treatment system sludge and spent peanut oil and had these materials hauled away by Industrial Liquid Chemical Co. (ILC) of Sicklerville, N.J. ILC reclaimed the sludge metals and regenerated the peanut oil. Methode ceased this practice when it learned that ILC was not a registered facility, according to Mr. McFarland.

In regard to the original complaint, we saw no evidence of liquid running off the property into storm sewers.

Steve Carfora

Steve Carfora



METHODE ELECTRONICS
3/20/80 INVESTIGATION
SC

PHILIP A. HUNT CHEMICAL CORPORATION
PALISADES PARK, NEW JERSEY 07650
CABLE ADDRESS: OCHAP NEW YORK
REPLY TO: BOURSE BUILDING · INDEPENDENCE MALL EAST · PHILADELPHIA, PA. 19106 · TEL. 215 627-3212

April 21, 1977

RECEIVED
APR 25 1977
METHODE ELECTRONICS, INC. EAST

Methode Electronics, Inc.
One Industrial Park
Willingboro, N.J. 08046

attn: Robert McFarland

Dear Bob,

I am pleased to confirm to you, per your request the other day, a revision in Hunt's quotation to Methode on November 24, 1976.

We will build into the invoice price of $1.08 a 12¢ rebate for whatever amount of material (Ac-Cu-Guard) is shipped to you. This will insure that you pay $0.96 a gallon for incoming material.

I hope you find this arrangement satisfactory and if you have any other questions please don't hesitate to contact me.

My best regards,

Philip A. Hunt Chemical Corp.

Robert A. Pirollo

Robert A. Pirollo
Area Sales Manager

REFERENCE NO. 2

RCRA INSPECTION REVIEW SHEET

Name of Facility ~~METHODE ELECTRONICS~~ Methode
RCRA ID= - NJD04[illegible]
Date of Inspection - 9/16/[illegible]
Type of Inspection: Generator Transporter TSD
Name of EPA/State Inspector - AYNE HOWITZ

Findings of Inspection:

The following violations were noted during my inspection:

262.34(a) - date of accumulation for wastes stored in drums.
262.42(a) - not submitting an exception report for manifest # NJ0013953.
265.53(c) - not submitting the contingency plan to local authorities
265.110 - no written closure plan.

Action(s) Taken: ~~[illegible]~~ Mr. McCahy & Mr. Olejniczak were informed of the above noted violations and agreed to correct ~~[illegible]~~ those violations noted.

Action(s) Recommended: Notice of violation

RCRA GENERATOR INSPECTION FORM

COMPANY NAME:
METHODE ELECTRONICS INC EAST

EPA I.D. NUMBER:
NJD048608897

COMPANY ADDRESS:
1 INDUSTRIAL PARK
WILLIAMSBURG, N.J. 08046

COMPANY CONTACT OR OFFICIAL:
JOSEPH MULCAHY
DENNIS OLEJNICZAK

INSPECTOR'S NAME:
WAYNE HOWITZ

TITLE:
PROCESS ENGINEER
WET PROCESS ENGINEER

BRANCH/ORGANIZATION:
N.J.D.E.P.
BUREAU OF HAZARDOUS WASTE

CHECK IF FACILITY IS ALSO A TSD FACILITY ✓

DATE OF INSPECTION:
09/16/81

	YES	NO	DON'T KNOW
(1) Is there reason to believe that the facility has hazardous waste on site? Yes	✓		

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

- [x] Company admits that its waste is hazardous during the inspection.
- [x] Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.
- [ ] The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)
- [x] The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)
- [ ] The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)
- [ ] EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)
- [ ] Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

	YES	NO	DON'T KNOW
b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?		X	

Please explain:

c. Identify the hazardous wastes that are on-site, and estimate-approximate quantities of each.
Twenty (20) 55 gallon drums containing F006 type waste
One (1) 55 gallon drum of spent etchant
Eleven (11) 55 gallon drums of EPA waste type D002
Thirteen (13) 55 gallon drums of solidified copper/carbon solids

d. Describe the activities that result in the generation of hazardous waste. Manufacture of electronic circuit boards.

	YES	NO	DON'T KNOW
(2) Is hazardous waste stored on site?	X		
a. What is the longest period that it has been accumulated?			
b. Is the date when drums were placed in storage marked on each drum?		X	
(3) Has hazardous waste been shipped from this facility since November 19, 1980?	X		
a. If "yes," approximately how many shipments were made? (2) Shipments			
(4) Approximately how many hazardous waste shipments off site have been made since November 19, 1980? (2)			
a. Does it appear from the available information that there is a manifest copy available for each hazardous waste shipment that has been made?	X		
b. If "no" or "don't know," please elaborate.			

	YES	NO	DON'T KNOW
c. Does each manifest (or a representative sample) have the following information?			
- a manifest document number	X		
- the generator's name, mailing address, telephone number, and EPA identification number	X		
- the name, and EPA identification number of each transporter	X		
- the name, address and EPA identification number of the designated facility and an alternate facility, if any:	X		
- a description of the wastes (DOT)	X		
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle	X		
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA	X		
(5) Were there any hazardous wastes stored on site at the time of the inspection?	X		
a. If "yes," do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure?	X		
b. If not properly packaged or in secure tanks, please explain.			
c. Are containers clearly marked and labelled?		X	
d. Do any containers appear to be leaking?		X	
e. If "yes," approximately how many?			

*(6) Has the generator submitted an annual report to EPA covering the previous calendar year? N/A

a. How do you know?

(7) Has the generator received signed copies (from the TSD facility) of all manifests for wastes shipped off site more than 35 days ago? X

a. If "no," have Exception Reports been submitted to EPA covering these shipments? X

(8) General comments.

N.J. Manifest # NJ 0013953

3,000 gallons of Spent Alkaline Etchant. Shipped from Methode Electronics on 03-03-87 to Philip A. Hunt. Chemical Corp Palisades Park. A signed copy from the aforementioned TSDF facility was not received

* The effective date for this requirement is March 1, 1982.

RCRA TREATMENT, STORAGE AND DISPOSAL FACILITY INSPECTION FORM
FOR TSD FACILITIES ONLY

COMPANY NAME: METHODE ELECTRONICS INC. EAST

EPA I.D. Number: NJD048608897

COMPANY ADDRESS: 1 INDUSTRIAL PARK
Willingboro, N.J. 08046

COMPANY CONTACT OR OFFICIAL:
① JOSEPH MULCAHY
② DENNIS OLEJNICZAK

TITLE:
① PROCESS ENGINEER
② WET Process Engineer

OTHER ENVIRONMENTAL PERMITS HELD BY FACILITY: ☐ NPDES ☐ AIR ☐ OTHER

INSPECTOR'S NAME: WAYNE HOWITZ

DATE OF INSPECTION: 09/16/81

BRANCH/ORGANIZATION: N.J. DEP
BUREAU OF HAZARDOUS WASTE

TIME OF DAY INSPECTION TOOK PLACE: 1:00 p.m.

(1) Is there reason to believe that the facility has hazardous waste on site? YES

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

☒ Company admits that its waste is hazardous during the inspection.

☒ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

☒ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

☒ The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

☐ The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

☐ EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

☐ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

	YES	NO	DON'T KNOW
b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?	___	X	___

Please explain:

c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.

(2) Does the facility generate hazardous waste?	X	___	___
(3) Does the facility transport hazardous waste?	___	X	___
(4) Does the facility treat, store or dispose of hazardous waste?	X	___	___

VISUAL OBSERVATIONS

	YES	NO	DON'T KNOW
(5) SITE SECURITY (§265.14)			
a. Is there a 24-hour surveillance system?	X		
b. Is there a suitable barrier which completely surrounds the active portion of the facility?	yes		
c. Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility?	X		
(6) Are there ignitable, reactive or incompatible wastes on site? (§265.27)		X	
a. If "YES", what are the approximate quantities?			
b. If "YES", have precautions been taken to prevent accidential ignition or reaction of ignitable or reactive waste?		N/A	
c. If "YES", explain			
d. In your opinion, are proper precautions taken so that these wastes do not:			
- generate extreme heat or pressure, fire or explosion, or violent reaction?		N/A	
- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficent quantities to threaten human health?		N/A	
- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions?		N/A	
- damage the structural integrity of the device or facility containing the waste?		N/A	
- threaten human health or the environment?		NA	

Please explain your answers, and comment if necessary.

e. Are there any additional precautions which you would recommend to improve hazardous waste handling procedures at the facility? NO

(7) Does the facility comply with preparedness and prevention requirements including maintaining: (§265.32) yes.

	YES	NO	DON'T KNOW
- an internal communications or alarm system?	X		
- a telephone or other device to summon emergency assistance from local authorities?	X		
- portable fire equipment?	X		
- adequate aisle space?	X		
- in your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.	X		

All wastes stored require the above mentioned procedures, to prevent any accidental chemical reactions.

In your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.

*(8) Have you inspected to verify that the groundwater monitoring wells (if any) mentioned in the facility's groundwater monitoring plan (see no. 19 below) are properly installed?		X	
If you have, please comment, as appropriate.			
(9) a. Is there any reason to believe that groundwater contamination already exists from this facility? If "YES", explain.		X	
b. Do you believe that operation of this facility may affect groundwater quality?		X	
c. If "YES", explain.			

RECORDS INSPECTION

(10) Has the facility received hazardous waste from an off-site source since Nov. 19, 1980 (effective date of the regulations)?		X	
a. If "YES", does it appear that the facility has a copy of a manifest for each hazardous waste load received?	N/A		
b. How many post-November 19 manifests does it have? (If the number is large, you may estimate)			
c. Does each manifest (or a representative sample) have the following information?			
- a manifest document number			

* This requirement applies only after November 19, 1981.

	YES	NO	DON'T KNOW
- the generator's name, mailing address, telephone number, and EPA identification number		N/A	
- the name, and EPA identification number of each transporter			
- the name, address and EPA identification number of the designated facility and an alternate facility, if any;			
- a DOT description of the wastes			
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle			
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA			
d. Are there any indications that unmanifested hazardous wastes have been received since November 19, 1980? If YES, explain.		X	
(11) Does the facility have a written waste analysis plan specifying test methods, sampling methods and sampling frequency? (§265.13)	X		
a. Does the character of wastes handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? (You may check more than one) Waste characteristics vary ____ All wastes are basically the same X Company treats all waste as hazardous ____ Don't Know ____			
b. Does hazardous waste come to this facility from off-site sources?		X	
c. If waste comes from an off-site source, are there procedures in the plan to insure that wastes received conform to the accompanying manifest?	N/A		
(12) INSPECTIONS (§265.15)			
a. Does the facility have a written inspection schedule?	X		
b. Does the schedule identify the types of problems to be looked for and the frequency for inspections?	X		
c. Does the owner/operator record inspections in a log?	X		
d. Is there evidence that problems reported in the inspection log have not been remedied? If "YES," please explain.		X	

	YES	NO	DON'T KNOW
(13) PERSONNEL TRAINING (§265.16)			
a. Is there written documentation of the following:			
- job title for each position at the facility related to hazardous waste management and the name of the employee filling each job?	✓		
- type and amount of training to be given to personnel in jobs related to hazardous waste management?	✓		
- actual training or experience received by personnel?	✓		
(14) Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosion or any unplanned release of hazardous waste? (§265.51)	✓		
a. Does the plan describe arrangements made with local authorities?	✓		
b. Has the contingency plan been submitted to local authorities?		✓	
How do you know? According to Messrs. Mulcahy and Olejniczak.			
c. Does the plan list names, addresses, and phone numbers of Emergency Coordinators?	✓		
d. Does the plan have a list of what emergency equipment is available?	✓		
e. Is there a provision for evacuating facility personnel?	✓		
f. Was an Emergency Coordinator present or on call at the time of the inspection?	✓		
(15) Does the owner/operator keep a written operating record with: (§265.73)			
- a description of wastes received with methods and dates of treatment, storage or disposal?	N/A		
- location and quantity of each waste?	✓		
- detailed records and results of waste analysis and treatability tests performed on wastes coming into the facility?	N/A		
- detailed operating summary reports and description of all emergency incidents that required the implementation of the facility contingency plan?	✓		
*(16) Does the facility have written closure and post-closure plans? (§265.110)		✓	
a. Does the written closure plan include:			
- a description of how and when the facility will be partially (if applicable) and ultimately closed?		✓	

* Effective date for this requirement is May 19, 1981.

	YES	NO	DON'T KNOW
- an estimate of the maximum inventory of wastes in storage or treatment at any time during the life of the facility?		X	
- a description of the steps necessary to decontaminate facility equipment during closure?		X	
- a schedule for final closure including the anticipated date when wastes will no longer be received and when final closure will be completed?		X	
b. What is the anticipated date for final closure?		X	
†c. Does the owner/operator have a written post-closure plan identifying the activities which will be carried on after closure and the frequency of these activities?		X	
d. Does the written post-closure plan include:			
- a description of planned groundwater monitoring activities and their frequencies during post-closure?		X	
- a description of planned maintenance activities and frequencies to ensure integrity of final cover during post-closure?		X	
- the name, address and phone number of a person or office to contact during post-closure?		X	
*(17) Does the owner/operator have a written estimate of the cost of closing the facility? (§265.142) What is it?		X	
*(18) Does the owner/operator have a written estimate of the cost for post-closure monitoring and maintenance?		N/A	
What is it? (§265.144)		N/A	
*(19) Has a groundwater monitoring plan been submitted to the Regional Administrator for facilities containing a surface impoundment, landfill or land treatment process? (This requirement does not apply to recycling facilities.) (§265.90)			
a. Does the plan indicate that at least one monitoring well has been installed hydraulically upgradient from the limit of the waste mangement area?		N/A	
b. Does the plan indicate that there are at least three monitoring wells installed hydraulically downgradient at the limit of the waste management area?		N/A	

† This section applies only to disposal facilities.

* Effective date for this requirement is May 19, 1981.

SITE-SPECIFIC

Please circle all appropriate activities and answer questions on indicated pages for all activities circled. When you submit your report, include only those site-specific pages that you have used.

STORAGE	TREATMENT	DISPOSAL
Waste Pile p. 9	Tank p. 8	Landfill pp. 10-11
Surface Impoundment p. 8	Surface Impoundment pp. 8-9	Land Treatment pp. 9, 10
Container p. 7	Incineration pp. 12-13	Surface Impoundment p. 8
Tank, above ground p. 8	Thermal Treatment pp. 12-13	Other _____
Tank, below ground p. 8	Land Treatment pp. 9-10	
Other _____	Chemical, Physical p. 13 and Biological Treatment (other than in tanks, surface impoundment or land treatment facilities)	
	Other _____	

CONTAINERS (§265.170)

	YES	NO	DON'T KNOW
1. Are there any leaking containers? If "YES", explain.		X	
2. Are there any containers which appear in danger of leaking? If "YES", explain.		X	
3. Do wastes appear compatible with container materials?	X		
4. Are all containers closed except those in use?	X		
5. Do containers appear to be opened, handled or stored in a manner which may rupture the containers or cause them to leak?		X	
6. How often does the plant manager claim to inspect container storage areas? Every day			
7. Does it appear that incompatible wastes are being stored in close proximity to one another? If "YES", explain.		X	
8. Are containers holding ignitable or reactive wastes located at least 15 meters (50 feet) from the facility's property line?	N/A		

9. What is the approximate number and size of containers with hazardous wastes?

Twenty (20)-55 gallon drums containing electroplating treat sludge (F006)
One (1)-55 gallon drum of spent etchant.
Eleven (11) 55 gallon drums containing EPA waste type D002.
Thirteen (13) 55 gal drums of solidified copper/carbon solids

TANKS (§265.190)	YES	NO	DON'T KNOW
1. Are there any leaking tanks? If "YES", explain.		X	
2. Are there any tanks which appear in danger of leaking. If "YES", explain.		X	
3. Are wastes or treatment reagents being placed in tanks which could cause them to rupture, leak, corrode or otherwise fail? If "YES", explain.		X	
4. Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure?	X		
5. Where hazardous waste is continuously fed into a tank, is the tank equipped with a means to stop this inflow?	X		
6. Does it appear that incompatible wastes are being stored in close proximity to one another, or in the same tank? If "YES", explain.		X	
7. How often does the plant manager claim to inspect container storage areas? daily			
8. Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction? If "YES", explain.	N/A		
9. What is the approximate number and size of tanks containing hazardous wastes?			

SURFACE IMPOUNDMENTS (§265.220)			
1. Is there at least 2 feet of freeboard in the impoundment?			
2. Do all earthen dikes have a protective cover to preserve their structural integrity? If "YES", specify type of covering.			
3. Is there reason to believe that incompatible wastes are being placed in the same surface impoundment? If "YES", explain.			

	YES	NO	DON'T KNOW
4. Are ignitable or reactive wastes being placed in surface impoundments without being treated to remove those characteristics? If "YES", explain.	___	___	___
5. Are there any leaks, failures or is there any deteriorization in the impoundments? If "YES", explain.	___	___	___
6. Give the approximate size of surface impoundments (gallons or cubic feet).			

WASTE PILES (§265.250)

1. Is the waste pile protected from wind erosion?	___	___	___
a. Does it appear to need such protection?	___	___	___
b. Explain what type of protection exists.			
2. Does it appear that incompatible wastes are being stored in the same waste pile? If "YES", explain.	___	___	___
3. Is leachate run-off from a pile a hazardous waste? If "YES", explain this determination and answer (a) and (b) below.	___	___	___
a. Is the pile placed on an impermeable base that is compatible with the waste?	___	___	___
b. Is the pile protected from precipitation and run-on?	___	___	___
4. In your judgment, are ignitable or reactive wastes managed in such a way that they are protected from any material or conditions which may cause them to ignite? Please explain or indicate if no such wastes are present.	___	___	___
Are they placed on an existing pile so that they no longer meet the definition of ignitable or reactive waste? Please explain.	___	___	___
5. How many waste piles are on site, and approximately how large are they?			

LAND TREATMENT (§265.270)

1. Can the facility operator demonstrate that the hazardous waste has been made less or non-hazardous by biological degradation or chemical reactions occurring in or on the soil? Please explain.	___	___	___

	YES	NO	DON'T KNOW
*2. Is run-on diverted away from the active portions of the land treatment facility?	___	___	___
*3. Is run-off collected?	___	___	___
4. Are food chain crops being grown on the facility property?	___	___	___
a. If "YES", can the facility operator document that arsenic, lead and mercury:			
- will not be transferred to the crop or ingested by food chain animals or	___	___	___
- will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils.	___	___	___
b. Has notification of the growing of the food chain crops been made to the Regional Administrator?	___	___	___
5. Is there a written and implemented plan for unsaturated zone monitoring?	___	___	___
6. Are there records of the application dates, application rates, quantities and location of each hazardous waste placed in the facility?	___	___	___
7. Do the closure and post-closure plans address:			
a. control of migration of hazardous wastes into the groundwater?	___	___	___
b. control of run-off, release of airborne particulate contaminants?	___	___	___
c. compliance with requirements for the growth of food-chain crops (if they are present)?	___	___	___
8. Is ignitable or reactive waste immediately incorporated into the soil so the resulting waste no longer meets that definition? If "YES", explain.	___	___	___
9. Are incompatible wastes placed in the same land treatment area? If "YES", explain.	___	___	___
10. What is the area of the land receiving hazardous waste treatment?	___	___	___
LANDFILLS (§265.300)			
†1. Is run-on diverted away from the active portions of the landfill?	___	___	___
†2. Is run-off from active portions of the landfill collected?	___	___	___

* Effective date for these requirements is May 19, 1981.

† These requirements are effective November 19, 1981.

	YES	NO	DON'T KNOW
3. Is waste which is subject to wind dispersal controlled? Explain.	___	___	___
4. Does the owner/operator maintain a map with:			
- the exact location and dimensions of each cell	___	___	___
- the contents of each cell and approximate location of each hazardous waste type	___	___	___
5. Do the closure and post-closure plans address:			
- control of pollutant migration via ground water?	___	___	___
- control of surface water infiltration?	___	___	___
- prevention of erosion?	___	___	___
6. Is ignitable or reactive waste treated before being placed in the landfill? Explain how you know.	___	___	___
7. Are precautions taken to insure that incompatible wastes are not placed in the same landfill cell? If "NO", explain.	___	___	___
8. Are bulk or non-containerized wastes containing free liquids placed in the landfill? If "YES",	___	___	___
a. Does the landfill have a liner which is chemically and physically resistant to the added liquid?	___	___	___
b. Is the waste treated and stabilized so that free liquids are no longer present?	___	___	___
*9. Are containers holding liquid waste or waste containing free liquids placed in the landfill?	___	___	___
10. Are empty containers (e.g. those containing less than 1/2 inch of liquid) placed in the landfills?	___	___	___
If so, are they crushed flat, shredded or similarly reduced in volume before they are buried?	___	___	___
11. What is the approximate area of the hazardous waste landfill?			

* Effective date for this requirement is November 19, 1981.

INCINERATORS AND THERMAL TREATMENT
(§§265.340 and 265.379)

	YES	NO	DON'T KNOW
1. What type of incinerator or thermal treatment is at the site (e.g. waterwall incinerator, boiler, fluidized bed, etc.)?			
2. Was hazardous waste being incinerated or thermally treated during your inspection? If "YES", answer all following questions. If "NO", answer only questions 3 and 7.	___	___	___
3. Has waste analysis been performed (and written records kept) to include:			
- heating value of the waste	___	___	___
- halogen content	___	___	___
- sulfur content	___	___	___
- concentration of lead	___	___	___
- concentration of mercury	___	___	___

NOTE: Waste analysis need not be performed on each waste load if if there are documented data available to show waste characteristics that do not vary. If there are such documented data available, check here [ ].

4. Does it appear that the owner/operator brings his thermal treatment process to steady state (normal) conditions of operation before introducing hazardous wastes?	___	___	___
5. Did it appear during your inspection that there was adequate monitoring and inspection by owner/operator every 15 minutes during hazardous waste incineration for:			
- waste feed	___	___	___
- auxiliary fuel feed	___	___	___
- air flow	___	___	___
- incinerator temperature	___	___	___
- scrubber flow	___	___	___
- scrubber pH	___	___	___
- relevant level controls	___	___	___
Every hour for:			
- stack plume (color and opacity)	___	___	___
5. Is there open burning of hazardous waste?	___	___	___

a. If "YES", what is being burned? (only burning or detonation of explosives is permitted)

b. If open burning or detonation of explosives is taking place, approximately what is the distance from the open burning or detonation to the property of others?

	YES	NO	DON'T KNOW
6. Does the incinerator appear to be operating properly? (Do emergency shutdown controls and system alarms seem to be in good working order?) Please explain.	___	___	___
a. Is there any evidence of fugitive emissions?	___	___	___
7. Is the residue from the incinerator treated by the owner as a hazardous waste? Please explain.	___	___	___

8. What types of air pollution control devices (if any) are installed on the incinerator?

CHEMICAL, PHYSICAL AND BIOLOGICAL TREATMENT (§265.400)

1. Does the treatment process system show any signs of ruptures, leaks, or corrosion? Please explain.	___	X	___
2. Is there a means to stop the inflow of continuously-fed hazardous wastes?	X	___	___
3. Is there ignitable or reactive waste fed into the treatment system?	___	X	___
If "YES", has it been treated or protected from any material or conditions which may cause it to ignite or react? If so, explain how.	N/A		___
Are the incompatible wastes placed in the same treatment process? If "YES", explain.	___	X	___

5. Describe the treatment system at this facility.

RINSE WATER IS TREATED WITH FERROUS SULFATE AND LIME. DEPENDING UPON THE PH OF SOLUTION, CAUSTIC IS ADDED TO ADJUST THE PH. A POLYELECTROLYTE IS ADDED FOR THE PRECIPITATION OF METALLIC HYDROXIDES. THE PRECIPITATE RESULTS IN A SLUDGE WHICH METHODE CONSIDERS A HAZARDOUS WASTE. THE NEUTRALIZED WATER IS DISCHARGED INTO THE WILMINGTON SEWAGE AUTHORITY (POTW).

REFERENCE NO. 3

Methode Electronics, Inc., East

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

September 16, 1981

EPA Region II
26 Federal Plaza
New York, N. Y. 10007

NJD048608817

~~NYD072731750~~

Attn: Manifest Section

Gentlemen:

During a recent inspection by the New Jersey Department of Environmental Protection, it was discovered that the Generators Copy (Part B) of manifest number NJ0013953 had not been returned to our company. We have attached a copy for your information.

Sincerely,

METHODE ELECTRONICS INC., EAST

R. C. McFarland
Purchasing Agent

RCM:mwk

AH
GWDMS
10/12/82

Form VHW-001 (10/80)

See cover sheet for instructions.
Please TYPE all information.

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

HAZARDOUS WASTE MANIFEST

PART A: GENERATOR'S COPY

DOCUMENT NO. NJ 0013953

GENERATOR NAME	PHONE (INCLUDE AREA CODE)	EPA ID NO.
METHODE ELECTRONICS INC	609-871-3500	NJD 048608897
ADDRESS (STREET - CITY - STATE - ZIP CODE)		
ONE INDUSTRIAL PARK, WILLINGBORO, NJ, 08046		
TRANSPORTER NO. 1	PHONE (INCLUDE AREA CODE)	EPA ID NO.
Philip A Hunt Chemical	212-361-9100	NYD ~~727173~~ 072731730
ADDRESS (STREET - CITY - STATE - ZIP CODE)		
Long Island City NY.		
TRANSPORTER NO. 2	PHONE (INCLUDE AREA CODE)	EPA ID NO.
		NX
ADDRESS (STREET - CITY - STATE - ZIP CODE)		
TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY	PHONE (INCLUDE AREA CODE)	EPA ID NO.
PHILIP A HUNT CHEMICAL CORP	~~800-227-0366~~ 212-361-9500	NYD072731730
SITE ADDRESS (STREET - CITY - STATE - ZIP CODE)		
~~PALISADES PARK, NJ~~, LIC, NY		

IF MORE THAN TWO TRANSPORTERS ARE TO BE UTILIZED, FILL OUT THE FOLLOWING AS APPROPRIATE

THIS FORM IS NO. _____ OF A TOTAL OF _____. THE FIRST MANIFEST DOCUMENT NO. IS NJ →

	PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
1.	SPENT ALKALINE ETCHANT.	CORROSIVE	UN1760	1	3000	1	001	02	C	D002
2.										
3.										
4.										
5.										
6.										

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION: This is to certify that the above named materials are properly classified, described, marked and labelled and are in condition for transportation according to the applicable regulations of the Department of Transportation, U.S. EPA and the State. The wastes described were consigned to the Transporter named. The Treatment, Storage or Disposal Facility can and will accept the shipment of hazardous waste, and has permit to do so. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE	TITLE	DATE SHIPPED (MO. DAY YR.)	EXPECTED ARRIVAL DATE (MO. DAY YR.)
[signature]	P/A	03 03 81	03 03 81

TRANSPORTER NO. 1 SIGNATURE AND CERTIFICATION OF RECEIPT OF SHIPMENT	TRANSPORTER NO. 1 VEHICLE ID NO.	DATE RECEIVED (MO. DAY YR.)
[signature]	NJ # 259 XX2AZ(4	3 3 81

TEAR AT THIS PERFORATION

REFERENCE NO. 4

1/25/82

RCRA GENERATOR INSPECTION FORM

Report Also Prepared for:

Transporter /_/

TSD facility /✓/

Copy of report requested by facility /_/

Methode

Facility Information

Name: Methode Corp

Address: 1 Industrial Park
Willingboro, N.J. 08046

EPA ID#: NJD048608817

Participating Personnel

State or EPA Personnel: Angela Morales
Ken Grigiello

Facility Personnel: Joseph Mulcahy Eng

Report Prepared by Name: Angela Morales

Agency: U.S. EPA Surveill. + Monitoring Br.

Telephone #: (201) 321-6623
FTS 340-6623

Approved for the Director by: _____

Purpose of Survey

To determine compliance with the RCRA regulations 40 CFR Parts 262 and 265.

Facility Description and Operations

The Methode Corp manufactures printed circuit boards. In their process, part of which involves electroplating and etching, rinse waters are used which become contaminated with copper. This rinse water is put through a waste water treatment system.

In recovering the copper in the waste-water, a metal hydroxide sludge is generated. (Company officials informed us that it was hazardous). Approximately 4,000 gallons/month is generated and after centrifuging, approximately six 55-gallon drums per month are generated. All remaining waste water is put through the sewer system.

A 50% solution of nitric acid is used to clean out the tanks which held the copper solution. This ~~[illegible]~~ nitric acid solution leaches copper from the walls of the After the saturation point of the nitric

solution has been reached it is put in drums and hauled away. Approximately 8-10 fifty-five gallon drums/month is generated.

In addition to the above mentioned wastes, Methode generated approximately 30 gallons per month of waste 1,1,1 trichloroethane (261.33). Also, the company purchases 5 gals/mo of acetone and 1 gallon/month of MEK, both of which evaporate during use. The ~~tat~~ 1,1,1 trichloroethane is used for cleaning purposes.

All plating baths are reused and replenished and are never discarded. According to company officials, the plating baths are constantly filtered and thus very little sludge develops at the bottom of the baths. The filters are thrown away in the trash.

Findings and Conclusions

Due to changes in the wording of the codes in 40 CFR Part 261.31, Methode is re-evaluating their Part A permit application to correct for the changes.

Summary of Waste Generated

1) Metal Hydroxide Sludge 6, 55 gal/mo
2) 50% nitric acid solution 8-10, 55 gal/mo
3) 1,1,1 trichloroethane 30, 55 gal/mo

RCRA GENERATOR INSPECTION FORM

COMPANY NAME: Methode Corp.

EPA I.D. NUMBER: NJD048603897

COMPANY ADDRESS: 1 Industrial Park
Willingboro, N.J. 08046

COMPANY CONTACT OR OFFICIAL: Joseph Mulcahy

INSPECTOR'S NAME: Angela Morales

TITLE: Engineering Manager. (609) 871-3500

BRANCH/ORGANIZATION: Environmental Services Div.

CHECK IF FACILITY IS ALSO A TSD FACILITY /✓/

DATE OF INSPECTION: 1/25/82

	YES	NO	DC KN
(1) Is there reason to believe that the facility has hazardous waste on site?	✓		

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

/✓/ Company admits that its waste is hazardous during the inspection.

/✓/ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

/✓/ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

/ / The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

/✓/ The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

/ / EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

/ / Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

	YES	NO	DON'T KNOW
b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?			✓
Please explain:			
c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.			
d. Describe the activities that result in the generation of hazardous waste.			
(2) Is hazardous waste stored on site?	✓		
a. What is the longest period that it has been accumulated? Greater than 90 days (Slightly over 90 days)			
b. Is the date when drums were placed in storage marked on each drum? (By not to 30 over 90 day limit but they do)		✓	
(3) Has hazardous waste been shipped from this facility since November 19, 1980?	✓		
(4) Approximately how many hazardous waste shipments off site have been made since November 19, 1980? 24 shipments			
a. Does it appear from the available information that there is a manifest copy available for each hazardous waste shipment that has been made?	✓		
b. If "no" or "don't know," please elaborate.			

	YES	NO	DON KNO
c. Does each manifest (or a representative sample) have the following information?			
- a manifest document number	✓		
- the generator's name, mailing address, telephone number, and EPA identification number	✓		
- the name, and EPA identification number of each transporter	✓		
- the name, address and EPA identification number of the designated facility and an alternate facility, if any:	✓		
- a description of the wastes (DOT)		✓	
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle	✓		
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA	✓		
(5) Were there any hazardous wastes stored on site at the time of the inspection?	✓		
a. If "yes," do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure?	✓		
b. If not properly packaged or in secure tanks, please explain.			
c. Are containers clearly marked and labelled?	✓		
d. Do any containers appear to be leaking?		✓	
e. If "yes," approximately how many?			

(6) Has the generator submitted an annual report to EPA covering the previous calendar year? ___ ✓ ___

a. How do you know?

(7) Has the generator received signed copies (from the TSD facility) of all manifests for wastes shipped off site more than 35 days ago? ___ ✓ ___

a. If "no," have Exception Reports been submitted to EPA covering these shipments? ✓ ___ ___

(8) General comments.

(7) Methode Corp. had not received the certification for one shipment sent to the Phillip A. Hunt Chemical Corp on Sept. 16, 1981. The Methode Corp. filed an exception report after having been notified by an DEP Inspector (Wayne Horitz) that one was required. Methode Corp has yet to receive the signed certification form.

During the inspection, EPA inspectors were informed that the Phillip A. Hunt Chem. Corp recycles the spent alkaline etchant which Methode sends them. The Hunt Chem. Corp recovers the copper which is contained in the solution.

* The effective date for this requirement is March 1, 1982.

RCRA TREATMENT, STORAGE AND DISPOSAL FACILITY INSPECTION FORM
FOR TSD FACILITIES ONLY

COMPANY NAME: Methode Corp

EPA I.D. Number: NJD048608897

COMPANY ADDRESS: 1 Industrial Park
Willingboro, NJ

COMPANY CONTACT OR OFFICIAL: Joseph Mulcahy

TITLE: Engineering Manager
(609) 871-3500

OTHER ENVIRONMENTAL PERMITS HELD BY FACILITY:
- [ ] NPDES
- [ ] AIR
- [ ] OTHER

INSPECTOR'S NAME: Angela Morales

DATE OF INSPECTION: 1/25/82

BRANCH/ORGANIZATION: Surv. & Analysis Br.

TIME OF DAY INSPECTION TOOK PLACE: 945a

(1) Is there reason to believe that the facility has hazardous waste on site? Yes

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

- [x] Company admits that its waste is hazardous during the inspection.
- [x] Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.
- [x] The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)
- [ ] The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)
- [x] The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)
- [ ] EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)
- [ ] Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

	YES	NO	DON'T KNOW
b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?		✓	

Please explain:

c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.

1) Does the facility generate hazardous waste?	✓		
2) Does the facility transport hazardous waste?		✓	
3) Does the facility treat, store or dispose of hazardous waste?	✓		

VISUAL OBSERVATIONS

	YES	NO	DON'T KNOW
(5) SITE SECURITY (§265.14)			
a. Is there a 24-hour surveillance system?		✓	
b. Is there a suitable barrier which completely surrounds the active portion of the facility?	✓		
c. Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility?	✓		
(6) Are there ignitable, reactive or incompatible wastes on site? (§265.27)		✓	
a. If "YES", what are the approximate quantities?	N/A		
b. If "YES", have precautions been taken to prevent accidential ignition or reaction of ignitable or reactive waste?			
c. If "YES", explain	N/A		
d. In your opinion, are proper precautions taken so that these wastes do not:	N/A		
- generate extreme heat or pressure, fire or explosion, or violent reaction?			
- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficent quantities to threaten human health?			
- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions?			
- damage the structural integrity of the device or facility containing the waste?			
- threaten human health or the environment?			

Please explain your answers, and comment if necessary.

a. Are there any additional precautions which you would recommend to improve hazardous waste handling procedures at the facility?

None

- Does the facility comply with preparedness and prevention requirements including maintaining: (265.32)

	YES	NO	DON'T KNOW
- an internal communications or alarm system?	✓		
- a telephone or other device to summon emergency assistance from local authorities?	✓		
- portable fire equipment?	✓		
- adequate aisle space?	✓		
- in your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.	✓		

~~In your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.~~

*(8.) Have you inspected to verify that the groundwater monitoring wells (if any) mentioned in the facility's groundwater monitoring plan (see no. 19 below) are properly installed? N/A			

If you have, please comment, as appropriate.

(9) a. Is there any reason to believe that groundwater contamination already exists from this facility? If "YES", explain.			
b. Do you believe that operation of this facility may affect groundwater quality?			
c. If "YES", explain.			

RECORDS INSPECTION

(10) Has the facility received hazardous waste from an off-site source since Nov. 19, 1980 (effective date of the regulations)?		✓	
a. If "YES", does it appear that the facility has a copy of a manifest for each hazardous waste load received? N/A			
b. How many post-November 19 manifests does it have? (If the number is large, you may estimate)			
c. Does each manifest (or a representative sample) have the following information? N/A			
- a manifest document number			

	YES	NO	DON'T KNOW
- the generator's name, mailing address, telephone number, and EPA identification number			
- the name, and EPA identification number of each transporter			
- the name, address and EPA identification number of the designated facility and an alternate facility, if any;			
- a DOT description of the wastes			
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle			
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA			
d. Are there any indications that unmanifested hazardous wastes have been received since November 19, 1980? If YES, explain.		✓	
(11) Does the facility have a written waste analysis plan specifying test methods, sampling methods and sampling frequency? (§265.13)	✓		
a. Does the character of wastes handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? (You may check more than one) Waste characteristics vary ✓ All wastes are basically the same ____ Company treats all waste as hazardous ____ Don't Know ____			
b. Does hazardous waste come to this facility from off-site sources?		✓	
c. If waste comes from an off-site source, are there procedures in the plan to insure that wastes received conform to the accompanying manifest? N/A			
(12) INSPECTIONS §265.15			
a. Does the facility have a written inspection schedule?	✓		
b. Does the schedule identify the types of problems to be looked for and the frequency for inspections?	✓		
c. Does the owner/operator record inspections in a log?	✓		
d. Is there evidence that problems reported in the inspection log have not been remedied? If "YES," please explain.		✓	

	YES	NO	DON'T KNOW
(13) PERSONNEL TRAINING (§265.16)			
a. Is there written documentation of the following:			
- job title for each position at the facility related to hazardous waste management and the name of the employee filling each job?	✓		
- type and amount of training to be given to personnel in jobs related to hazardous waste management?	✓		
- actual training or experience received by personnel?	✓		
(14) Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosion or any unplanned release of hazardous waste? (§265.51)	✓		
a. Does the plan describe arrangements made with local authorities?	✓		
b. Has the contingency plan been submitted to local authorities?	✓		
How do you know?			
c. Does the plan list names, addresses, and phone numbers of Emergency Coordinators?	✓		
d. Does the plan have a list of what emergency equipment is available?	✓		
e. Is there a provision for evacuating facility personnel?	✓		
f. Was an Emergency Coordinator present or on call at the time of the inspection?	✓		
(15) Does the owner/operator keep a written operating record with: (§265.73)			
- a description of wastes received with methods and dates of treatment, storage or disposal?	N/A		
- location and quantity of each waste?	✓		
- detailed records and results of waste analysis and treatability tests performed on wastes coming into the facility?	N/A		
- detailed operating summary reports and description of all emergency incidents that required the implementation of the facility contingency plan?	✓		
(16) Does the facility have written closure and post-closure plans? (§265.112)	✓		
a. Does the written closure plan include:			
- a description of how and when the facility will be partially (if applicable) and completely closed?		✓	

	YES	NO	DON'T KNOW
- an estimate of the maximum inventory of wastes in storage or treatment at any time during the life of the facility?	✓		
- a description of the steps necessary to decontaminate facility equipment during closure?	✓		
- a schedule for final closure including the anticipated date when wastes will no longer be received and when final closure will be completed?		✓	
b. What is the anticipated date for final closure?			✓
c. Does the owner/operator have a written post-closure plan identifying the activities which will be carried on after closure and the frequency of these activities? N/A			
d. Does the written post-closure plan include:			
- a description of planned groundwater monitoring activities and their frequencies during post-closure?			
- a description of planned maintenance activities and frequencies to ensure integrity of final cover during post-closure?			
- the name, address and phone number of a person or office to contact during post-closure?			
*(17) Does the owner/operator have a written estimate of the cost of closing the facility? (§265.142) What is it?		✓	
*(18) Does the owner/operator have a written estimate of the cost for post-closure monitoring and maintenance? What is it? (§265.144) N/A			
*(19) Has a groundwater monitoring plan been submitted to the Regional Administrator for facilities containing a surface impoundment, landfill or land treatment process? (This requirement does not apply to recycling facilities.) (§265.90) N/A			
a. Does the plan indicate that at least one monitoring well has been installed hydraulically upgradient from the limit of the waste management area?			
b. Does the plan indicate that there are at least three monitoring wells installed hydraulically downgradient at the limit of the waste management area?			

* This section applies only to disposal facilities.

* Effective date for this requirement is May 19, 1981.

SITE-SPECIFIC

Please circle all appropriate activities and answer questions on indicated pages for all activities circled. When you submit your report, include only those site-specific pages that you have used.

STORAGE	TREATMENT	DISPOSAL
Waste Pile p. 9	Tank p. 8	Landfill pp. 10-11
Surface Impoundment p. 8	Surface Impoundment pp. 8-9	Land Treatment pp. 9, 10
Container p. 7	Incineration pp. 12-13	Surface Impoundment p. 8
Tank, above ground p. 8	Thermal Treatment pp. 12-13	Other _____
Tank, below ground p. 8	Land Treatment pp. 9-10	
Other _____	Chemical, Physical p. 13 and Biological Treatment (other than in tanks, surface impoundment or land treatment facilities)	
	Other _____	

CONTAINERS (§265.170)

	YES	NO	DON'T KNOW
1. Are there any leaking containers? If "YES", explain.		✓	
2. Are there any containers which appear in danger of leaking? If "YES", explain.		✓	
3. Do wastes appear compatible with container materials?	✓		
4. Are all containers closed except those in use?	✓		
5. Do containers appear to be opened, handled or stored in a manner which may rupture the containers or cause them to leak?		✓	
6. How often does the plant manager claim to inspect container storage areas? Daily.			
7. Does it appear that incompatible wastes are being stored in close proximity to one another? If "YES" explain.		✓	
8. Are containers holding ignitable or reactive wastes located at least 15 meters (50 feet) from the facility's property line? N/A			
9. What is the approximate number and size of containers?			

TANKS (§265.190)	YES	NO	DON'T KNOW
1. Are there any leaking tanks? If "YES", explain.	___	___	___
2. Are there any tanks which appear in danger of leaking. If "YES", explain.	___	___	___
3. Are wastes or treatment reagents being placed in tanks which could cause them to rupture, leak, corrode or otherwise fail? If "YES", explain.	___	___	___
4. Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure?	___	___	___
5. Where hazardous waste is continuously fed into a tank, is the tank equipped with a means to stop this inflow?	___	___	___
6. Does it appear that incompatible wastes are being stored in close proximity to one another, or in the same tank? If "YES", explain.	___	___	___
7. How often does the plant manager claim to inspect container storage areas?			
8. Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction? If "YES", explain.	___	___	___
9. What is the approximate number and size of tanks containing hazardous wastes?			

SURFACE IMPOUNDMENTS (§265.220)			
1. Is there at least 2 feet of freeboard in the impoundment?	___	___	___
2. Do all earthen dikes have a protective cover to preserve their structural integrity? If "YES", specify type of covering.	___	___	___
3. Is there reason to believe that incompatible wastes are being placed in the same surface impoundment? If "YES", explain.	___	___	___

	YES	NO	DON'T KNOW
4. Are ignitable or reactive wastes being placed in surface impoundments without being treated to remove these characteristics? If "YES", explain.	___	___	___
5. Are there any leaks, failures or is there any deteriorization in the impoundments? If "YES", explain.	___	___	___
6. Give the approximate size of surface impoundments (gallons or cubic feet).			

WASTE PILES (§265.250)

1. Is the waste pile protected from wind erosion?	___	___	___
a. Does it appear to need such protection?	___	___	___
b. Explain what type of protection exists.			
2. Does it appear that incompatible wastes are being stored in the same waste pile? If "YES", explain.	___	___	___
3. Is leachate run-off from a pile a hazardous waste? If "YES", explain this determination and answer (a) and (b) below.	___	___	___
a. Is the pile placed on an impermeable base that is compatible with the waste?	___	___	___
b. Is the pile protected from precipitation and run-on?	___	___	___
4. In your judgment, are ignitable or reactive wastes managed in such a way that they are protected from any material or conditions which may cause them to ignite? Please explain or indicate if no such wastes are present.	___	___	___
Are they placed on an existing pile so that they no longer meet the definition of ignitable or reactive waste? Please explain.	___	___	___

5. How many waste piles are on site, and approximately how large are they?

LAND TREATMENT (§265.270)

1. Can the facility operator demonstrate that [illegible] have been made less or

	YES	NO	DON'T KNOW
*2. Is run-on diverted away from the active portions of the land treatment facility?	___	___	___
*3. Is run-off collected?	___	___	___
4. Are food chain crops being grown on the facility property?	___	___	___
a. If "YES", can the facility operator document that arsenic, lead and mercury:			
- will not be transferred to the crop or ingested by food chain animals or	___	___	___
- will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils.	___	___	___
b. Has notification of the growing of the food chain crops been made to the Regional Administrator?	___	___	___
5. Is there a written and implemented plan for unsaturated zone monitoring?	___	___	___
6. Are there records of the application dates, application rates, quantities and location of each hazardous waste placed in the facility?	___	___	___
7. Do the closure and post-closure plans address:			
a. control of migration of hazardous wastes into the groundwater?	___	___	___
b. control of run-off, release of airborne particulate contaminants?	___	___	___
c. compliance with requirements for the growth of food-chain crops (if they are present)?	___	___	___
8. Is ignitable or reactive waste immediately incorporated into the soil so the resulting waste no longer meets that definition? If "YES", explain.	___	___	___
9. Are incompatible wastes placed in the same land treatment area? If "YES", explain.	___	___	___
10. What is the area of the land receiving hazardous waste treatment?	___	___	___

LANDFILLS ($265.000)

*1. Is run-on diverted away from the active portions of the landfill?	___	___	___
*2. Is run-off from active portions of the landfill collected?	___	___	___

[illegible] May [illegible] 1981.

	YES	NO	DON'T KNOW
3. Is waste which is subject to wind dispersal controlled? Explain.	___	___	___
4. Does the owner/operator maintain a map with:			
- the exact location and dimensions of each cell	___	___	___
- the contents of each cell and approximate location of each hazardous waste type	___	___	___
5. Do the closure and post-closure plans address:			
- control of pollutant migration via ground water?	___	___	___
- control of surface water infiltration?	___	___	___
- prevention of erosion?	___	___	___
6. Is ignitable or reactive waste treated before being placed in the landfill? Explain how you know.	___	___	___
7. Are precautions taken to insure that incompatible wastes are not placed in the same landfill cell? If "NO", explain.	___	___	___
8. Are bulk or non-containerized wastes containing free liquids placed in the landfill? If "YES",	___	___	___
a. Does the landfill have a liner which is chemically and physically resistant to the added liquid?	___	___	___
b. Is the waste treated and stabilized so that free liquids are no longer present?	___	___	___
*9. Are containers holding liquid waste or waste containing free liquids placed in the landfill?	___	___	___
10. Are empty containers (e.g. those containing less than 1.0 inch of liquid) placed in the landfills?	___	___	___
If so, are they crushed flat, shredded or similarly reduced in volume before they are buried?	___	___	___

11. What is the approximate area of the hazardous waste landfill?

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* Effective date for this requirement is November 19, 1981.

INCINERATORS AND THERMAL TREATMENT
(§§265.340 and 265.379)

	YES	NO	DON'T KNOW
1. What type of incinerator or thermal treatment is at the site (e.g. waterwall incinerator, boiler, fluidized bed, etc.)?			
2. Was hazardous waste being incinerated or thermally treated during your inspection? If "YES", answer all following questions. If "NO", answer only questions 3 and 7.	___	___	___
3. Has waste analysis been performed (and written records kept) to include:			
- heating value of the waste	___	___	___
- halogen content	___	___	___
- sulfur content	___	___	___
- concentration of lead	___	___	___
- concentration of mercury	___	___	___

NOTE: Waste analysis need not be performed on each waste load if if there are documented data available to show waste characteristics that do not vary. If there are such documented data available, check here [ ].

4. Does it appear that the owner/operator brings his thermal treatment process to steady state (normal) conditions of operation before introducing hazardous wastes?	___	___	___
5. Did it appear during your inspection that there was adequate monitoring and inspection by owner/operator every 15 minutes during hazardous waste incineration for:			
- waste feed	___	___	___
- auxiliary fuel feed	___	___	___
- air flow	___	___	___
- incinerator temperature	___	___	___
- scrubber flow	___	___	___
- scrubber pH	___	___	___
- relevant level controls	___	___	___
Every hour for:			
- stack plume (color and opacity)	___	___	___
6. Is there open burning of hazardous waste?	___	___	___

a. If "YES", what is being burned? (only burning or detonation of explosives is permitted)

b. If open burning or detonation of explosives is taking place, approximately what is the distance from the open burning or detonation to the property of others?

	YES	NO	DON'T KNOW
6. Does the incinerator appear to be operating properly? (Do emergency shutdown controls and system alarms seem to be in good working order?) Please explain.	___	___	___
a. Is there any evidence of fugitive emissions?	___	___	___
7. Is the residue from the incinerator treated by the owner as a hazardous waste? Please explain.	___	___	___

8. What types of air pollution control devices (if any) are installed on the incinerator?

CHEMICAL, PHYSICAL AND BIOLOGICAL TREATMENT (§265.400)

1. Does the treatment process system show any signs of ruptures, leaks, or corrosion? Please explain.	___	___	___
2. Is there a means to stop the inflow of continuously-fed hazardous wastes?	___	___	___
3. Is there ignitable or reactive waste fed into the treatment system?	___	___	___
If "YES", has it been treated or protected from any material or conditions which may cause it to ignite or react? If so, explain how.	___	___	___
Are the incompatible wastes placed in the same treatment process? If "YES", explain.	___	___	___

5. Describe the treatment system at this facility.

REFERENCE NO. 5

3

Methode Electronics, Inc., East

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

July 7, 1982

JUL 13 2 14 PM '82
ENVIRONMENTAL PROTECTION AGENCY
NEW YORK, N.Y. 10007

EPA Region II
Permits Administration Branch
Room 432
26 Federal Plaza
New York, New York 10007

EPA ID # NJ DO 48608897
RE: Change in Permit Application

Gentlemen:

The purpose of this letter is to inform the EPA of an important change concerning our hazardous waste permit application of November 17, 1980.

In this original application, we used the Federal Register, Volume 45, No. 98 as a guide to determine the EPA hazardous waste numbers. In doing so, Section 261.31, "the list of hazardous waste from nonspecific sources," was used. Hazardous waste numbers F007, F008, F009, were selected in our permit application because these numbers seemed to represent our waste as it read in this section only.

However, referring to appendix VII, "the basis for listing hazardous waste", in the above mentioned Federal Register, it is noted here and only here that cyanide is the required waste and basis to use F007, F008, F009. This is a very misleading situation, since section 261.31, F007, F008, F009 seems to represent all type plating bath etc. from electroplating operations, NOT ONLY CYANIDE.

In your revised Code of Federal Regulations 40 Parts 190 to 399, revised as of July 1, 1981, Section 261.31, F007, F008, F009 includes the wording "from cyanide plating baths or where cyanides are used in the process" clearly stating the basis for listing.

Therefore, hazardous waste #F007, F008, F009 should not have been used on Methode's permit application because our wastes do not contain cyanide. These three formerly listed wastes should be classified as D002 and D003.

(cont'd)

IPC MEMBER

This error on our permit application was due to misleading information in the older Federal Register, but which now has been clearly corrected in your revised Federal Register.

Please consider this registered letter as Methode Electronics official notice to the EPA concerning the hazardous waste code number changes in our permit application from F007, F008, F009 to D002 and D003.

Thank you.

Very truly yours,

METHODE ELECTRONICS, INC., EAST

Dennis Olejniczak

Dennis Olejniczak
Process Engineer

DO:mwk
enc: 3

§ 261.31 Hazardous waste from nonspecific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001	The spent halogenated solvents used in degreasing, tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The spent halogenated solvents, tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, o-dichlorobenzene, trichlorofluoromethane and the still bottoms from the recovery of these solvents.	(T)
F003	The spent non-halogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, n-butyl alcohol, cyclohexanone, and the still bottoms from the recovery of these solvents.	(I)
F004	The spent non-halogenated solvents, cresols and cresylic acid, nitrobenzene, and the still bottoms from the recovery of these solvents	(T)
F005	The spent non-halogenated solvents, methanol, toluene, methyl ethyl ketone, methyl isobutyl ketone, carbon disulfide, isobutanol, pyridine and the still bottoms from the recovery of these solvents.	(I, T)
F006	Wastewater treatment sludges from electroplating operations	(T)
F007	Spent plating bath solutions from electroplating operations	(R, T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations	(R, T)
F010	Quenching bath sludge from oil baths from metal heat treating operations	(R, T)
F011	Spent solutions from salt bath pot cleaning from metal heat treating operations	(R, T)
F012	Quenching wastewater treatment sludges from metal heat treating operations	(T)
F013	Flotation tailings from selective flotation from mineral metals recovery operations	(T)
F014	Cyanidation wastewater treatment tailing pond sediment from mineral metals recovery operations	(T)
F015	Spent cyanide bath solutions from mineral metals recovery operations	(R, T)
F016	Dewatered air pollution control scrubber sludges from coke ovens and blast furnaces	(T)

§ 261.32 Hazardous waste from specific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Wood Preservation: K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)
Inorganic Pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic Chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R, T)
K012	Still bottoms from the final purification of acrylonitrile in the production of acrylonitrile	(T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R, T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from fractionation in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tars from the production of methyl ethyl pyridines	(T)
K027	Centrifuge residue from toluene diisocyanate production	(R, T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)
K029	Waste from the product stream stripper in the production of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
Pesticides:		
K031	By-products salts generated in the production of MSMA and cacodylic acid	(T)
K032	Wastewater treatment sludge from the production of chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)
K039	Filter cake from the filtration of diethylphosphorodithoic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K042	Heavy ends or still bottoms residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
Explosives:		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds	(T)
K047	Pink/red water from TNT operations	(R)
Petroleum Refining:		
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)
K049	Slop oil emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)
Leather Tanning Finishing:		
K053	Chrome (blue) trimmings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.	(T)

Revised

§ 261.31 Hazardous waste from nonspecific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.	(T)
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.	(I)
F004	The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(T)
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.	(I, T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum	(T)
F007	Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions).	(R, T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges).	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions).	(R, T)
F010	Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges).	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning).	(R, T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges).	(T)

[46 FR 4617, Jan. 16, 1981, as amended at 46 FR 27477, May 20, 1981]

Continued on page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

EPA I.D. NUMBER (enter from page 1): N J D 0 4 8 6 0 8 8 9 7

FOR OFFICIAL USE: W DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESS CODES (enter)
1	D 0 0 0	102,000	P	S 0 2
2	D 0 0 2			
3	F 0 0 2	SEE U226		
4	F 0 0 3	SEE U002		
5	F 0 0 5	SEE U220		
6	F 0 0 6	320,000	P	T 0 1 S 0 2
7	F 0 0 7	24,000	P	S 0 1
8	F 0 0 8			
9	F 0 0 9	40,000	P	T 0 1 S 0 1
10	U 0 0 2	400	P	S 0 1
11	U 1 2 2	2,000	P	S 0 1
12	U 2 2 0	100	P	S 0 1
13	U 2 2 6	11,000	P	S 0 2
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

Methode Electronics East. Willingboro N.J.

EPA ID # NJD 048608897

EPA Form 3510-3 (6-80)

REFERENCE NO. 6

Methode Electronics, Inc., East

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

July 14, 1982

JUL 22 9 15 AM '82
ENVIRONMENTAL PROTECTION AGENCY
NEW YORK, NEW YORK 10007
GRANTS ADMINISTRATION BRANCH
REGION II

U. S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, N. Y. 10278

Attn: Mr. Joseph Cvinar

RE: Submission Financial & Liability Requirements
EPA Letter - Kenneth S. Stoller, P. E.
EPA I.D. No. NJ0048608897

Dear Mr. Cvinar:

Pursuant to our telecon of July 14, 1982 we are formally requesting an extension of sixty days for the submission of our Financial and Liability date as required in the above reference EPA letter.

Thank you for your consideration in this matter.

Sincerely,

METHODE ELECTRONICS, INC., EAST

Mary W. Kelly

Mary W. Kelly
Secretary

IPC MEMBER

REFERENCE NO. 7

C3-44

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
32 E. Hanover St., CN 027, Trenton, N.J. 08625

JACK STANTON
DIRECTOR

LINO F. PEREIRA
DEPUTY DIRECTOR

Joseph Mulchay, Processing Engineer
Multhode Electronics
P.O. Box M
Willingboro, NJ 08046

RE: NOTICE OF VIOLATION
FAILURE TO SUBMIT ANNUAL REPORT

Dear Mr. Mulchay:

As a result of the information included in your company's RCRA Part A submittal to the USEPA, Region II, your hazardous waste activities were classified as a TSD (Treatment, Storage or Disposal) facility status. Pursuant to the provisions of the New Jersey Solid Waste Management Act, N.J.S.A. 13:1E-1, et seq., the Department of Environmental Protection has determined by examination of our files that you failed to submit a TSD Facility Annual Report by March 1, 1982. The requirements of this report are given on the enclosed sheet (along with instructions on how to be delisted from TSD status). Please note that this report is different and separate from the Generator's Report referred to in N.J.A.C. 7:26-7.4(g).

NOW, THEREFORE, YOU ARE HEREBY NOTIFIED that your facility shall submit the required annual report within fifteen (15) days of receipt of this Notice to: Frank Coolick, Chief, Bureau of Hazardous Waste Engineering, 32 East Hanover Street, Trenton, New Jersey 08625.

BE ON NOTICE that the Solid Waste Management Act establishes penalties of up to $25,000 per day for violation of the Department's hazardous waste management regulations. Your failure to correct the above violation, or any future violation, may result in a penalty action by this Department. Failure to submit the required report by the specified date will result in daily fines as follows:

i.	During the first week after the deadline:	$100/day
ii.	During the second week after the deadline:	$200/day
iii.	During the third week after the deadline:	$500/day
iv.	During the fourth week after the deadline and subsequently: a maximum of	$25,000/day

If you have any questions regarding this Notice, please call the Bureau of Hazardous Waste Engineering at (609) 292-9880.

DATE: JAN 0 1983

David J. Shotwell, Chief
Bureau of Compliance and Eforcement

DJS:rh
Enclosure

New Jersey Is An Equal Opportunity Employer

REFERENCE NO. 8

565-6226

Alexander & Alexander

February 9, 1983

Ms. Helen Beggun, Chief
Grants Administration Branch
Office of Policy & Management
U.S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

Re: Methode Electronics, Inc.
Willingboro, New Jersey
EPA ID No. 048608897

Dear Ms. Beggun:

I have been asked to answer the letter from Conrad Simon, dated January 31, 1983, regarding financial responsibility for Bodily Injury and Property Damage to third parties caused by sudden accidental occurrences arising from operations of this facility.

You will find attached a Certificate of Insurance issued by the Insurance Company of North America which shows coverage for sudden accidental occurrences is provided by their Policy No. GLPGO2955337. This insurance is primary and provides a limit of $500,000.

There is also included a Hazardous Waste Liability endorsement and Certificate issued by the Mission National Insurance Company. This policy provides additional limits of $1,000,000/$3,000,000 and is excess over the INA policy.

I hope this information will allow you to close your file on this location.

Yours very truly,

Charles J. O'Neill
Assistant Vice President

cd2/C2

cc: Mr. Kevin Hayes

-591,abs,11-15-

HAZARDOUS WASTE FACILITY POLLUTION LIABILITY ENDORSEMENT

Name of Insured			Policy Number
Methode Electronics, Inc.			
		Policy Period	Effective Date of Endorsement
GLP	GO 29 55 33 7	4-30-82/83	4-30-82

Issued By (Name of Insurance Company)

Insurance Company of North America

The above is required to be completed only when this endorsement is issued subsequent to the preparation of the policy.

1. This endorsement certifies that the policy to which the endorsement is attached provides pollution liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at

EPA #0312730007	EPA #0316000035	EPA #048608897
1700 Hicks Road	7444 W. Wilson Ave.	1 Industrial Park Drive
Rolling Meadows, IL	Chicago, IL	Willingboro, N.J.

for Sudden Accidental Occurrences

The insurance hereby certified is either primary or excess insurance, as indicated by "X" for the limits shown:

[X] The insurance hereby certified is primary and the Insurer shall not be liable for amounts in excess of $ 500,000. , $ 500,000. - annual aggregate, exclusive of legal defense costs.

[ ] The insurance hereby certified is excess and the Insurer will not be liable for amounts in excess of $, $ annual aggregate, exclusive of legal defense costs, in excess of the underlying limits of $

2. The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with subsections (a) through (e) of this Paragraph 2 are hereby amended to conform with subsections (a) through (e):

(a) Bankruptcy or insolvency of the Insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

(b) The primary Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

(over)

ALEXANDER & ALEXANDER AGENCY, INC., AGENT

By John Boylston

Authorized Agent

551,abe

(c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate original of the policy and all endorsements.

(d) Cancellation of this endorsement, whether by the Insurer or the Insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

(e) Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

It is the obligation of the Insured to obtain the required liability coverage(s).

Attached to and forming part of Policy No. CLP CO 29 55 33 7 issued by Insurance Company of North America, herein called the Insurer, of 1600 Arch St., Philadelphia, PA

to Methode Electronics

of 7447 W. Wilson Ave. Chicago, IL

this 5th day of November, 19 82.

The effective date of said policy is the 30th day of April, 19 82.

I hereby certify that the wording of this endorsement is identical to the wording specified in 40 CFR 264.151 (j) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

(Signature of authorized representative of Insurer)

John Wallentus
(Type name)

Casualty Manager
(Title), Authorized Representative of

Insurance Company of North America
(name of Insurer)

1600 Arch Street, Philadelphia, PA
(Address of Representative)

ENDORSEMENT #9

EFFECTIVE: September 14, 1982

It is hereby understood and agreed that the attached Hazardous Waste Facility Liability Endorsement is made a part of this policy.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

THIS ENDORSEMENT IS ATTACHED TO AND MADE A PART OF POLICY NO. MN012532

OF THE Mission National Insurance Company

ISSUED TO: Methode Electronics, Inc., Etal

DATED AT: Chicago, Illinois

DATE: September 24, 1982/es

SAYRE & TOSO, INC.

BY: Gilbert Menchaca

551,abs,11-15

HAZARDOUS WASTE FACILITIES—AMENDATORY PROVISIONS

Name of Insured			Endorsement Number
Methode Electronics, Inc.			6 8
Policy Symbol	Policy Number	Policy Period	Effective Date of Endorsement
GLP	60 29 55 23 7	4-30-82/83	4-30-82

Name of Insurance Company

Insurance Company of North America

The above is required to be completed only when this endorsement is issued subsequent to the preparation of the policy.

This endorsement modifies such insurance as is afforded by the provisions of the policy relating to the following:

COMPREHENSIVE GENERAL LIABILITY INSURANCE
MANUFACTURERS AND CONTRACTORS LIABILITY INSURANCE
OWNERS, LANDLORDS AND TENANTS LIABILITY INSURANCE
SMP LIABILITY INSURANCE

It is agreed that the following additional provisions apply with respect to a Hazardous Waste Treatment, Storage, or Disposal Facility subject to the financial responsibility requirements of 40 CFR Part 264.147 or 265.147 (Environmental Protection Agency Regulations); provided that the name, address or location, and ERA Identification Number of such facility are shown in the Schedule below.

1. The following provisions apply, in place of the limits of liability provisions shown elsewhere in this policy, to the company's liability for damages because of **bodily injury** or **property damage** arising out of a sudden and accidental discharge, dispersal, release or escape of irritants, contaminants or pollutants from any facility shown in the Schedule of this endorsement.

   Regardless of the number of: (1) facilities shown in the Schedule of this endorsement; (2) **insureds** under this policy; (3) persons or organizations which sustain **bodily injury** or **property damage;** or (4) claims made or suits brought:

   (a) the total liability of the company for all damages because of all **bodily injury** and all **property damage** shall not exceed the limit of liability shown in the Schedule of this endorsement as "aggregate;"

   (b) subject to (a), the total liability of the company for all damages because of all **bodily injury** and all **property damage** arising out of a single **occurrence** shall not exceed the limit of liability shown in the Schedule of this endorsement as "each **occurrence.**"

   For the purpose of determining the limit of the company's liability, all **bodily injury** and **property damage** arising out of a sudden and accidental discharge, dispersal, release or escape of irritants, contaminants or pollutants, including all **bodily injury** and **property damage** arising out of all subsequent exposure of persons and property to such substances, shall be considered as arising out of a single **occurrence.**

HAZARDOUS WASTE FACILITY
CERTIFICATE OF LIABILITY INSURANCE

1. Mission National Insurance Company (the insurer)
of Los Angeles, California
hereby certifies that it has issued liability insurance covering bodily injury and property damage to Methode Electronics, etal (the insured), of Chicago, Illinois
in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at
Methode Electronics, Inc. East , 1 Industrial Dr., Willingboro, N.J.
for sudden accidental occurrences. EPA ID# 0486 08897

The limits of liability are $1,000,000 each occurrence, $3,000,000 annual aggregate, exclusive of legal defense cost. The coverage is provided under Policy Number MN 012532 issued on April 30, 1982. The effective date of said policy is April 30, 1982.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

(c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is(are) located.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is(are) located.

I hereby certify that the wording of this instrument is identical to the wording specified in 40CFR 264.151(j) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

_____

Authorized Representative of Insurer

NAME (TYPE IN) John Boylston

TITLE Vice President

Authorized Representative of Alexander & Alexander, Inc.

ADDRESS:

PJ9-A4

REFERENCE NO. 9

Methode Electronics, Inc.

GENERAL OFFICES
7444 W. WILSON AVE. • CHICAGO, ILL. 60656
TWX 910-221-2468
TELEPHONE (312) 867-9600

February 14, 1983

Ms. Helen Beggun
Chief, Grants Administration Branch
Office of Policy and Management
U. S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

RE: Methode Electronics, Inc.
Willingboro, New Jersey
EPA Identification Number 048608897

Dear Ms. Beggun:

As Chief Financial Officer of Methode Electronics, Inc., I am enclosing a letter outlining how we meet the financial tests of closure and post-closure expenses for our Willingboro, New Jersey facility. I am also enclosing a letter from Ernst & Whinney, our independent accountants, confirming the data submitted in my letter.

Late last week, our insurance broker, Alexander & Alexander, forwarded to you the required Certificates of Insurance, and hopefully all of the above will answer any questions you might have pertaining to this facility.

After you have had a chance to review this information, please give me a call if you have questions.

Very truly yours,

Kevin J. Hayes

jak
enclosures

Methode Electronics, Inc.

GENERAL OFFICES
7444 W. WILSON AVE. • CHICAGO, ILL. 60656
TWX 910-221-2468
TELEPHONE (312) 867-9600

February 11, 1983

Ms. Helen Beggun
Chief, Grants Administration Branch
Office of Policy and Management
U. S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

Dear Ms. Beggun:

I am the Chief Financial Officer of Methode Electronics, Inc. located at 7444 West Wilson Avenue, Chicago, Illinois 60656. This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Subpart H of 40 CFR Parts 264 and 265.

1. This firm is the owner or operator of the following facility for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure and/or post-closure cost estimates covered by the test are shown for this facility:

   EPA Identification #048608897

   Methode Electronics, Inc.
   One Industrial Park
   Willingboro, New Jersey 08046

   Current closure cost estimate: $12,471

2. None

3. None

4. None

This firm is required to file a Form 10-K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on April 30. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended April 30, 1982.

Alternative I

1.	$ 12,471
*2.	$12,463,194
*3.	$11,421,071
*4.	$11,421,071
*5.	$14,985,001
*6.	$ 5,508,762
7.	$ 9,476,239
*8.	$ 3,017,263
*9.	Not applicable
10.	Yes
11.	Yes
12.	Yes
*13.	Yes
14.	---
15.	Yes
16.	Yes
17.	Yes

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 264.151(f) as such regulations were constituted on the date shown immediately below.

Kevin J. Hayes
Vice President and
Treasurer
February 11, 1983

jak

Ernst & Whinney

150 South Wacker Drive
Chicago, Illinois 60606

312/368-1800

Mr. Kevin J. Hayes
Vice President and Treasurer
Methode Electronics, Inc.
Chicago, Illinois

We have examined the consolidated financial statements of Methode Electronics, Inc. and subsidiaries for the year ended April 30, 1982 and have expressed our opinion thereon in our report dated June 14, 1982.

At your request, we have compared the data enumerated below, as set forth in your letter dated February 11, 1983 to the United States Environmental Protection Agency to corresponding amounts included in, or derived from such audited consolidated financial statements, and have found such amounts to be in agreement. Furthermore, no matters came to our attention which would require the following data to be adjusted.

The data so compared are as follows:

1.	Total liabilities	$12,463,194
2.	Tangible net worth	11,421,071
3.	Net worth	11,421,071
4.	Current assets	14,985,001
5.	Current liabilities	5,508,762
6.	The sum of net income plus depreciation, depletion and amortization	3,017,263

This letter is solely to assist in your compliance with the applicable requirements of the United States Environmental Protection Agency and is not to be used for any other purpose.

Ernst & Whinney

Chicago, Illinois
February 11, 1983

AMENDATORY ENDORSEMENT POLLUTION LIABILITY

THE HARTFORD

This endorsement modifies such insurance as is afforded by the provisions of the policy relating to the following
COMPREHENSIVE GENERAL LIABILITY INSURANCE
COMPREHENSIVE — PLUS SPECIAL GENERAL LIABILITY INSURANCE
SMP LIABILITY INSURANCE

Premium for This Endorsement $ 145.00

Part I Separate Limits of Liability Endorsement (Hazardous Waste Facility)

It is agreed that:

1. The limits of liability stated in the Hazardous Waste Facility Pollution Liability Endorsement in Part II apply separately to such insurance as is afforded by the policy in connection with the insured's obligation to demonstrate financial responsibility at the facilities described therein.
2. Such limits of liability apply collectively to all such facilities (and not separately to each) and are in lieu of and not in addition to any other limits of liability stated elsewhere in the policy.
3. The "each occurrence" limit applies to all bodily injury and all property damage arising out of a single occurrence.
4. The annual "aggregate" limit applies to all damages because of all bodily injury and all property damage which occurs during the policy period.
5. For the purpose of determining the limit of the company's liability, all bodily injury and property damage arising out of a sudden and accidental discharge, dispersal, release or escape of irritants, contaminants or pollutants, including all bodily injury and property damage arising out of all subsequent exposure of persons or property to such substances, shall be considered as arising out of a single occurrence.
6. Part I of this endorsement shall be cancelled automatically by cancellation of the Hazardous Waste Facility Pollution Liability Endorsement in Part II.

Part II Hazardous Waste Facility Pollution Liability Endorsement

1. This endorsement certifies that the policy to which the endorsement is attached provides pollution liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at: EPA Identification Number: 048608897
   Name: METHODE ELECTRONICS, INC.
   Address: 1 INDUSTRIAL PARK DR., WILLINGBORO, N. J.
   for sudden accidental occurrences. The limits of liability are $ 500,000 BI. & 100,000 PD. "each occurrence" and $ 600,000 annual aggregate, exclusive of legal defense costs.
2. The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with subsections (a) through (e) of the Paragraph 2 are hereby amended to conform with subsections (a) through (e):
   (a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

THE HARTFORD

Named Insured and Address

Policy Number
83 C HP1603E

This endorsement forms a part of the policy as numbered above, issued by THE HARTFORD INSURANCE GROUP company designated therein, and takes effect as of the effective date of said policy unless another effective date is stated herein.

Effective Date — Effective hour is the same as stated in the Declarations of the policy.

Endt. No.

ATTACHMENT 1A

LOCATION	EPA IDENTIFICATION NUMBER
7444 W. WILSON AVE. CHICAGO, IL	0316000035
1700 HICKS RD. ROLLING MEADOWS, IL	0312730007

Nothing herein contained shall be held to vary, waive, alter, or extend any of the terms, conditions, agreements or declarations of the policy, other than as herein stated.

This endorsement shall not be binding unless countersigned by a duly authorized agent of the company; provided that if this endorsement takes effect as of the effective date of the policy and, at issue of said policy, forms a part thereof, countersignature on the declarations page of said policy by a duly authorized agent of the company shall constitute valid countersignature of this endorsement.

Countersigned by.....
Authorized Agent

REFERENCE NO. 10

NJDEP INSPECTION FORM

03-38-01

Report Prepared for:

Generator [X]

Transporter [ ]

HWM (TSD) facility [X]

Facility Information

Name: Methode Electronics

Address: one Industrial Park

Willingboro NJ

Lot: _____ Block: _____

County: _____

Phone: 871-3500

EPA ID#: NJD048608897

Date of Inspection: 08-02-93

Participating Personnel

State or EPA personnel: C ELMENDORF

P Guarria

Facility personnel: Jack Glasser V.P, Joseph Mulcahy Engineer Mngr, Dennis Olajniczak, Waste Trtmt Eng.

Report Prepared by Name: C ELMENDORF

Region: South

Telephone #: _____

Reviewed by: TD

Date of Review: 10-21-93

FACILITY NAME: Mallinckrodt electronics

ADDRESS: _____

_____

COUNTY: _____

EPA ID #: NJD 041866897

DATE OF INSPECTION: 08-02-83

PHOTOS TAKEN [ ] YES [X] NO

If yes, how many? _____

SAMPLES TAKEN [ ] YES [X] NO NUMBER OF SAMPLES _____

NJDEP ID # _____

MANIFESTS REVIEWED [X] YES [ ] NO

Number of manifests in compliance 5

Number of manifests not in compliance _____

List manifest document numbers of those manifests not in compliance.

Summary of Findings

Facility Description and Operations

Facility plates printed circuit boards. This process generates waste acids, sludges, from the plating process. Water is discharged from the plant at roughly 70,000 gpd into a local POTW. About 30 to 50 gpm (2-3 shifts) of this go through a pretreatment system on site prior to discharge. Treatment includes removing Cu^{+} from rinse water with $FeSO_4$ then it is treated with Lime (+ Caustic) as to adjust the pH, then the rinse water is clarified, and finally discharged. The sludge resulting from this is hauled away as hazardous. Some Tin-Lead is also found in the sludge. The sludge ~~is~~ has been analysed and is being shipped off-site as hazardous due to the high lead content.

Plating baths are changed and filtered once every year or two, sometimes longer. When a bath is changed, it will be sent off-site as a hazardous waste.

Describe the activities that result in the generation of hazardous waste.

(1) Waste Sludge from pretreatment, 2 to 3 shipments (5,000 gal ea)/yr
(2) Sulfuric, Nitric, Hydrochloric acids from processes
(3) Copper, Tin-lead, Nickel solutions from plating baths
(acids, 8 to 10 (55 gal drums) drums per month
plating baths 2 to 3 drums per year, sometimes
more when a bath is changed over completely.
(4) Also ("fuse-coat") an oil w/ alcohol base used as a hot bath
solution to fuse tin-lead plating, gen 2-3 drums/yr
(5) also Nitrichlor, about 1 drum/yr.

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

Currently 25 drums, of various acids, caustics.
3 drums started, one for each bath
also a pyro-copper drum started
waste pretreatment sludge, approx 8,000 gals
in a settling tank.

one shipment of cyanide was sent out 3-28-83 This was
a 45 shipment of 9, 5 lb cans virgin product, no longer
used at this site.

GENERATOR INSPECTION CHECKLIST

		YES	NO	N/A
7:26-8.5	Hazardous waste determination			
	(a) Did the generator test its waste to determine whether it is hazardous?	X		
	Is the waste hazardous?	X		
	Is the generator determining that its waste exhibits a hazardous waste characteristic(s) based on its knowledge of the material(s) or processes used?	X		
	Has hazardous waste been shipped off site since November 19, 1980?	X		
	If yes, how many shipments off site, have been made and describe the approximate size of an average shipment made on a monthly basis. If facility is a small quantity generator, please explain.			
7:26-7.4(a)1	Does the generator have an EPA ID #?	X		
7:26-7.4(a)4	Does each manifest have the following information? Please circle the elements missing and obtain a copy of the incomplete manifests. (List those manifests that are deficient)	X		
7:26-7.4(a)4i	The generator's name, address and phone number?	X		
7:26-7.4(a)4ii	The generator's EPA ID number?	X		
7:26-7.4(a)4iii	The transporter(s) name, address and phone number?	X		
7:26-7.4(a)4iv	The transporter(s) EPA ID number?	X		
7:26-7.4(a)4v	The name, address and phone number of the designated TSD facility?	X		
7:26-7.4(a)4vi	The TSDF's EPA ID number?	X		
7:26-7.4(a)4vii	The name, type and quantity of hazardous waste being shipped, including such particulars as may be required regarding same?	X		

manifests (some shipments have more than one manifest)

20 in 1981 (approx)
12 in 1982 "
10 in 1983 "

		YES	NO	N/A
7:26-7.4(a)4viii	Special handling instructions and any other information required on the form to be shipped by the generator?	X		
7:26-7.4(a)5	Before allowing the manifested waste to leave the generator's property, did the generator:			
7:26-7.4(a)5i	Sign the manifest certification by hand?	X		
7:26-7.4(a)5ii	Obtain the handwritten signature of the initial transporter and date of acceptance on the manifest?	X		
7:26-7.4(a)5iii	Retain one copy and forward one copy to the state of origin and one copy to the state of destination?	X		
7:26-7.4(a)5iv	Give remaining copies of the manifest form to the transporter?	X		
7:26-7.4(f)1	Has the generator maintained facility records since November 19, 1980? (Manifest(s), exception report(s) and waste analysis)	X		
7:26-7.4(h)1	Has the generator received signed copies of portion B (from the TSD facility) of all manifests for waste shipped off site more than 35 days ago?	X 1983	X 1982	
7:26-7.4(h)2	If not,			
	1. Did the generator contact the hauler and/or the owner or operator of the TSDF and the NJDEP at 609-292-9877 to inform the NJDEP of the situation, and	X		
	2. Have exception reports been submitted to the Department covering any of these shipments made more than 45 days ago?	X submitted to EPA Region II		
	Before transporting or offering hazardous waste for transportation off site, does the generator?			
7:26-7.2(a)	Conspicuously lable appropriate manifest numbers on all hazardous waste containers that are intended for shipment?	X		
7:26-7.2(b)	Insure that all containers used to transport hazardous waste off site are in conformance with applicable DOT regulations (i.e., 49 CFR 171 - 49 CFR 179)?	X		

		YES	NO	N/A
7:26-9.3	Accumulation time			
	How is waste accumulated on site?			
	☒ Containers			
	☒ Tanks (complete HWMF checklist)			
	☐ Aboveground ☐ Below ground ☒ Above/Below			
	☐ Surface impoundments (complete HWMF checklist			
	☐ Piles (complete HWMF checklist)			
7:26-9.3(a)3	Is each container clearly dated with each period of accumulation so as to be visible for inspection?	X		
	Is waste accumulated for more than 90 days?	X		
	If yes, complete HWMF checklist.			

STOP HERE IF THE HAZARDOUS WASTE MANAGEMENT FACILITY (TSD) CHECKLIST IS FILLED OUT.

SHORT TERM ACCUMULATION STANDARDS (FOR GENERATORS WHO ACCUMULATE WASTE IN CONTAINERS FOR 90 DAYS OR LESS)

		YES	NO	N/A
7:26-9.4	Containers			
	What type of containers are used for storage. Describe the size, type and quantity and nature of waste (e.g., 12 fifty five gallon drums of waste acetone).			
7:26-9.4(d)3	Do the containers appear to be in good condition, not in danger of leaking?	___	___	___
	If no, please describe the type, condition and number of leaking or corroded containers. Be detailed and specific.			
7:26-9.4(d)4i	Are all containers securely closed except those in use?	___	___	___
7:26-9.4(d)4iii	Do containers appear to be properly handled or stored in a manner which will minimize the risk of the container rupturing or leaking?	___	___	___
7:26-9.4(d)4iv	Are containerized hazardous waste segregated in storage by waste type?	___	___	___
7:26-9.4(d)4v	Is every container arranged so that its identification label is visible?	___	___	___
7:26-9.4(d)5	Is the storage area inspected at least daily?	___	___	___
7:26-9.4(d)6	Are containers holding ignitible and reactive wastes located at least 50 feet (15 meters) from the facility's property line?	___	___	___
7:26-11.2	Tanks			
	What are the approximate number and size of tanks containing hazardous waste?	___	___	___
	Identify the waste treated/stored in each tank.			

		YES	NO	N/A
	General Operating Requirements			
7:26-11.2(a)2	Are the tanks maintained so that there is no evidence of past, present, or risk of future leaks?	___	___	___
	If no, please explain.			
	Are there leaking tanks?	___	___	___
7:26-11.2(a)2	Are all hazardous wastes or treatment reagents being placed in tanks compatible with the tank material so that there is no danger of ruptures, corrosion, leaks or other failures?	___	___	___
7:26-11.2(3)	Do uncovered tanks have at least 2 feet of freebo d or an adequate containment structure?	___	___	___
7:26-11.2(a)4	If waste is continuously fed into a tank, is the tank equipped with a means to stop the inflow from the tank, e.g., bypass system to a standby tank?	___	___	___
7:26-11.2(c)	Inspections			
	Is the tank(s) inspected each operating day for:			
	1. Discharge control equipment	___	___	___
	2. Monitoring equipment	___	___	___
	3. Level of waste in tank	___	___	___
	4. Construction of materials of the tank	___	___	___
	5. Are the tanks and surrounding areas (e.g., dike) inspected weekly for leaks, corrosion or other failures?	___	___	___
	Are there underground tanks?	___	___	___
	If yes, how many and can they be entered for inspection?	___	___	___
7?26-11.2(e)	Are ignitible or reactive wastes stored in a manner which protects them from a source of ignition or reaction?	___	___	___
	If no, please explain.			

		YES	NO	N/A
7:26-11.2(f)	Does it appear that incompatible wastes are being stored separate from each other?	___	___	___
7:26-9.4(g)	Personnel training			
	Have facility personnel successfully completed a program of classroom instruction or on-the-job training within 6 months of having been employed?	___	___	___
7:26-9.4(g)2	Is the program directed by a person trained in hazardous waste management procedures and does it include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed?	___	___	___
7:26-9.4(g)5	If yes, have facility personnel taken part in an annual review of training?	___	___	___
	Is there written documentation of the following:	___	___	___
7:26-9.4(g)5i	Job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job?	___	___	___
7:26-9.4(g)5ii	A written job description for each position related to hazardous waste management?	___	___	___
7:26-9.4(g)5iii	A written description of the type and amount of both introductory and continuing training given to personnel in jobs related to hazardous waste management?	___	___	___
7:26-9.4(g)5iv	Documentation of actual training or experience received by personnel?	___	___	___
7:26-9.4(g)7	Are training records kept on all employees for at least 3 years?	___	___	___
7:26-9.4(g)8	Are semi-annual drills conducted involving all employees and appropriate local authorities to test emergency response capabilities at the facility in accordance with the contingency plan and emergency procedures development pursuant to NJAC 7:26-9.7?	___	___	___
7:26-9.6	Preparedness and prevention			
	Does the facility comply with preparedness and prevention requirements including maintaining:			

		YES	NO	N/A
7:26-9.6(b)1	An internal communications or alarm system?	___	___	___
7:26-9.6(b)2	A telephone or other device to summon emergency assistance from local authorities?	___	___	___
7:26-9.6(b)3	Portable fire equipment, spill control equipment, and decontamination equipment?	___	___	___
7:26-9.6(b)4	Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems?	___	___	___
7:26-9.6(c)	Is equipment tested and maintained?	___	___	___
7:26-9.6(d)1	Is there immediate access to communications or alarm systems during handling of hazardous waste?	___	___	___
7:26-9.6(e)	Adequate aisle space to allow unobstructed movement of personnel fire protection equipment, spill control equipment and decontamination equipment?	___	___	___
	If no, please explain.			
	In your opinion, do the types of waste on site require all of the above procedures, or are some not required?	___	___	___
	Explain.			
7:26-9.6(f)	Has the facility made the following arrangements, as appropriate for the type of waste handled on site:	___	___	___
7:26-9.6(f)1	Familiarize police, fire departments and emergency response teams with the layout of the facility and hazardous waste handled?	___	___	___
7:26-9.6(f)2	Where more than one police and fire department might respond to an emergency, is there an agreement designating primary emergency authority to a specific police or fire department, and agreements with any others to provide support to the primary emergency authority?	___	___	___

		YES	NO	N/A
7:26-9.6(f)3	Agreements with emergency response contractors, and equipment suppliers?	___	___	___
7:26-9.6(f)4	Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or discharges at the facility?	___	___	___
7:26-9.6(f)5	Arrangements with local fire departments to inspect the facility on a regular basis with at least two (2) inspections annually?	___	___	___
7:26-9.7	Contingency plan and emergency procedures			
7:26-9.7(a)	Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosions, hazards to human health or environment, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil or surface water?	___	___	___
7:26-9.7(b)	Are provisions of the plan carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment?	___	___	___
7:26-9.7(c)	Does the contingency plan describe the actions facility personnel shall take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility?	___	___	___
7:26-9.7(d)	Did the owner or operator prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112 or 151 or a Discharge Prevention, Containment and Countermeasure (DPCC) Plan in accordance with N.J.A.C. 7:1E-4.1 *et seq*.?	___	___	___
	If yes, did the owner or operator amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this section?	___	___	___
7:26-9.7(e)	Does the plan describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services?	___	___	___

		YES	NO	N/A
7:26-9.7(f)	Does the plan list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator and is this list kept up to date? Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates.	___	___	___
7:26-9.7(g)	Does the plan include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required? Is the list kept up-to-date? In addition, does the plan include the location and a physical description of each item on the list, and a brief outline of its capabilities?	___	___	___
7:26-9.7(h)	Does the plan include an evacuation procedure for facility personnel where there is a possibility that evaucation could be necessary? Does this plan describe signal(s) to be used to begin evacuation, evacuation routes, and alternative evaucation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires)?	___	___	___
7:26-9.7(i)	Is a copy of the contingency plan and all revisions to the plan:			
	1. Maintained at the facility; and	___	___	___
	2. Has the contingency plan been submitted to local authorities (police fire departments, emergency response teams)?	___	___	___

TRANSPORTER INSPECTION

		YES	NO	N/A
	Does the transporter carry hazardous waste? If yes, explain.	___	___	___
7:26-7.5(c)1	Has the transporter obtained a hazardous waste collector/hauler license from the NJDEP? License #:	___	___	___
7:26-7.5(d)1	Does the transporter have an EPA identification number?	___	___	___
7:26-3.4(h)	Do the vehicle(s) have the NJSWA registration number in letters and numbers at least three (3) inches in height?	___	___	___
7:26-3.4(h)	Is the capacity of the vehicle marked on both sides of the vehicle in letters and numbers at least three (3) inches in height?	___	___	___
7:26-3.4(h)	Is the current NJSWA registration certificate in the vehicle?	___	___	___
7:26-3.2(b)	Does the license plate number and registration number on the certificate correspond to the vehicle's license plate number and the registration number displayed on the vehicle?	___	___	___
7:26-7.5(d)	Does the transporter have in each registered vehicle a current list of all federal and state agencies to be notified in the event of a discharge of hazardous waste during transportation?	___	___	___
	How many vehicles were inspected?			
7:26-7.5(d)12	Have the drivers received any instruction or training to do with the handling of hazardous waste?	___	___	___
7:26-7.5(d)15	Is the transporter equipped with emergency equipment in conformance with subpart H of 49 CFR 393?	___	___	___

		YES	NO	N/A
	Has the transporter ever had an unauthorized discharge of hazardous waste during transportation?	___	___	___
	If yes, did the transporter:			
7:26-7.5(f)3i	Give notice, if required by 49 CFR 171.15 to the National Response Center?	___	___	___
7:26-7.5(f)3ii	Report in writing as required by 49 CFR 171.16 to the Director, Office of Hazardous Materials, Transportation Bureau, Department of Transportation, Washington, DC 20590?	___	___	___
7:26-7.5(f)3iii	Contact the Department at 609-292-5560 or 609-292-7172?	___	___	___

MANIFESTS

7:26-7.5(d)5	Does the transporter have a manifest form to accompany the waste shipment?	___	___	___
	Manifest document number:_____			
7:26-7.3(a)1	If the shipment originated from a site in New Jersey and is destined for another site in New Jersey, is the manifest form one supplied by the NJDEP?	___	___	___
7:26-7.3(a)2	If the shipment originated from a site in another state and is destined for a TSDF in New Jersey, is the manifest form one supplied by the NJDEP or one approved for use in New Jersey by the Department?	___	___	___
7:26-7.3(a)3	If the shipment originated from a site in New Jersey and is destined for a TSDF in another state, is the manifest form one supplied by the NJDEP or one approved for use by the Department?	___	___	___
7:26-7.5(d)11	If the hauler was unable to deliver a manifested load to the designated facility, did they contact the generator and gain further instructions from them?	___	___	___
	If yes, cite generator name and manifest number involved.			

HAZARDOUS WASTE FACILITY STANDARDS

		YES	NO	N/A
7:26-9.4(b)	Waste Analysis			
7:26-9.4(b)1i	Is there a detailed chemical and physical analysis of a representative sample of the waste(s) or each waste? (At a minimum, this analysis most contain all the information necessary for proper treatment, storage or disposal of the waste.)	X → sludge		
7:26-9.4(b)1iii	Does the character of the waste handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? Check only one:		X	
	Waste characteristics vary			
	All waste(s) are basically the same			
	Company treats all waste(s) as hazardous	X		
7:26-9.4(b)2	Is there a written waste analysis plan at the facility?	X		
	Does it contain:			
7:26-9.4(2)i	Parameters for which each hazardous waste stream will be analyzed including constituents listed in NJAC 7:26-8.16 and the rational for the selection of these parameters?	X		
7:26-9.4(b)2ii	The test methods which will be used to test for these parameters?	X		
7:26-9.4(b)2iii	The sampling method which will be used to obtain a representative sample of the waste to be analyzed?	X		
7:26-9.4(b)2iv	The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up-to-date?	X		
7:26-9.4(b)2v	For off-site facilities, the waste analysis that hazardous waste generators have agreed to supply?			X
7:26-9.4(b)2vii	Procedures which will be used to identify changes in waste stream characteristics?	These procedures do exist, but are not documented in the plan.		
7:26-9.4(b)3	Did the owner or operator submit the waste analysis plan to the Department?	Y		
	If yes, when was the plan submitted?	Some of the plan was submitted to the Dept on Feb. 1983 (the 1982 annual report.		

acids, plating baths oil and III. trichlor are known to be hazardous, no analysis

		YES	NO	N/A
	Does hazardous waste come to this facility from an outside source? (e.g., another generator)		X	
	If yes, list the name(s) of generators.			X
7:26-9.4(b)4	If waste comes from an outside source, are there procedures in the waste analysis plan to insure that waste received conforms to the accompanying manifest?			X
	Does the plan describe:			
7:26-9.4(b)4i	The procedures which will be used to determine the identity of each shipment of waste managed at the facility?			X
7:26-9.4(b)4ii	The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling?			X
7:7:26-9.4(h)	Security			
	Does the facility have:			
7:26-9.4(h)1i	A 24 hour surveillance system which continuously monitors and controls entry onto the active portion of the facility?	X		
7:26-9.4(h)1ii	An artificial or natural barrier, which completely surrounds the active portion of the facility; and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility?	X		
7:26-9.4(h)3	Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility?	X		
	If no, explain what measures are taken for security.			

		YES	NO	N/A
7:26-9.4(f)	General Inspection Requirements			
7:26-9.4(f)1	Does the owner or operator inspect the facility for malfunctions and deterioration, operator errors and discharges which may be causing, or may lead to:			
7:26-9.4(f)1i	Discharge of hazardous waste constituents to the environment?	X		
7:26-9.4(f)1ii	A threat to human health?			
7:26-9.4(f)3	Has the owner or operator developed, and does the owner or operator follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are utilized for the prevention, detection or response to environmental or human health?	X		
7:26-9.4(f)3i	Did the owner or operator submit the written inspection schedule to the department?	X		
	If yes, when was it submitted? IN FEBUARY with the 90% annual report			
7:26-9.4(f)3iii	Is the written inspection schedule kept at the facility?	X		
7:26-9.4(f)3iv	Does the schedule identify the types of problems to be looked for during the inspection?	X		
7:26-9.4(f)3v	Does the schedule include the frequency of inspection, based upon the rate of possible deterioration of the equipment and the probability of an environmental, or human health incident if the deterioration or malfunctions or any operator error goes undetected between inspections?	X		
7:26-9.4(f)5	Is there evidence that problems reported in the inspection log have been remedied?			X
7:26-9.4(f)6	Does the owner/operator record inspections in a log?	X		
	Are these records kept for at least three (3) years from the date of inspection?	X		

		YES	NO	N/A
	Does the records include the date, and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial action?	X		
7:26-9.4(g)	Personnel training			
	Have facility personnel successfully completed a program of classroom instruction or on-the-job training within 6 months of having been employed?	X		
7:26-9.4(g)2	Is the program directed by a person trained in hazardous waste management procedures and does it include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed?	X		
7:26-9.4(g)5	If yes, have facility personnel taken part in an annual review of training?	X		
	Is there written documentation of the following:	X		
7:26-9.4(g)5i	Job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job?	X		
7:26-9.4(g)5ii	A written job description for each position related to hazardous waste management?	X		
7:26-9.4(g)5iii	A written description of the type and amount of both introductory and continuing training given to personnel in jobs related to hazardous waste management?	X		
7:26-9.4(g)5iv	Documentation of actual training or experience received by personnel?	X		
7:26-9.4(g)7	Are training records kept on all employees for at least three (3) years?	X		
7:26-9.4(g)8	Are semi-annual drills conducted involving all employees and appropriate local authorities to test emergency response capabilities at the facility in accordance with the contingency plan and emergency procedures development pursuant to NJAC 7:26-9.7?		X	

semi-annual reviews

		YES	NO	N/A
7:26-9.6	Preparedness and prevention			
	Does the facility comply with preparedness and prevention requirements including maintaining:			
7:26-9.6(b)1	An internal communications or alarm system?	X		
7:26-9.6(b)2	A telephone or other device to summon emergency assistance from local authorities?	X		
7:26-9.6(b)3	Portable fire equipment, spill control equipment, and decontamination equipment?	X		
7:26-9.6(b)4	Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems?	X		
7:26-9.6(c)	Is equipment tested and maintained?	X		
7:26-9.6(d)1	Is there immediate access to communications or alarm systems during handling of hazardous waste?	X		
7:26-9.6(e)	Adequate aisle space to allow unobstructed movement of personnel fire protection equipment, spill control equipment and decontamination equipment?			
	If no, please explain.			
	In your opinion, do the types of waste on site require all of the above procedures, or are some not required?	X		
	Explain.			
7:26-9.6(f)	Has the facility made the following arrangements, as appropriate for tye type of waste handled on site?	X		
7:26-9.6(f)1	Familiarize police, fire departments and emergency response teams with the layout of the facility and hazardous waste handled?	X		

		YES	NO	N/A
7:26-9.6(f)2	Where more than one police and fire department might respond to an emergency, is there an agreement designating primary emergency authority to a specific police or fire department, and agreements with any others to provide support to the primary emergency authority?			X
7:26-9.6(f)3	Agreements with emergency response contractors, and equipment suppliers?	X		
7:26-9.6(f)4	Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or discharges at the facility?	X		
7:26-9.6(f)5	Arrangements with local fire departments to inspect the facility on a regular basis with at least two (2) inspections annually?			
7:26-9.7	<u>Contingency plan and emergency procedures</u>			
7:26-9.7(a)	Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosions, hazards to human health or environment, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil or surface water?	X		
7?26-9.7(b)	Are provisions of the plan carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment?			X
7:26-9.7(c)	Does the contingency plan describe the actions facility personnel shall take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility?	X		
7:26-9.7(d)	Did the owner or operator prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112 or 151 or a Discharge Prevention, Containment and Countermeasure (DPCC) Plan in accordance with N.J.A.C. 7:1E-4.1 <u>et seq</u>.?		X	
	If yes, did the owner or operator amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this section?			X

Arrangements are made with the F.D. but inspections are not semi-annually

The semi annual inspections will be arranged.

7:26-9.7(e)	Does the plan describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services?	X		
7:26-9.7(f)	Does the plan list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator and is this list kept up-to-date? Where more than one person is listed, one shall be named as primary emergency coordinator and others shall assume responsibility as alternates.	X		
7:26-9.7(g)	Does the plan include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required? Is the list kept up-to-date? In addition, does the plan include the location and a physical description of each item on the list, and a brief outline of its capabilities?	X		
7:26-9.7(h)	Does the plan include an evacuation procedure for facility personnel where there is a possibility that evacuation could be necessary? Does this plan describe signal(s) to be used to begin evacuation, evacuation routes, and alternative evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires)?	X		
7:26-9.7(i)	Is a copy of the contingency plan and all revisions to the plan:			
	1. Maintained at the facility; and	X		
	2. Has the contingency plan been submitted to local authorities (police, fire departments, emergency response teams)?	X		
7:26-9.8	Closure plan			
7:26-9.8(c)	Does the facility have a written closure plan?	X		
	Does the owner/operator keep a written copy of the closure plan and all revisions to the plan at the facility?	X		
	If yes, does the plan include:			

		YES	NO	N/A
7:26-9.8(e)1i	A description of how and when the facility will be partially closed (if applicable) and ultimately closed?	X		
7:26-9.8(e)1ii	The maximum extent of the operation which will be open during the life of the facility?	X		
7:26-9.8(e)2	An estimate of the maximum inventory of wastes in storage or in treatment at any given time during the life of the facility?	X		
7:26-9.8(e)3	A description of the steps needed to decontaminate facility equipment during closure?	X		
7:26-9.8(e)4	A schedule for final closure including the anticipated date when the wastes will no longer be received, the date when completion of final closure is anticipated, and intervening milestone dates which will allow tracking of the progress of closure?		X	
	Post Closure Plan			
7:26-9.9(g)	Does the facility have a written post-closure plan kept at the facility?			X
	If yes, does the plan:			
7:26-9.9(i)	Identify the activities which will be carried on after closure and the frequency of these activities?			
7:26-9.9(i)1	Include a description of the planned groundwater monitoring activities and frequencies at which they will be performed?			
7:26-9.9(i)2	Include a description of the planned maintenance activities, and frequency at which they will be performed, to insure the following:			
7:26-9.9(i)2i	The integrity of the cap and final cover or other containment structures where applicable?			
7:26-9.9(i)2ii	Describe the function of the facility monitoring equipment?			
7:26-9.9(i)3	Include the name, address and phone number of a person or office to contact about the disposal facility during the post-closure period?			
	Does the owner/operator have a written estimate of the cost of post-closure for the facility?			
	If yes, what is it?			

Please circle all appropriate activities and answer questions on indicated pages for all activities circled.

Storage	Treatment	Disposal
Container - pg. 9	Tank - pg. 12	Landfill - pg. 18
Tank, above ground - pg. 12	Surface Impoundments - pg. 15	
Tank, below ground - pg. 12	Incineration - pg. 20	Surface Impoundments - pg. 15
Surface Impoundments - pg. 15	Thermal Treatment - pg. 23	Other_____
Waste Piles - pg. 17		
Other_____	Chemical, Physical and Biological Treatment - pg. 25	
	Other_____	

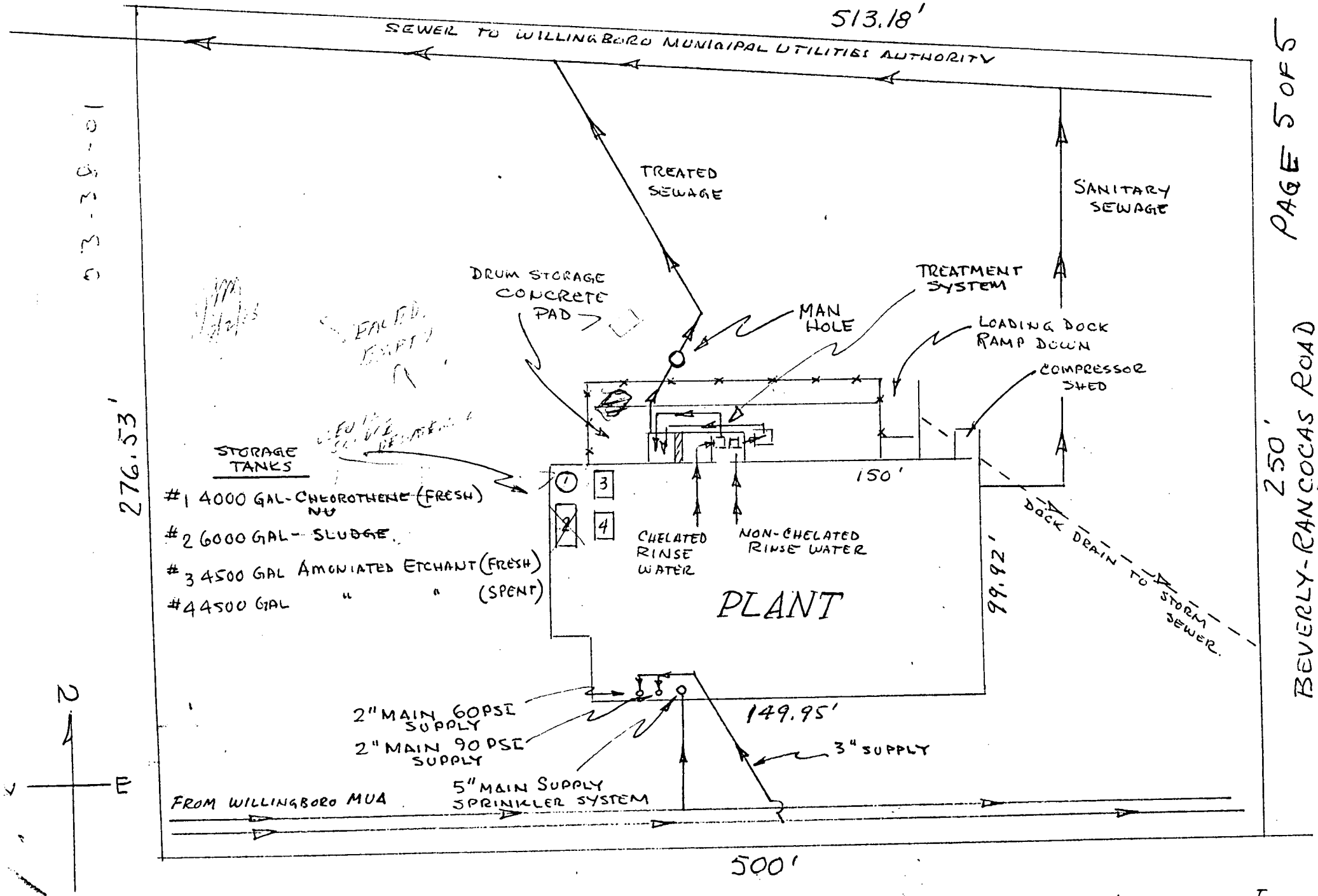
		YES	NO	N/A
7:26-9.4(d)	Containers			
	What type of containers are used for storage? Describe the size, type, quantity and nature of wastes (e.g., 12 fifty-five gallon drums of waste acetone)			
	8 corrosive liquid - this is trickled into the pretreatment 2 drums sulfuric 3 drums fuse-coat 2 drums nitric 5 drums solids (sludges)			
	Is there a containment system for spills, leaks and precipitation?	X	___	___
	Is yes, describe the containment system. area is diked, and equipped with sumps			
7:26-9.4(d)1i	Do the containers appear to be of sturdy leak-proof construction of adequate wall thickness, weld, hinge and seam strength, and of sufficient material strength to withstand side and bottom shock, while filled, without impairment of the container's ability to contain hazardous waste?	X	___	___
	If no, explain.			

		YES	NO	N/A
7:26-9.4(d)1ii	Are the lids, caps, hinges or other closure devices of sufficient strength that when closed, they will withstand dropping, overturning or other shock without impairment of the container's ability to contain hazardous waste?	X		
	If no, explain.			
7:26-9.4(d)2	Do the containers appear to be in good condition, not in danger of leaking?	X		
7:26-9.4(d)2	If not, please describe the type, condition and number of leaking or corroded containers. Be detailed and specific.			
7:26-9.4(d)4i	Are all containers securely closed, except those in use, so that there is no escape of hazardous waste or its vapors?	X		
	If no, explain.			
7:26-9.4(d)4iii	Do containers appear to be properly opened, handled or stored in a manner which will minimize the risk of the container rupturing or leaking?	X		
	If no, explain.			
7:26-9.4(d)iv	Are containerized hazardous wastes segregated in storage by waste type?	X		
7:26-9.4(d)v	Are containerized hazardous wastes arranged so that their identification label is visible?	X		
7:26-9.4(d)3	Are hazardous wastes stored in containers made of compatible materials?	X		

		YES	NO	N/A
7:26-9.4(d)5	Does the owner/operator inspect the container storage area at least daily, looking for leaks and for deterioration caused by corrosion or other factors?	X		
7:26-9.4(d)6	Are containers holding ignitable and reactive waste located at least 50 feet (15 meters) away from the facility's property line?	X		
7:26-9.4(d)7i	Are incompatible wastes, or incompatible wastes and materials placed in the same container?		X	
	If yes, explain.			
7:26-9.4(d)7ii	Are hazardous wastes placed in unwashed containers that previously held incompatible wastes?		X	
	If yes, explain.			
7:26-9.4(d)iii	Are containers holding hazardous waste that are incompatible with any waste or other materials stored nearby in other containers, open tanks, or surface impoundments separated from the other materials or protected from them by means of a dike, berm, wall or other device?			
7:26-9.4(e)1i	Are ignitable, reactive or incompatible wastes protected from sources of ignition or reaction?	X		
	If no, explain.			
7:26-9.4(e)1ii	Does the owner/operator confine smoking and open flames to specially designated locations when ignitable or reactive wastes are being handled?	X		
	If no, explain.			

		YES	NO	N/A
7:26-9.4(e)1iii	Does the owner/operator conspicuously place "No Smoking" signs whenever there is a hazard from ignitable or reactive waste?	X		
	If the treatment, storage or disposal of ignitable or reactive waste, and the mixture of incompatible wastes and materials, conducted so that it does not:			
7:26-9.4(e)2i	Generate extreme heat or pressure, fire or explosion, or violent reaction?	X		
7:26-9.4(e)2ii	Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health?	X		
7:26-9.4(e)2iii	Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk or fire or explosion?	X		
7:26-9.4(e)2iv	Damage the structural integrity of the device or facility containing the waste?	X		
7:26-9.4(e)2v	Threaten human health or the environment?	X		
7:26-11.2	Tanks			
	What are the approximate number and size of tanks containing hazardous waste? ONE, 17,000 gal cap.			
	Identify the waste treated/stored in each tank. Sludge from pre treatment process high Cu + Pb content			
	General Operating Requirements			
7:26-11.2(a)2	Are the tanks maintained so that there is no evidence of past, present, or risk of future leaks?	small leak in closed area		
	If no, please explain.			
	Are there leaking tanks?			

		YES	NO	N/A
7:26-11.2(a)2	Are all hazardous wastes or treatment reagents being placed in tanks compatible with the tank material so that there is no danger of ruptures, corrosion, leaks or other failures?	X		
7:26-11.2(3)	Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure?			X
7:26-11.2(a)4	If waste is continuously fed into a tank, is the tank equipped with a means to stop the inflow from the tank, e.g., bypass system to a standby tank?	X		
7:26-11.2(c)	Inspections			
	Is the tank(s) inspected each operating day for:			
	1. Discharge control equipment	X		
	2. Monitoring equipment	X		
	3. Level of waste in tank	X		
	4. Construction of materials of the tank	X		
	5. Are the tanks and surrounding areas (e.g., dike) inspected weekly for leaks, corrosion or other failures?	X		
	Are there underground tanks?		X	
	If yes, how many and can they be entered for inspection?			X
7:26-11.2(e)	Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction?	X		
	If no, please explain.			
7:26-11.2(f)	Does it appear that incompatible wastes are being stored separate from each other?			X
7:14A-6	Groundwater monitoring			
	(Applies only to: surface impoundments, landfills, land disposal facilities.)			



INDUSTRIAL DRIVE

METHODE ELECTRONICS INC
FACILITY DRAWING

REFERENCE NO. 11

Methode Electronics, Inc.

Interconnection City

7444 W. WILSON AVE • CHICAGO ILL 60656
TWX 910-221 2468
TELEPHONE (312) 867-9600

October 20, 1983

Ms. Helen Beggun
Chief, Grants Administration Branch
Office of Policy and Management
U. S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

RE: Methode Electronics, Inc.
Willingboro, New Jersey
EPA Identification Number 048608897

Dear Ms. Beggun:

As Chief Financial Officer of Methode Electronics, Inc., I am enclosing a letter outlining how we meet the financial tests of closure and post-closure expenses for our Willingboro, New Jersey facility. I am also enclosing a letter from Ernst and Whinney, our independent accountants, confirming the data submitted in my letter.

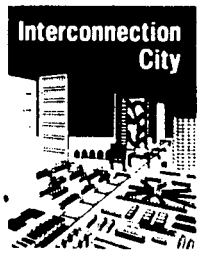
Recently, our insurance broker, Alexander & Alexander, forwarded to you the required Certificates of Insurance. After you have had a chance to review this information, please give me a call if you have questions.

Very truly yours,

Kevin J. Hayes
Vice President and
Treasurer

jak
enclosures

Methode Electronics, Inc.



7444 W. WILSON AVE • CHICAGO ILL 60656
TWX 910-221-2468
TELEPHONE (312) 867-9600

October 18, 1983

Ms. Helen Beggun
Chief, Grants Administration Branch
Office of Policy and Management
U. S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

Dear Ms. Beggun:

I am the Chief Financial Officer of Methode Electronics, Inc. located at 7444 West Wilson Avenue, Chicago, Illinois 60656. This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Subpart H of 40 CFR Parts 264 and 265.

1. This firm is the owner or operator of the following facility for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure and/or post-closure cost estimates covered by the tests are shown for this facility:

   EPA Identification #048608897

   Methode Electronics, Inc.
   One Industrial Park
   Willingboro, New Jersey 08046

   Current closure cost estimate $13,095

2. None

3. None

4. None

This firm is required to file a Form 10-K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends of April 30. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended April 30, 1983.

ALTERNATIVE I

1.	$ 13,095
*2.	$14,298,333
*3.	$17,877,801
*4.	$17,877,801
*5.	$20,764,193
*6.	$ 7,690,856
7.	$13,073,337
*8.	$ 3,865,034
*9.	Not applicable
10.	Yes
11.	Yes
12.	Yes
*13.	Yes
14.	--
15.	Yes
16.	Yes
17.	Yes

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 264.151(f) as such regulations were constituted on the date shown immediately below.

Kevin J. Hayes
Vice President & Treasurer
October 18, 1983

jak

Ernst & Whinney

150 South Wacker Drive
Chicago, Illinois 60606

312/368-1800

Mr. Kevin J. Hayes
Vice President and Treasurer
Methode Electronics, Inc.
Chicago, Illinois

We have examined the consolidated financial statements of Methode Electronics, Inc. and subsidiaries for the year ended April 30, 1983 and have expressed our opinion thereon in our report dated June 16, 1983.

At your request, we have compared the data enumerated below, as set forth in your letter dated October 18, 1983 to the United States Environmental Protection Agency to corresponding amounts included in, or derived from such audited consolidated financial statements, and have found such amounts to be in agreement. Furthermore, no matters came to our attention which would require the following data to be adjusted.

The data so compared are as follows:

1.	Total liabilities	$14,298,333
2.	Tangible net worth	17,877,801
3.	Net worth	17,877,801
4.	Current assets	20,764,193
5.	Current liabilities	7,690,856
6.	The sum of net income plus depreciation, depletion and amortization	3,865,034

This letter is solely to assist in your compliance with the applicable requirements of the United States Environmental Protection Agency and is not to be used for any other purpose.

Ernst + Whinney

Chicago, Illinois
October 18, 1983

REFERENCE NO. 12

U-38-01

SFC

State of New Jersey

RECEIVED
NOV 18 1983
Division of Waste Mgt.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
120 Rt. 156, Yardville, N.J. 08620

Dr. Marwan M. Sadat, P.E.
Director

LINO F. PEREIRA
DEPUTY DIRECTOR

Methode
Joseph Mulchay
1 Industrial Park
Willingboro, NJ 08046

RE: NOTICE OF VIOLATION
FAILURE TO ESTABLISH FINANCIAL ASSURANCE FOR CLOSURE AND POST-CLOSURE AND TO DEMONSTRATE FINANCIAL RESPONSIBILITY FOR CLAIMS - EPA ID #NJD048608897

Dear Mr. Mulchay:

Pursuant to the provisions of New Jersey Solid Waste Management Act, N.J.S.A. 13:1E-1, et seq., the Department of Environmental Protection has determined by examination of our files that you violated N.J.A.C. 7:26-9.10(e) and 9.11(c) in that you have failed to establish, and/or submit to the Department, financial assurance for closure and post-closure of the facility, and N.J.A.C. 7:26-9.13 in that you have failed to demonstrate financial responsibility for claims arising from the operations of your facility for sudden or non-sudden and accidental occurrences that cause injury to persons or property.

NOW, THEREFORE, YOU ARE HEREBY NOTIFIED that you facility shall submit the required documents within thirty (30) days of receipt of this Notice to: Frank Coolick, Bureau of Hazardous Waste Engineering, 32 East Hanover Street, Trenton, New Jersey 08625.

BE ON NOTICE that the Solid Waste Management Act establishes penalties of up to $25,000 per day for violation of the Department's hazardous waste management regulations. Your failure to correct the above violation may result in a penalty action by this Department up to the maximum allowed pursuant to law.

If you have any questions regarding this Notice, please call the Bureau of Compliance and Enforcement at (609) 292-0967. If you have any questions regarding the document to be submitted, please call the Bureau of Hazardous Waste Engineering at (609) 292-9880.

DATE: NOV 16 1983

David J. Shotwell, Chief
Bureau of Compliance and
Enforcement

lmc

New Jersey Is An Equal Opportunity Employer

REFERENCE NO. 13

Methode Electronics, Inc., East

December 13, 1983

EPA Region II
Permits Administration Branch
Room 432
26 Federal Plaza
New York, New York 10007

Re: EPA ID # NJD048608897
Change in Permit Application

Gentlemen:

Enclosed please find a revised "Hazardous Waste Permit" application for the U. S. EPA. Parts IV, description of hazardous waste and Part V, facility drawing are revised, due to quantity reduction.

Our initial application is dated November 13, 1980.

Thank you.

Very truly yours,

METHODE ELECTRONICS, INC., EAST

Dennis Olejniczak
Process Engineer

DO:mwk

IPC

fill–in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F N J D 0 4 8 6 0 8 8 9 7 — T/A C: 1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR.	MO.	DAY

☐ 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

DUP — T/A C: 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1					7				
2					8				
3					9				
4					10				

CONTINUE ON REVERSE

ontinued from page 2.
OTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY	
WNJ104860889 7 1	W DUP	2 DUP

V. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1					
2					
3					
4	OMIT	OMIT			
5	OMIT	OMIT			
6					
7	D002				
8	OMIT				
9	D002				
10	OMIT	OMIT			
11		200		T01	
12	OMIT	OMIT			
13		250		SO1	
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CONTINUE ON REVER

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WAST (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAG

EPA I.D. NO. (enter from page 1)

S	N	J	D	0	4	8	6	0	8	8	9	7	T/A	C
2												13	14	15

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

I. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

II. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
65 66 / 67 68 / 69 - 71	72 - 74 / 75 76 / 77 - 79

III. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
16	55 56 - 58 59 - 61 62 - 65

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
15 - 35	C G 15 16 - 40	41 42	47 - 51

IX. OWNER CERTIFICATION

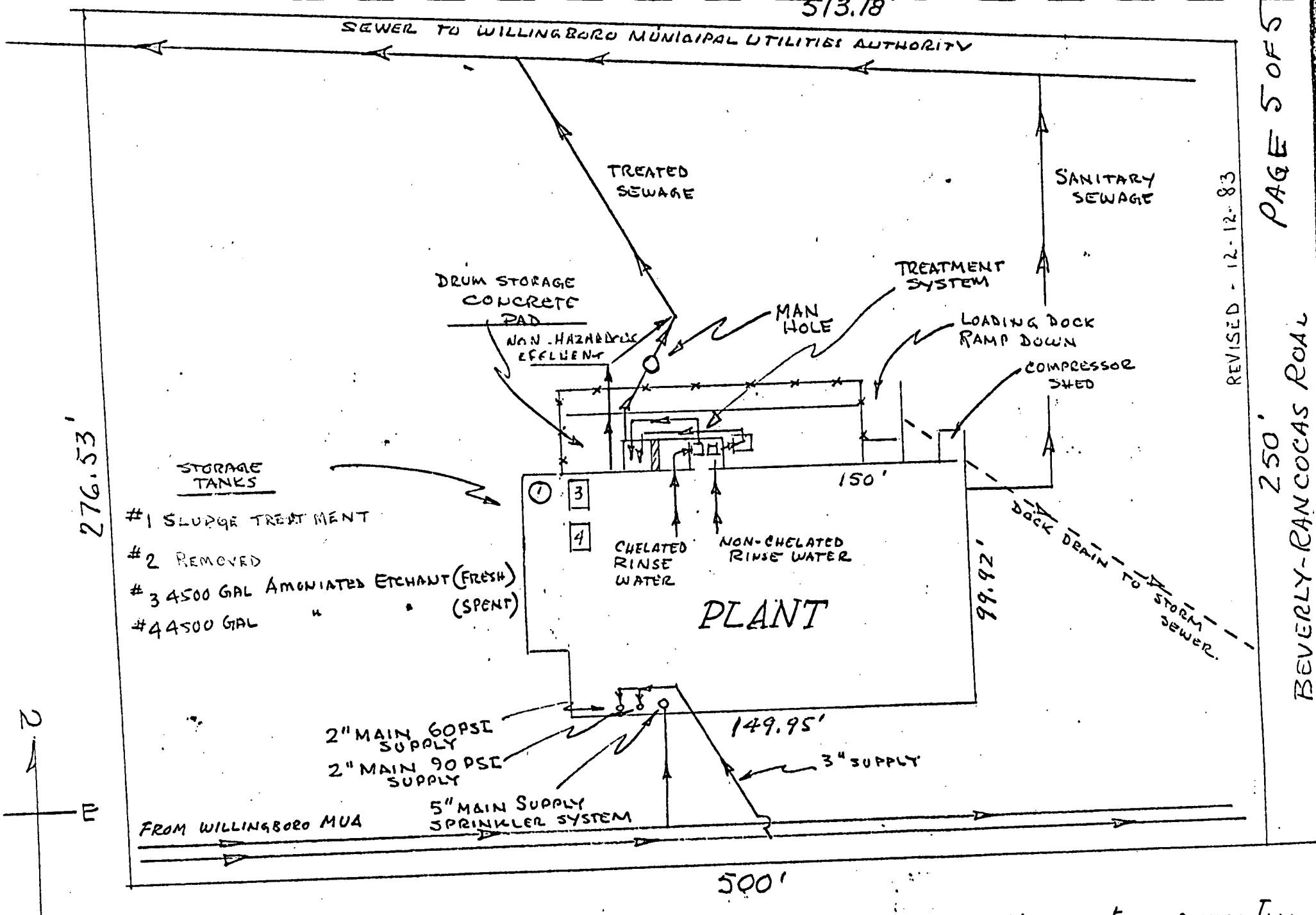
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
John L. Glasser Vice President & General Man.	John L. Glasser	12/12/82

OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED



METHODE ELECTRONICS INC
FACILITY DRAWING

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F NJD048608897 3 D

LABEL ITEMS

NJD048608897

METHODE ELECTRONICS INC
1 INDUSTRIAL PARK
WILLINGBORO, NJ 08046

1 INDUSTRIAL PARK
WILLINGBORO, NJ 08046

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP METHODE ELECTRONICS

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 MULCHAY JOSEPH PROCESSENGR	609 871 3500

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 POBOX M

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 WILLINGBORO	NJ	08046

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 [illegible]

B. COUNTY NAME

BURLINGTON

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 [illegible]			

Form Approved OMB No. 158-S80004

FORM 3 EPA

ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

I. EPA I.D. NUMBER: NJD048608897 (T/A C: 1)

I. ... USE ONLY

... RECEIVED

COMMENTS

II. ... REVISED APPLICATION

... appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a ... application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's ... above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

X 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

YR.	MO.	DAY
69	12	15

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

2. NEW FACILITY (Complete item below.)

YR.	MO.	DAY

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION (place an "X" below and complete Item I above)

1. FACILITY HAS INTERIM STATUS

2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP (T/A C: 1)

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G	
X-2	T 0 3	20	F	
	S 0 1	6,800	G	
	S 0 2	19,000	G	
	T 0 1	[illegible],000		

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
5				
6				
7				
8				
9				
10				

CONTINUE ON REVERSE

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N J D 0 4 8 6 0 8 8 9 7 T/A 1 C 1	W DUP T/A 2 C 2 DUP

DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	D 0 0 0	102,000	P	S 0 2	
2	D 0 0 2				INCLUDED WITH ABOVE
3	F 0 0 2	~~SEE U226~~			
4	F 0 0 3	~~SEE U002~~			
5	F 0 0 5	~~SEE U220~~			
6	F 0 0 6	320,000	P	T 0 1 S 0 2	
7	F 0 0 7	24,000	P	S 0 1	
8	F 0 0 8				INCLUDED WITH ABOVE
9	F 0 0 9	40,000	P	T 0 1 S 0 1	
10	U 0 0 2	400	P	S 0 1	
11	U 1 2 2	2,000	P	S 0 1	
12	U 2 2 0	100	P	S 0 1	
13	U 2 2 6	11,000	P	S 0 2	
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CONTINUE ON REVERSE

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

LABEL ITEMS

NJD048608897

METHODE ELECTRONICS INC
1-INDUSTRIAL PARK
WILLINGBORO, NJ 08046

1 INDUSTRIAL PARK
WILLINGBORO, NJ 08046

I. EPA I.D. NUMBER

F NJD048608897 T/A D

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP METHODE ELECTRONICS

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*		
2 MULCHAY JOSEPH PROCESS ENGR	609	871	3500

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 P.O. BOX M

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 WILLINGBORO	NJ	08046

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5

B. COUNTY NAME

BURLINGTON

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6			

CONTINUE ON REVERSE

Form Approved OMB No. 158-S80004

FORM 3 EPA

ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

I. EPA I.D. NUMBER

NJD048608897

COMMENTS

II. FIRST OR REVISED APPLICATION

[illegible] A or B below, mark one box only, to indicate whether this is the first application you are submitting for your facility or a [illegible] your first application and you already [illegible] your facility's EPA I.D. Number, or if this is a revised application, enter your facility's [illegible] above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

X EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

YR.	MO.	DAY
69	12	15

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

2. NEW FACILITY (Complete item below.)

YR.	MO.	DAY

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION (place an "X" below and complete Item I above)

1. FACILITY HAS INTERIM STATUS

2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided. Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

DUP 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	[illegible]	600	G		5				
X-2	[illegible]	20	F		6				
	S01	6,800	G						
	S02	19,000	G		8				
	T01	[illegible],000			9				
					10				

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER *(enter from page 1)*: W N J D 0 4 8 6 0 8 8 9 7 — T/A: 2 — C: 1

FOR OFFICIAL USE ONLY: S: W — DUP — T/A: 2 — C: 2 — DUP

DESCRIPTION OF HAZARDOUS WASTES *(continued)*

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	D 0 0 0	102,000	P	S 0 2	
2	D 0 0 2				INCLUDED WITH ABOVE
3	F 0 0 2	~~SEE U226~~			
4	F 0 0 3	~~SEE U002~~			
5	F 0 0 5	~~SEE U220~~			
6	F 0 0 6	320,000	P	T 0 1 S 0 2	
7	F 0 0 7	24,000	P	S 0 1	
8	F 0 0 8				INCLUDED WITH ABOVE
9	F 0 0 9	40,000	P	T 0 1 S 0 1	
10	U 0 0 2	400	P	S 0 1	
11	U 1 2 2	2,000	P	S 0 1	
12	U 2 2 0	100	P	S 0 1	
13	U 2 2 6	11,000	P	S 0 2	
14					
15					
16					
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22					
23					
24					
25					
26					

CONTINUE ON REVERSE

I.D. – FOR OFFICIAL USE ONLY

S													T/A	C
W	I	7	2	0	4	9	5	5	2	7	1	7	2	1
1	2											13	14	15

IX. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
F002	F003	F005	F007	F008	F009
7	**8**	**9**	**10**	**11**	**12**

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U002	U220	U226			
37	**38**	**39**	**40**	**41**	**42**
43	**44**	**45**	**46**	**47**	**48**

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

X. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE *(type or print)*	DATE SIGNED
[illegible]	[illegible] Purchasing Manager	Aug 7, 1980

EPA Form 8700-12 (6-80) REVERSE

Please print or type with ELITE type (12 characters/inch) in the unshaded areas only.

Form Approved OMB No. 158-S79016
GSA No. 0246-EPA-OT

EPA

ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

INSTALLATION'S EPA I.D. NO.: NJD048608897

I. NAME OF INSTALLATION: METHODE ELECTRONICS INC

II. INSTALLATION MAILING ADDRESS: ~~1 INDUSTRIAL PARK~~ WILLINGBORO, NJ 08046

III. LOCATION OF INSTALLATION: 1 INDUSTRIAL PARK WILLINGBORO, NJ 08046

DETACH

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER: S F NJD048608897 T/A 3 C 1

APPROVED:

DATE RECEIVED (yr., mo., & day): 800811

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3 PO BOX M

CITY OR TOWN: 4

ST.:

ZIP CODE:

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5

CITY OR TOWN: 6

ST.:

ZIP CODE:

IV. INSTALLATION CONTACT

NAME AND TITLE *(last, first, & job title)*: 2 MULCAHY JOSEPH ENG MGR

PHONE NO. *(area code & no.)*: 609-371-3500

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 METHODE ELECTRONICS INC

B. TYPE OF OWNERSHIP *(enter the appropriate letter into box)*

F = FEDERAL
M = NON-FEDERAL

M

VI. TYPE OF HAZARDOUS WASTE ACTIVITY *(enter "X" in the appropriate box(es))*

- [X] A. GENERATION
- [ ] B. TRANSPORTATION *(complete item VII)*
- [X] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION *(transporters only – enter "X" in the appropriate box(es))*

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER *(specify)*:

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

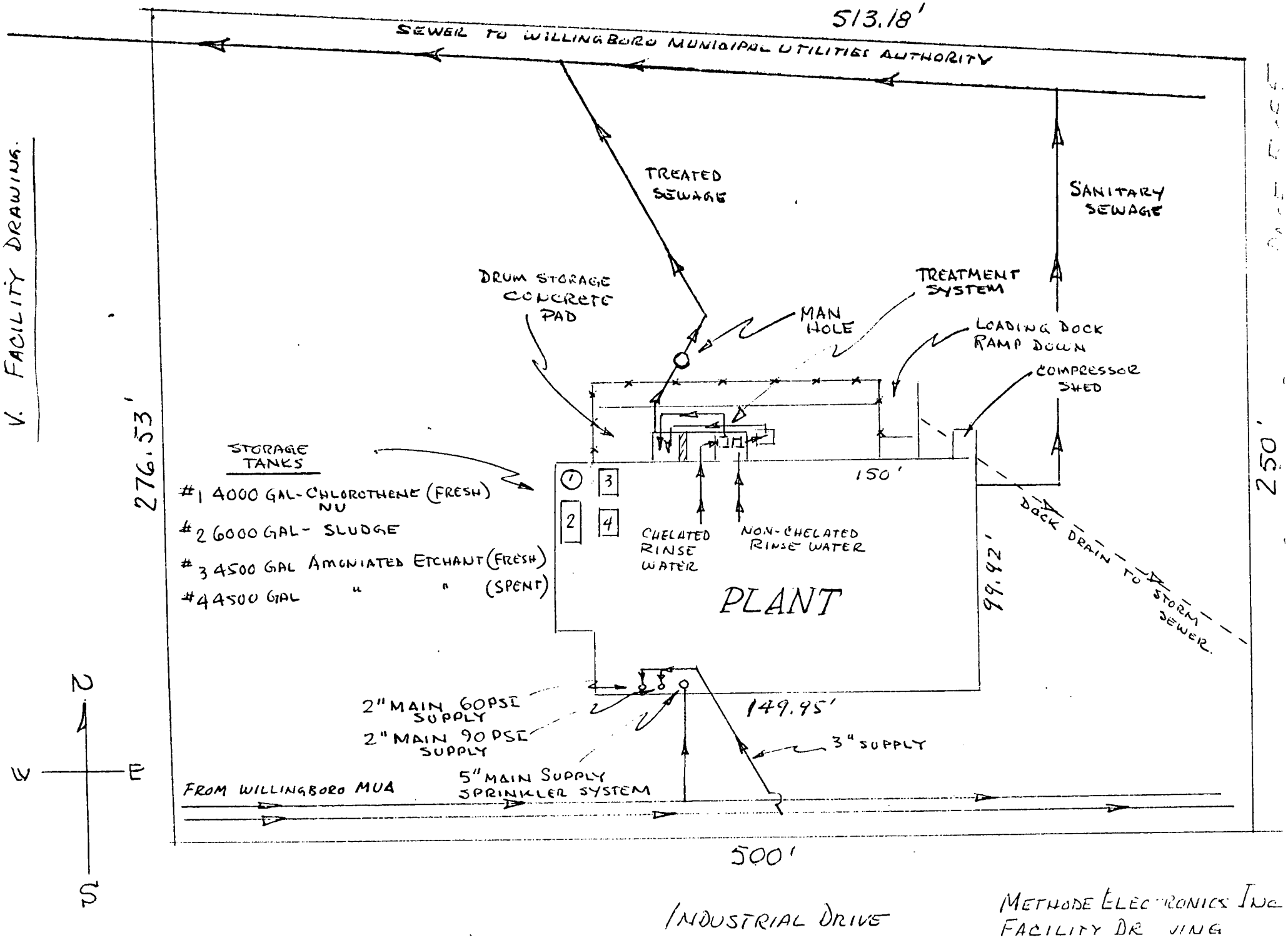
- [X] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION *(complete item C)*

C. INSTALLATION'S EPA I.D. NO.:

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

V. FACILITY DRAWING.



METHODE ELECTRONICS INC
FACILITY DRAWING

FACILITY-EXTERIOR
Northeast corner

FACILITY-EXTERIOR
Northeast corner-showing north side of plant

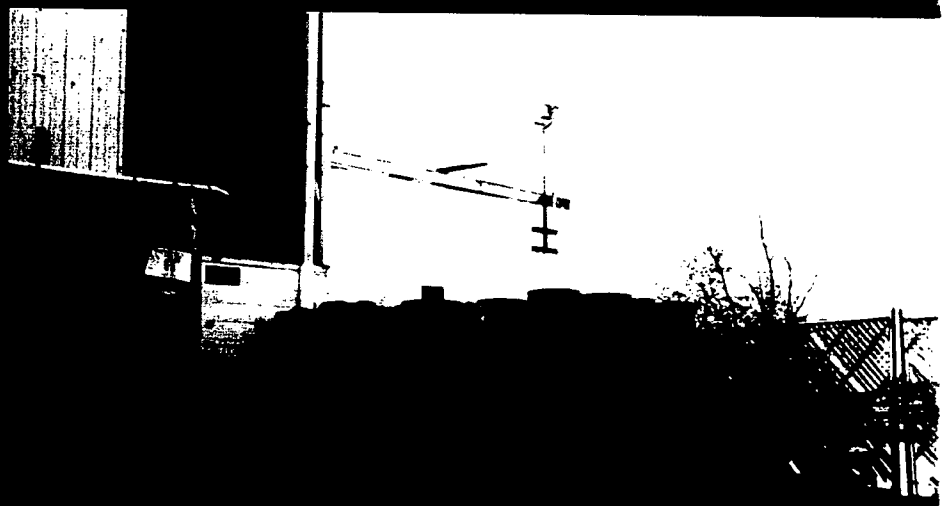
FACILITY-EXTERIOR
Northwest corner

FACILITY-EXTERIOR
Southwest corner

FACILITY-EXTERIOR
Southeast corner

FACILITY-EXTERIOR
View from Beverly-Rancocas
Road showing southeast corne
of plant

STORAGE AREA
Drum storage-Northeast view

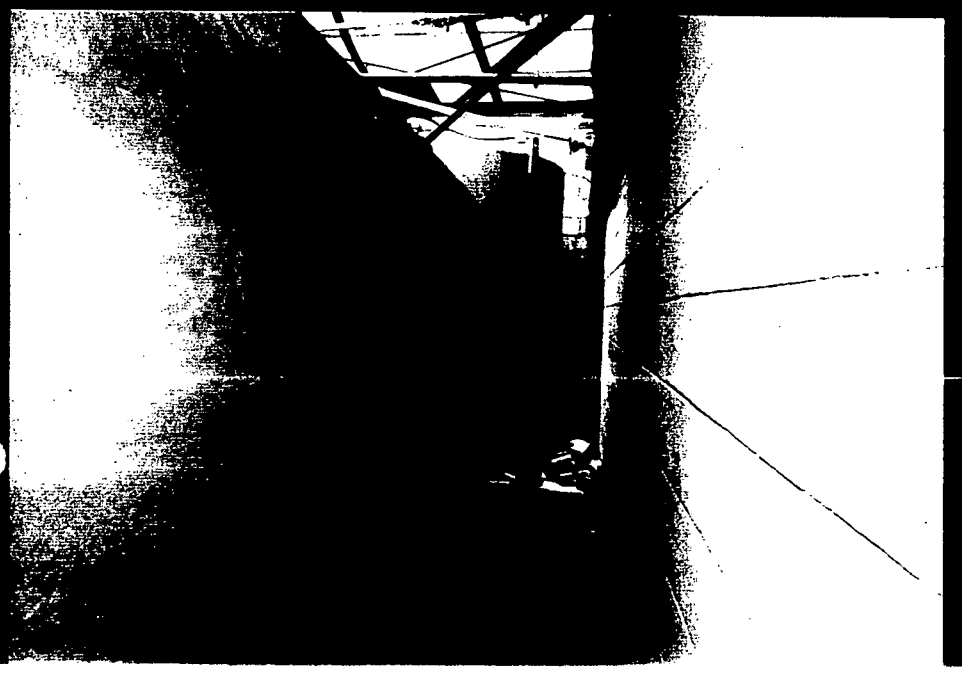


STORAGE AREA
Drum storage-Northeast view

STORAGE AREA
Drum storage-Southeast view

STORAGE AREA
Tank storage-4500 gal (2)

STORAGE AREA
Tank storage-6000 gal (1)

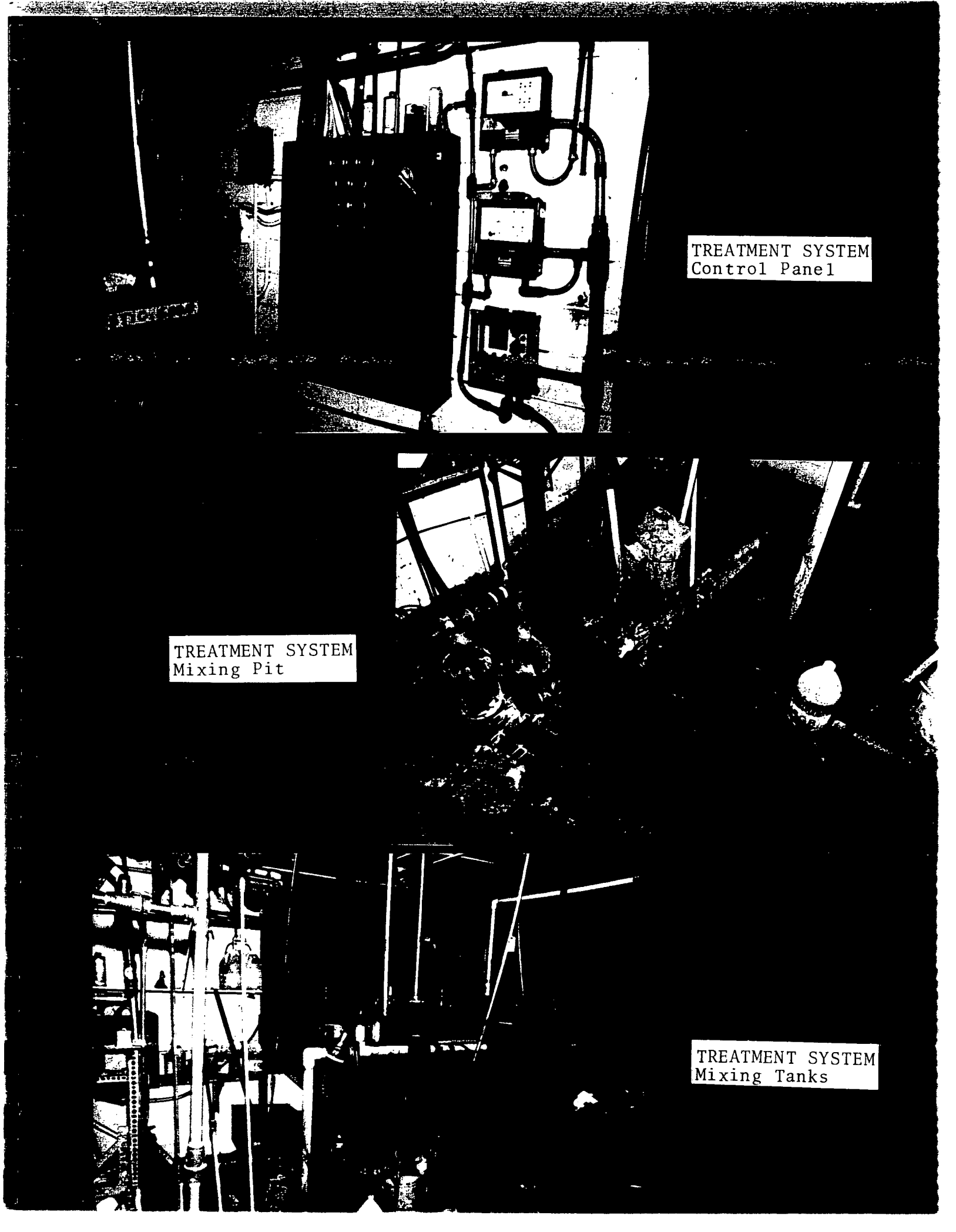


STORAGE AREA
Tank storage-4000 gal (1)

TREATMENT SYSTEM
Settling Tank-Southeast view

TREATMENT SYSTEM
Settling Tank-Northwest view

TREATMENT SYSTEMS
Exterior-Treatment area



TREATMENT SYSTEM
Control Panel

TREATMENT SYSTEM
Mixing Pit

TREATMENT SYSTEM
Mixing Tanks

TREATMENT SYSTEM
Mixing Tanks

TREATMENT SYSTEM
Mixing Tanks

TREATMENT SYSTEM
Mixing Tanks

REFERENCE NO. 14

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P 439 576 257

3-38-1

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WASTE MANAGEMENT
32 E. Hanover St., CN 028, Trenton, N.J. 08625

DR. MARWAN M. SADAT, P.E.
DIRECTOR

LINO F. PEREIRA, P.E.
DEPUTY DIRECTOR

23 FEB 1984

Michael A. Greco, Corporate Controller
Methode Electronics, Inc.
7444 W. Wilson Avenue
Chicago, IL 60656

RE: Methode Electronics, Willingboro, EPA ID NO. NJD048608897

Dear Mr. Greco:

In regard to a telephone conversation with Scott Baker on February 16, 1984 the financial requirements of N.J.A.C. 7:26-9.10 and 9.13 have been adequately established for the above referenced facility except for one necessary item. The Hazardous Waste Facility Liability Endorsement (HWFLE) submitted with your letter of January 4, 1984 includes the Regional Administrator of the USEPA and 40 CFR citations. With New Jersey having been granted Phase I under the RCRA program, the HWFLE must be prepared pursuant to Appendix A of Subchapter 9. The endorsement will then refer to the NJDEP and N.J.A.C. 7:26-9 et seq. which is the agency and regulations requiring such documents. The endorsement shall be submitted within thirty (30) days of receipt of this letter.

Thank you for your cooperation. Further questions may be referred to Mr. Scott Baker of my staff at (609) 292-9880.

Very truly yours,

Frank Coolick

Frank Coolick, Chief
Bureau of Hazardous Waste Engineering

EP7/ch

REFERENCE NO. 15

FOM S
3-37-1

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WASTE MANAGEMENT
32 E. Hanover St., CN 028, Trenton, N.J. 08625

DR. MARWAN M. SADAT, P.E.
DIRECTOR

LINO F. PEREIRA, P.E.
DEPUTY DIRECTOR

17 MAY 1985

Kevin J. Hayes, Vice President and Treasurer
Methode Electronics, Inc.
7444 W. Wilson Avenue
Chicago, Ill. 60656

RE: Methode Electronics, Inc., Willingboro
EPA ID NO: NJD 048 608 987

Dear Mr. Hayes:

Your letter of April 15, 1985 to the USEPA, Region II, has been referred to me for response due to the fact that NJDEP has received final authorization from USEPA to implement its hazardous waste program in the State of New Jersey.

Under the New Jersey Administrative Code, a financial test for closure is not acceptable for compliance with N.J.A.C. 7:26-9.10. However, the above referenced TSD facility is in complinace with subsection 9.10 as a Trust Agreement was submitted to the Bureau of Hazardous Waste Engineering (BHWE) on January 31, 1984.

Evidence of liability insurance required under subsection 9.13, was submitted to the BHWE on January 4, 1984. The policy period has expired, and appropriately, a current Hazardous Waste Facility Certificate of Liability Insurance shall be submitted to verify coverage within thirty (30) days from the date of this letter.

If you have any questions, contact Scott Baker at (609) 292-8504.

Very truly yours,

Frank Coolick

Frank Coolick, Chief
Bureau of Hazardous Waste Engineering

EP7/slw

REFERENCE NO. 16

Form ADM-012

2-38-01 Run

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Kenneth Goldstein, Chief Industrial Pretreatment Section

DATE 17 MAR 1986

FROM Frank Coolick, Chief Bureau of Hazardous Waste Engineering

SUBJECT Methode Electronics, Willingboro, NJ NJD 048 608 897

The Bureau of Hazardous Waste Engineering has reviewed the draft NJPDES/SIU permit No. NJD 0054135 for Methode Electronics to discharge treated waste water to the Sewage Authority.

The Bureau does not have any comments or suggestions.

EP35:vb

REFERENCE NO. 17

Form DWM-029
3/84

NEW JER Y DEPARTMENT OF ENVIRONMENTAL P TECTION
DIVISION OF WASTE MANAGEMENT

CS 38-07 ✓

INSPECTION REPORT

REPORT PREPARED FOR:

- [x] Generator
- [ ] Transporter
- [x] HWM (TSD) Facility

FACILITY INFORMATION

Name: Methode Electronics

Address: 1 Industrial Park
Willingboro - Burlington

Lot: _____ Block: _____

County: Burlington

Phone: (609) 871-3500

EPA ID#: NJD048608897

Date of Inspection: June 18, 1986

PARTICIPATING PERSONNEL

State or EPA Personnel: Kenneth Cloutman

Facility Personnel: Joseph Hulcbay - Engineering Manager
Jack Glasser - Vice President
Jeff Holmes - Wet Process Eng.

Report Prepared by Name: Kenneth Cloutman

Region: Central

Telephone#: (609) 426-0700

Reviewed by: Linda Z. Jordan rec'd 7-28-86

Date of Review: 7-28-86

FACILITY NAME: Methode Electronics

ADDRESS: 1 Industrial Park
Willingboro

TIME IN: 0920

COUNTY: Burlington

TIME OUT: 1130

EPA ID : NJD048608897

DATE OF INSPECTION: June 18, 1986

PHOTOS TAKEN ☐ YES ☒ NO

If yes, how many? _____

SAMPLE TAKEN ☐ YES ☒ NO NO. OF SAMPLES _____

NJDEP ID # _____

MANIFESTS REVIEWED ☒ YES ☐ NO

Number of manifests in compliance 49

Number of manifests not in compliance Ø

List manifest document numbers of those manifests not in compliance.

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

Methode Electronics (East) is a division of Methode Electronics, based in Chicago since 1949. They have been operating in Willingboro since 1969. They employ about 125 workers over 3 shifts on weekdays and ½ day on Saturdays. The business manufactures double sided and multi-layered printed circuit boards. About 70% of their work is for prime government contractors.

The manufacturing process consists primarily of electroplating and acid etching. The process generates acids and sludges. Waste water is pre-treated on site to remove metals and adjust the pH. It is then clarified before being discharged into the sanitary sewer line. The sludge generated is shipped off as a hazardous waste due to its high lead content. The clarification process was held in a 1200 gal. pre-treatment settling tank until 1985. They are currently working toward cleaning the settling tank and filling it in. This procedure is being monitored by Ground Water Quality. Clarification of pre-treatment water is now accomplished by centrifuging rather than settling.

I reviewed 49 manifests and found them all to be completed correctly.

Describe the activities that result in the generation of hazardous waste.

1) Laboratory ~ small amounts of TCE, HCl, & NaOH
2) Etching ~ Sulfuric, Nitric, & Hydrochloric Acids
3) Plating ~ Copper solutions.
4) Pre-treatment ~ waste solids (sludges)

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

10 gallons TCE
4 Cu. yds. Sludge
1 drum waste oil
9 drums Copper Sulfate crystals
3 drums Isopropyl alcohol with lead
4 drums Alkaline cleaning solution
2 drums Citric Acid
2 drums Fluoboric Acid
1 drum Ammonium Bichloride (Glass Etch)
2 drums Dilute Sulfuric Acid
1 drum Alkaline Striping Solution
4 drums Hydrochloric Acid
14 drums Acid Copper Plating Bath
6 drums Nitric Acid
13 drums Sulfuric Acid & Peroxide
3 drums Pyrophosphate Copper Plating Bath
4 drum 90% Sulfuric Acid
4 drums HCl & Stanous Chloride

GENERATOR INSPECTION CHECKLIST

		YES	NO	N/A
7:26-8.5	Hazardous waste determination			
	(a) Did the generator test its waste to determine whether it is hazardous? By Waste Conversion	✓		
	Is the waste hazardous?	✓		
7:26-8.5(b)2	Is the generator determining that its waste exhibits a hazardous waste characteristic(s) based on its knowledge of the material(s) or processes used?	✓		
	Has hazardous waste been shipped off site since November 19, 1980?	✓		
	If yes, how many shipments, off site, have been made and describe the approximate size of an average shipment made on a monthly basis. If facility is a small quantity generator, please explain.	Approx 36 drums every 6 weeks. 20 cu. yds of sludge every 6 weeks.		
7:26-7.4(a)1	Does the generator have an EPA ID #?	✓		
7:26-7.4(a)4	Does each manifest have the following information? Please circle the elements missing and obtain a copy of the incomplete manifests. (List those manifests that are deficient)	✓		
7:26-7.4(a)4i	The generator's name, address and phone number?	✓		
7:26-7.4(a)4ii	The generator's EPA ID number?	✓		
7:26-7.4(a)4iii	The transporter(s) name, address and phone number?	✓		
7:26-7.4(a)4iv	The transporter(s) EPA ID number?	✓		
7:26-7.4(a)4v	The name, address and phone number of the designated TSD facility?	✓		
7:26-7.4(a)4vi	The TSDF's EPA ID number?	✓		
7:26-7.4(a)4vii	The name, type and quantity of hazardous waste being shipped, including such particulars as may be required regarding same?	✓		

		YES	NO	N/A
7:26-7.4(a)4viii	Special handling instructions and any other information required on the form to be shipped by the generator?	✓		
7:26-7.4(a)5	Before allowing the manifested waste to leave the generator's property, did the generator:			
7:26-7.4(a)5i	Sign the manifest certification by hand?	✓		
7:26-7.4(a)5ii	Obtain the handwritten signature of the initial transporter and date of acceptance on the manifest?	✓		
7:26-7.4(a)5iii	Retain one copy and forward one copy to the state of origin and one copy to the state of destination?	✓		
7:26-7.4(a)5iv	Give remaining copies of the manifest form to the transporter?	✓		
7:26-7.4(f)1	Has the generator maintained facility records for three (3) years? (Manifest(s), exception report(s) and waste analysis)	✓		
7:26-7.4(h)1	Has the generator received signed copies of portion B (from the TSD facility) of all manifests for waste shipped off site more than 35 days ago?	✓		
7:26-7.4(h)2	If not:			
	1. Did the generator contact the hauler and/or the owner or operator of the TSDF and the NJDEP at 609-292-9877 to inform the NJDEP of the situation, and			
	2. Have exception reports been submitted to the Department covering any of these shipments made more than 45 days ago?			
	Before transporting or offering hazardous waste for transportation off site, does the generator?			
7:26-7.2(a)	Conspicuously lable appropriate manifest numbers on all hazardous waste containers that are intended for shipment?	✓		
7:26-7.2(b)	Insure that all containers used to transport hazardous waste off site are in conformance with applicable DOT regulations (i.e., 49 CFR 171 - 49 CFR 179)?	✓		

		YES	NO	N/A
7:26-9.3	Accumulation time			
	How is waste accumulated on site?			
	☒ Containers			
	☐ Tanks (complete HWMF checklist)			
	☐ Aboveground ☐ Below ground			
	☐ Surface impoundments (complete HWMF checklist *			
	☐ Piles (complete HWMF checklist)			
7:26-9.3(a)3	Is each container clearly dated with each period of accumulation so as to be visible for inspection?	✓		
7:26-9.3(a)1	Is waste accumulated for more than 90 days?	✓		
	If yes, complete HWMF checklist.			

STOP HERE IF THE HAZARDOUS WASTE MANAGEMENT FACILITY (TSD) CHECKLIST IS FILLED OUT.

HAZARDOUS WASTE FACILITY STANDARDS

		YES	NO	N/A
7:26-9.4(b)	Waste Analysis			
7:26-9.4(b)1i	Is there a detailed chemical and physical analysis of a representative sample of the waste(s) or each waste? (At a minimum, this analysis most contain all the information necessary for proper treatment, storage or disposal of the waste.)	✓		
7:26-9.4(b)1iii	Does the character of the waste handled at the facility change from day to day, week to week, etc., thus requiring frequent testing?		✓	
	Check only one: Waste characteristics vary All waste(s) are basically the same ✓ Company treats all waste(s) as hazardous			
7:26-9.4(b)2	Is there a written waste analysis plan at the facility? Sign April 8, 1983 Does it contain:	✓		
7:26-9.4(2)i	Parameters for which each hazardous waste stream will be analyzed including constituents listed in NJAC 7:26-8.16 and the rational for the selection of these parameters?	✓		
7:26-9.4(b)2ii	The test methods which will be used to test for these parameters?	✓		
7:26-9.4(b)2iii	The sampling method which will be used to obtain a representative sample of the waste to be analyzed?	✓		
7:26-9.4(b)2iv	The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up-to-date?	✓		
7:26-9.4(b)2v	For off-site facilities, the waste analysis that hazardous waste generators have agreed to supply?			✓
7:26-9.4(b)2vii	Procedures which will be used to identify changes in waste stream characteristics?	✓		
7:26-9.4(b)3	Did the owner or operator submit the waste analysis plan to the Department?	✓		

If yes, when was the plan submitted?

1983

		YES	NO	N/A
	Does hazardous waste come to this facility from an outside source? (e.g., another generator)		✓	
	If yes, list the name(s) of generators.			
7:26-9.4(b)4	If waste comes from an outside source, are there procedures in the waste analysis plan to insure that waste received conforms to the accompanying manifest?			✓
	Does the plan describe:			
7:26-9.4(b)4i	The procedures which will be used to determine the identity of each shipment of waste managed at the facility?			✓
7:26-9.4(b)4ii	The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling?			✓
7:7:26-9.4(h)	Security			
	Does the facility have:			
7:26-9.4(h)1i	A 24 hour surveillance system which continuously monitors and controls entry onto the active portion of the facility? Plant is checked by Supervisor on Sunday	✓		
7:26-9.4(h)1ii	An artificial or natural barrier, which completely surrounds the active portion of the facility; and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility?	✓		
7:26-9.4(h)3	Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility?	✓		
	If no, explain what measures are taken for security.			

		YES	NO	N/A
7:26-9.4(f)	General Inspection Requirements			
7:26-9.4(f)1	Does the owner or operator inspect the facility for malfunctions and deterioration, operator errors and discharges which may be causing, or may lead to: Daily inspections of all major operation			
7:26-9.4(f)1i	Discharge of hazardous waste constituents to the environment?	✓		
7:26-9.4(f)1ii	A threat to human health?	✓		
7:26-9.4(f)3	Has the owner or operator developed, and does the owner or operator follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are utilized for the prevention, detection or response to environmental or human health?	✓		
7:26-9.4(f)3i	Did the owner or operator submit the written inspection schedule to the department?	✓		
	If yes, when was it submitted? 1981 (?)			
7:26-9.4(f)3iii	Is the written inspection schedule kept at the facility?	✓		
7:26-9.4(f)3iv	Does the schedule identify the types of problems to be looked for during the inspection?	✓		
7:26-9.4(f)3v	Does the schedule include the frequency of inspection, based upon the rate of possible deterioration of the equipment and the probability of an environmental, or human health incident if the deterioration or malfunctions or any operator error goes undetected between inspections?	✓		
7:26-9.4(f)5	Is there evidence that problems reported in the inspection log have been remedied?			✓
7:26-9.4(f)6	Does the owner/operator record inspections in a log?	✓		
	Are these records kept for at least three (3) years from the date of inspection?	✓		

		YES	NO	N/A
	Does the records include the date, and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial action?	✓		
7:26-9.4(g)	Personnel training			
	Have facility personnel successfully completed a program of classroom instruction or on-the-job training within 6 months of having been employed?	✓		
7:26-9.4(g)2	Is the program directed by a person trained in hazardous waste management procedures and does it include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed?	✓		
7:26-9.4(g)5	If yes, have facility personnel taken part in an annual review of training?	✓		
	Is there written documentation of the following:	✓		
7:26-9.4(g)6i	Job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job?	✓		
7:26-9.4(g)6ii	A written job description for each position related to hazardous waste management?	✓		
7:26-9.4(g)6iii	A written description of the type and amount of both introductory and continuing training given to personnel in jobs related to hazardous waste management?	✓		
7:26-9.4(g)6iv	Documentation of actual training or experience received by personnel?	✓		
7:26-9.4(g)7	Are training records kept on all current employees until closure of the facility and training reocrds kept on former employees for 3 years from their last date of employment?	✓		
7:26-9.4(g)8	Are semi-annual drills conducted involving all employees and appropriate local authorities to test emergency response capabilities at the facility in accordance with the contingency plan and emergency procedures development pursuant to NJAC 7:26-9.7?	✓		

		YES	NO	N/A
7:26-9.6	Preparedness and prevention			
	Does the facility comply with preparedness and prevention requirements including maintaining:			
7:26-9.6(b)1	An internal communications or alarm system? Hooked to sprinkler system	✓		
7:26-9.6(b)2	A telephone or other device to summon emergency assistance from local authorities?	✓		
7:26-9.6(b)3	Portable fire equipment, spill control equipment, and decontamination equipment?	✓		
7:26-9.6(b)4	Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems?	✓		
7:26-9.6(c)	Is equipment tested and maintained?	✓		
7:26-9.6(d)1	Is there immediate access to communications or alarm systems during handling of hazardous waste?	✓		
7:26-9.6(e)	Adequate aisle space to allow unobstructed movement of personnel fire protection equipment, spill control equipment and decontamination equipment?	✓		
	If no, please explain.			
	In your opinion, do the types of waste on site require all of the above procedures, or are some not required?	✓		
	Explain.			
7:26-9.6(f)	Has the facility made the following arrangements, as appropriate for tye type of waste handled on site?			
7:26-9.6(f)1	Familiarize police, fire departments and emergency response teams with the layout of the facility and hazardous waste handled?	✓		

		YES	NO	N/A
7:26-9.6(f)2	Where more than one police and fire department might respond to an emergency, is there an agreement designating primary emergency authority to a specific police or fire department, and agreements with any others to provide support to the primary emergency authority?	✓		
7:26-9.6(f)3	Willingboro Agreements with emergency response contractors, and equipment suppliers?	✓		
7:26-9.6(f)4	Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or discharges at the facility?	✓		
7:26-9.6(f)5	Arrangements with local fire departments to inspect the facility on a regular basis with at least two (2) inspections annually?	✓		
7:26-9.7	<u>Contingency plan and emergency procedures</u>			
7:26-9.7(a)	Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosions, hazards to human health or environment, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil or surface water?	✓		
7?26-9.7(b)	Are provisions of the plan carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment?	✓		
7:26-9.7(c)	Does the contingency plan describe the actions facility personnel shall take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility?	✓		
7:26-9.7(d)	Did the owner or operator prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112 or 151 or a Discharge Prevention, Containment and Countermeasure (DPCC) Plan in accordance with N.J.A.C. 7:1E-4.1 <u>et seq</u>.?	✓		
	If yes, did the owner or operator amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this section?	✓		

7:26-9.7(e)	Does the plan describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services?	✓		
7:26-9.7(f)	Does the plan list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator and is this list kept up-to-date? Where more than one person is listed, one shall be named as primary emergency coordinator and others shall assume responsibility as alternates.	✓		
7:26-9.7(g)	Does the plan include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required? Is the list kept up-to-date? In addition, does the plan include the location and a physical description of each item on the list, and a brief outline of its capabilities?	✓		
7:26-9.7(h)	Does the plan include an evacuation procedure for facility personnel where there is a possibility that evacuation could be necessary? Does this plan describe signal(s) to be used to begin evacuation, evacuation routes, and alternative evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires)?	✓		
7:26-9.7(i)	Is a copy of the contingency plan and all revisions to the plan:			
	1. Maintained at the facility; and	✓		
	2. Has the contingency plan been submitted to local authorities (police, fire departments, emergency response teams)?	✓		
7:26-9.8	<u>Closure plan</u>			
7:26-9.8(c)	Does the facility have a written closure plan?	✓		
	Does the owner/operator keep a written copy of the closure plan and all revisions to the plan at the facility?	✓		
	If yes, does the plan include:			

		YES	NO	N/A
7:26-9.8(e)1i	A description of how and when the facility will be partially closed (if applicable) and ultimately closed?		✓	✓
7:26-9.8(e)1ii	The maximum extent of the operation which will be open during the life of the facility?	✓		
7:26-9.8(e)2	An estimate of the maximum inventory of wastes in storage or in treatment at any given time during the life of the facility?	✓		
7:26-9.8(e)3	A description of the steps needed to decontaminate facility equipment during closure?	✓		
7:26-9.8(e)4	A schedule for final closure including the anticipated date when the wastes will no longer be received, the date when completion of final closure is anticipated, and intervening milestone dates which will allow tracking of the progress of closure?			✓
	Post Closure Plan			
7:26-9.9(g)	Does the facility have a written post-closure plan kept at the facility?			N/A
	If yes, does the plan:			
7:26-9.9(i)	Identify the activities which will be carried on after closure and the frequency of these activities?			
7:26-9.9(i)1	Include a description of the planned groundwater monitoring activities and frequencies at which they will be performed?			
7:26-9.9(i)2	Include a description of the planned maintenance activities, and frequency at which they will be performed, to insure the following:			
7:26-9.9(i)2i	The integrity of the cap and final cover or other containment structures where applicable?			
7:26-9.9(i)2ii	Describe the function of the facility monitoring equipment?			
7:26-9.9(i)3	Include the name, address and phone number of a person or office to contact about the disposal facility during the post-closure period?			
	Does the owner/operator have a written estimate of the cost of post-closure for the facility?			✓
	If yes, what is it?			

Please circle all appropriate activities and answer questions on indicated pages for all activities circled.

Storage	Treatment	Disposal
Container - pg. 9	Tank - pg. 12	Landfill - pg. 18
Tank, above ground - pg. 12	Surface Impoundments - pg. 15	
Tank, below ground - pg. 12	Incineration - pg. 20	Surface Impoundments - pg. 15
Surface Impoundments - pg. 15	Thermal Treatment - pg. 23	Other_____
Waste Piles - pg. 17		
Other_____	Chemical, Physical and Biological Treatment - pg. 25	
	Other_____	

		YES	NO	N/A
7:26-9.4(d)	Containers What type of containers are used for storage? Describe the size, type, quantity and nature of wastes (e.g., 12 fifty-five gallon drums of waste acetone)			
7:26-10.4(b)	Is there a containment system for spills, leaks and precipitation? Is yes, describe the containment system. 6-8" reinforced concrete with sumps	✓		
7:26-9.4(d)1i	Do the containers appear to be of sturdy leak-proof construction of adequate wall thickness, weld, hinge and seam strength, and of sufficient material strength to withstand side and bottom shock, while filled, without impairment of the container's ability to contain hazardous waste? If no, explain.	✓		

		YES	NO	N/A
7:26-9.4(d)1ii	Are the lids, caps, hinges or other closure devices of sufficient strength that when closed, they will withstand dropping, overturning or other shock without impairment of the container's ability to contain hazardous waste? If no, explain.	✓		
7:26-9.4(d)2	Do the containers appear to be in good condition, not in danger of leaking?	✓		
7:26-9.4(d)2	If not, please describe the type, condition and number of leaking or corroded containers. Be detailed and specific.			
7:26-9.4(d)4i	Are all containers securely closed, except those in use, so that there is no escape of hazardous waste or its vapors? If no, explain.	✓		
7:26-9.4(d)4iii	Do containers appear to be properly opened, handled or stored in a manner which will minimize the risk of the container rupturing or leaking? If no, explain.	✓		
7:26-9.4(d)iv	Are containerized hazardous wastes segregated in storage by waste type?	✓		
7:26-9.4(d)v	Are containerized hazardous wastes arranged so that their identification label is visible?	✓		
7:26-9.4(d)3	Are hazardous wastes stored in containers made of compatible materials?	✓		

		YES	NO	N/A
7:26-9.4(d)5	Does the owner/operator inspect the container storage area at least daily, looking for leaks and for deterioration caused by corrosion or other factors?	✓		
7:26-9.4(d)6	Are containers holding ignitable and reactive waste located at least 50 feet (15 meters) away from the facility's property line?	✓		
7:26-9.4(d)7i	Are incompatible wastes, or incompatible wastes and materials placed in the same container?		✓	
	If yes, explain.			
7:26-9.4(d)7ii	Are hazardous wastes placed in unwashed containers that previously held incompatible wastes?		✓	
	If yes, explain.			
7:26-9.4(d)7iii	Are containers holding hazardous waste that are incompatible with any waste or other materials stored nearby in other containers, open tanks, or surface impoundments separated from the other materials or protected from them by means of a dike, berm, wall or other device?	✓		
7:26-9.4(e)1i	Are ignitable, reactive or incompatible wastes protected from sources of ignition or reaction?			✓
	If no, explain.			
7:26-9.4(e)1ii	Does the owner/operator confine smoking and open flames to specially designated locations when ignitable or reactive wastes are being handled?	✓		
	If no, explain.			

		YES	NO	N/A
7:26-9.4(e)1iii	Does the owner/operator conspicuously place "No Smoking" signs whenever there is a hazard from ignitable or reactive waste?	✓		
	If the treatment, storage or disposal of ignitable or reactive waste, and the mixture of incompatible wastes and materials, conducted so that it does not:			
7:26-9.4(e)2i	Generate extreme heat or pressure, fire or explosion, or violent reaction?	✓		
7:26-9.4(e)2ii	Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health?	✓		
7:26-9.4(e)2iii	Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk or fire or explosion?	✓		
7:26-9.4(e)2iv	Damage the structural integrity of the device or facility containing the waste?	✓		
7:26-9.4(e)2v	Threaten human health or the environment?	✓		

7:26-11.2 **Tanks**

What are the approximate number and size of tanks containing hazardous waste?

Waste Water Treatment Tanks NJDEPS Permit # NJD0054135

4 - batch treating tanks (200 gals each)
1 - 3000 gal clarifying tank (sludge removed daily)

Identify the waste treated/stored in each tank.

Rinse water is treated to remove copper and adjust pH.

General Operating Requirements

		YES	NO	N/A
7:26-11.2(a)2	Are hazardous wastes or treatment reagents placed in the tank that could cause the tank or its inner liner to rupture, leak or corrode?		✓	

If yes, please explain.

	Are there leaking tanks?		✓	

		YES	NO	N/A
7:26-11.2(a)2	Are all hazardous wastes or treatment reagents being placed in tanks compatible with the tank material so that there is no danger or ruptures, corrosion, leaks or other failures?	✓		
7:26-11.2(3)	Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure?	✓		
7:26-11.2(a)4	If waste is continuously fed into a tank, is the tank equipped with a means to stop the inflow from the tank, e.g., bypass system to a standby tank?	✓		
7:26-11.2(c)	Inspections			
	Is the tank(s) inspected for:			
	1. Discharge control equipment (each operating day)	✓		
	2. Monitoring equipment (each operating day)	✓		
	3. Level of waste in tank (each operating day)	✓		
	4. Construction of materials of the tank (weekly)	✓		
	5. Are the tanks and surrounding areas (e.g., dike) inspected weekly for leaks, corrosion or other failures (weekly)?	✓		
7:26-9.2(b)	Are there underground tanks used to store hazardous waste?		✓	
	If yes, how many and can they be entered for inspection?			
	Has the underground tank been in use on or before November 19, 1980? Specify date.			✓
	If no, when was the tank placed in use?			
7:26-11.2(e)	Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction?			✓
	If no, please explain.			

		YES	NO	N/A
7:26-11.2(f)	Does it appear that incompatible wastes are being stored separate from each other?	✓		
7:26-9.2(b)3i	Does the facility have a groundwater monitoring plan approved by the Department?	✓		
7:26-9.2(b)3ii	Is the use of the tank specified to the manufacturers recommended lifetime?	✓		
7:26-10.5(e)6	Are the underground tanks subjected to periodic integrity testing?			✓

		YES	NO	N/A
7:14A-6	Groundwater monitoring			
	(Applies only to: surface impoundments, landfills, land disposal facilities)			
7:14A-6.2	Does the owner/operator have a groundwater monitoring plan approved by the Department and capable of determining the facility's impact on the quality of groundwater?	___	___	___
	If no, please explain.			
	How many monitoring wells has the facility installed?			
	What is the depth to groundwater?			
	How many deep monitoring wells are onsite? (Indicate depth of monitoring wells)			
	How many shallow monitoring wells are onsite? (Indicate depth of monitoring wells)			
7:14A-6.3(a)	Is the groundwater monitoring system capable of yielding groundwater samples for analysis?	___	___	___
	If no, please explain.			
7:14A-6.3(a)1	Are monitoring wells installed hydraulically upgradient?	___	___	___
	If yes, specify how many and the depth of each.			

		YES	NO	N/A
7:14A-6.3(a)2	How many monitoring wells are installed hydraulically down gradient?	___	___	___
	If yes, specify how many and the depth of each.			
7:14A-6.4(a)	Does the owner/operator have a groundwater sampling and analysis plan?	___	___	___
	If no, please explain.			
7:14A-6.4(a)	Does the plan include procedures and techniques for:			
	1. Sample collection	___	___	___
	2. Sample preservation and shipment	___	___	___
	3. Analytical procedures	___	___	___
	4. Chain of custody	___	___	___
7:26-11.3	Surface Impoundments			
	Describe the design and operating features of the surface impoundment to prevent groundwater contamination (e.g., liner leachate collection system).			
	Give the approximate size of surface impoundments (gallons or cubic feet). Please specify the types of waste stored and treated.			
7:26-11.3(a)	Is there at least 2 feet of freeboard in the impoundment?	___	___	___

		YES	NO	N/A
7:26-11.3(b)	Do all earthen dikes have a protective cover to preserve their structural integrity?	___	___	___
	If yes, please specify the type of covering.			
7:26-9.4(b)1	Does the owner/operator have a detailed chemical and physical analysis of a representative sample of the waste in the impoundment?	___	___	___
7:26-9.4(c)2	Does the owner/operator place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility?	___	___	___
7:26-11.3(d)	Does the owner or operator inspect:			
7:26-11.3(d)1	The freeboard level at least once each operating day to ensure compliance with subsection 11.3(a)?	___	___	___
7:26-11.3(d)2	The surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect any leaks, deterioration or failures in the impoundment?	___	___	___
7:26-11.3(f)	Is ignitable or reactive waste placed in the surface impoundment?	___	___	___
7:26-11.3(f)1	If yes, is the waste treated, rendered, or mixed before or immediately after placement in the impoundment?	___	___	___
7:26-11.3(f)1i	Does the resulting waste, mixture, or dissolution of material no longer meet the definition of ignitable or reactive waste?	___	___	___
7:26-11.3(f)1ii	Is the waste treated, rendered or mixed so that it does not:			
7:26-9.4(e)2i	Generate extreme heat or pressure, fire or explosion, or violent reaction?	___	___	___
7:26-9.4(e)2ii	Produce uncontrolled toxic mists, fumes, dusts, of gases in sufficient quantities to threaten human health?	___	___	___
7:26-9.4(e)2iii	Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion?	___	___	___

		YES	NO	N/A
7:26-9.4(e)2iv	Damage the structural integrity of the device or facility containing the waste?	___	___	___
7:26-9.4(e)2v	Threaten human health or the environment?	___	___	___
7:26-11.3(f)2	Is the surface impoundment used soley for emergencies?	___	___	___
7:26-11.3(g)	Are incompatible wastes, or incompatible wastes and materials placed in the same surface impoundment?	___	___	___
	If yes, is the waste managed so that it does not:			
7:26-9.4(e)2i	Generate extreme heat or pressure, fire or explosion, or violent reaction?	___	___	___
7:26-9.4(e)2ii	Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health?	___	___	___
7:26-9.4(e)2iii	Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk or fire or explosion?	___	___	___
7:26-9.4(e)2iv	Damage the structural integrity of the device or facility containing the waste?	___	___	___
7:26-9.4(e)2v	Threaten human health or the environment?	___	___	___
	<u>Waste Piles</u>			
	How many waste piles are on-site and approximately how large are they? (Please indicate size and height and types of wastes in piles.)			
	Is the waste pile protected from wind erosion?	___	___	___
	a) Does it appear to need such protection?	___	___	___
	b) Explain what type of protection does exist.			
7:26-9.3(a)5i	Is the waste pile larger than 200 cubic yards?	___	___	___

		YES	NO	N/A
7:26-9.3(a)5ii	Is the pile placed on an impermeable base that is compatible with the waste?	___	___	___
	If no, explain.			
7:26-9.3(a)5iii	Is run-on diverted away from the pile?	___	___	___
7:26-9.3(a)5iv	Is leachate and run-off from the pile collected and managed as a hazardous waste?	___	___	___
7:26-11.4	Landfills			
	Identify the types of waste and size of the landfill.			
	General Operating Requirements			
7:26-11.4(a)1	Is run-on diverted away from all portions of the landfill?	___	___	___
7:26-11.4(a)2	Is run-off from active portions of the landfill collected?	___	___	___
7:26-11.4(a)3	Is waste which is subject to wind dispersal controlled?	___	___	___
	Please explain how.			
7:26-11.4(a)4	Does waste disposal or the disposal operation occur within 200 feet (60.6 meters) of the property boundary?	___	___	___
7:26-11.4(a)6	Are untreated, ignitable, or reactive wastes placed in the landfill?	___	___	___
	If yes, explain.			

		YES	NO	N/A
7:26-11.4(a)7	Are incompatible wastes, or incompatible wastes and materials placed in the same hazardous waste landfill cell?	___	___	___
	If yes, explain.			
7:26-11.4(a)8	Are bulk or non-containerized liquid waste or waste containing free liquids placed in a hazardous waste landfill?	___	___	___
	If yes:			
7:26-11.4(a)8i	Does the hazardous waste landfill have a liner which is chemically and physically resistant to the added liquid and a functioning leachate collection and removal system with a capacity sufficient to remove all leachate produced?	___	___	___
7:26-11.4(a)8ii	Before disposal, is the liquid waste or waste containing free liquids treated or stabilized, chemically or physically, so that free liquids are no longer present?	___	___	___
7:26-11.4(a)9	Are containers holding liquid waste or waste containing free liquids placed in a hazardous waste landfill?	___	___	___
	If yes:			
7:26-11.4(a)9i	Is the container designed to hold liquids or free liquids for a use other than storage, such as a battery?	___	___	___
7:26-11.4(a)9ii	Is the container very small, such as an ampule?	___	___	___
7:26-11.4(a)10	Are empty containers crushed flat, shredded, or similarly reduced in volume before it is buried beneath the surface of a hazardous waste landfill?	___	___	___
7:26-11.4(a)11	Does the owner or operator of a hazardous waste landfill continue to dispose of hazardous wastes subsequent to the detection of any liquid, in the secondary collection system?	___	___	___
7:26-11.4(b)	Does the owner or operator of a hazardous waste landfill maintain an operating record required in N.J.A.C. 7:26-9.4(i)?	___	___	___

		YES	NO	N/A
7:26-11.4(b)1	Does the owner/operator maintain a map, the exact location and dimensions, including depth of each cell with respect to permanently surveyed bench marks?	___	___	___
7:26-11.4(b)2	The contents of each cell and the appropriate location of each hazardous waste type within each cell?	___	___	___
	Are containers holding liquid waste or waste containing free liquids placed in the landfill?	___	___	___
	Please describe the types and contents of such containers placed in the landfill.			
	Are empty containers placed in the landfill crushed flat, shredded or similarly reduced in volume before they are buried?	___	___	___
	Are small containers of hazardous waste in overpacked drums placed in the landfill?	___	___	___
	If yes, please describe precautions taken to prevent the release of the waste.			
7:26-11.5	Incinerator			
	What type of incinerator is at the site (e.g., waterwall incinerator, boiler, fluidized bed, etc.)			
	List the types and quantities of hazardous waste incinerated.			

		YES	NO	N/A
	Is the residue from the incinerator a hazardous waste?	___	___	___
	What types of air pollution control devices (if any) are installed in the incinerator unit?			
	Is energy recovered from the process?	___	___	___
	If yes, describe.			
	What is the destruction and removal efficiency for the organic hazardous waste constituents?			
7:26-11.5(b)1	Does the operating record include additional analysis and to determine types of pollutants which might be emitted including:			
7:26-11.5(b)1i	Heating value of the waste?	___	___	___
7:26-11.5(b)1ii	Halogen and sulfur content?	___	___	___
7:26-11.5(b)1iii	Concentrations of lead and mercury?	___	___	___
7:26-11.5(2)	If no to any of the above questions, is there justification and documentation?	___	___	___
	If operating, does it appear the incinerator is operating at steady state for conditions of operation, including temperature and air flow?	___	___	___
	<u>Monitoring and Inspection</u>			
7:26-11.5(c)1	Are existing instruments relating to combustion and emission controls monitored every 15 minutes?	___	___	___
	If no, explain.			

		YES	NO	N/A
7:26-11.5(c)1	Does the incinerator have all the following instruments for measuring: wastefeed, auxiliary fuel feed air flow, incinerator temperature scrubber flow, and scrubber pH? (Circle missing instruments.)	___	___	___
	If no, explain.			
7:26-11.5(c)2	Is the stack plume observed visually at least hourly for opacity and color?	___	___	___
7:26-11.5(c)3	Are there any signs of leaks, spill and fugitive emission associated with the pumps, valves, conveyors, pipes, etc?	___	___	___
	If yes, describe.			
7:26-11.5(c)3	Are all emergency shutdown controls and system alarms checked to assure proper operation?	___	___	___
	Is there any reason to believe the incinerator is being operated improperly? i.e., steady state conditions are not maintained.	___	___	___
	If yes, explain.			
7:26-11.5(c)3	Is the incinerator inspected daily?	___	___	___
7:26-11.5(e)	Is there open burning of hazardous waste?	___	___	___
	If yes, what is being burned? (Only burning or detonation of explosives is permitted.)			
	If open burning or detonation of explosives is taking place, approximately what is the distance from the open burning or detonation to the property of others?			

	YES	NO	N/A
Are containers holding liquid waste or waste containing free liquids placed in the landfill?	___	___	___
Please describe the types and contents of such containers placed in the landfill.			
Are empty containers placed in the landfill crushed flat, shredded or similarly reduced in volume before they are buried?	___	___	___
Are small containers of hazardous waste in overpacked drums placed in the landfill?	___	___	___
If yes, please describe precautions taken to prevent the release of the waste.			

7:26-11.6 Thermal Treatment

What type of thermal treatment is at the site (e.g., waterwall incinerator, boiler, fluidized bed, etc.)

List the types and quantities of hazardous waste thermally treated.

Is the residue from the thermal treatment unit a hazardous waste?	___	___	___
What types of air pollution control devices (if any) are installed in the thermal treatment unit?			

		YES	NO	N/A
	Is energy recovered from the process?	___	___	___
	If yes, describe.			
	What is the destruction and removal efficiency for the organic hazardous waste constituents?			
7:26-11.6(b)1	Does the operating record include additional analysis and to determine types of pollutants which might be emitted including:			
7:26-11.6(b)1i	Heating value of the waste?	___	___	___
7:26-11.6(b)1ii	Halogen and sulfur content?	___	___	___
7:26-11.6(b)1iii	Concentrations of lead and mercury?	___	___	___
7:26-11.6(2)	If no to any of the above questions, is there justification and documentation?	___	___	___
	If operating, does it appear the thermal treatment unit is operating at steady state for conditions of operation, including temperature and air flow?	___	___	___
	Monitoring and Inspection			
	Are existing instruments relating to combustion and emission controls monitored every 15 minutes?	___	___	___
	If no, explain.			
7:26-11.6(c)1	Does the thermal treatment have all the following instruments for measuring: wastefeed, auxiliary fuel feed air flow, incinerator temperature scrubber flow, and scrubber pH? (Circle missing instruments.)	___	___	___
	If no, explain.			

		YES	NO	N/A
7:26-11.6(c)2	Is the stack plume observed visually at least hourly for opacity and color?	___	___	___
7:26-11.6(c)3	Are there any signs of leaks, spill and fugitive emission associated with the pumps, valves, conveyors, pipes, etc?	___	___	___
	If yes, describe.			
7:26-11.6(c)3	Are all emergency shutdown controls and system alarms checked to assure proper operation?	___	___	___
	Is there any reason to believe the thermal treatment unit is being operated improperly? i.e., steady state conditions are not maintained.	___	___	___
	If yes, explain.			
7:26-11.6(c)3	Is the thermal treatment inspected daily?	___	___	___
7:26-11.6(e)	Is there open burning of hazardous waste?	___	___	___
	If yes, what is being burned? (Only burning or detonation of explosives is permitted.)			
	If open burning or detonation of explosives is taking place, approximately what is the distance from the open burning or detonation to the property of others?			
7:26-11.7	<u>Chemical, Physical and Biological Treatment</u>			
	(Other than in tanks, surface impoundments or plant treatment facilities)			

		YES	NO	N/A
	Describe the treatment system at this facility and the types of wastes treated.			
7:26-11.7(a)2	Does the treatment process system show any signs of ruptures, leaks or corrosion?	___	___	___
	If yes, describe.			
7:26-11.7(a)3	Is there a means to stop the inflow of continuously-fed hazardous wastes?	___	___	___
	Inspections			
7:26-11.7(c)1	Is the discharge control safety equipment (e.g., waste feed cut-off systems, by-pass systems, drainage systems and pressure relief systems) in good working order?	___	___	___
7:26-11.7(c)1	Are they inspected at least once each operation day?	___	___	___
7:26-11.7(c)2	Does the data gathered from the monitoring equipment (e.g., pressure and temperature gauges) show treatment process is operating according to design?	___	___	___
7:26-11.7(c)2	Is data gathered at least once each operating day?	___	___	___
7:26-11.7(c)3	Are construction materials of the treatment process inspected at least weekly to detect corrosion or leaking of fixtures and seams?	___	___	___
7:26-11.7(c)4	Are the discharge confinement structures (e.g., dikes) immediately surrounding the treatment unit inspected at least weekly to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).	___	___	___
7:26-11.7(e)1	Are ignitable or reactive waste fed into the waste treatment system treated or protected from any material or conditions which may cause it to ignite or react?	___	___	___
	If yes, explain how.			

		YES	NO	N/A
7:26-11.7(f)	Are the incompatible wastes placed in the same treatment process?	___	___	___

If yes, please explain.

REFERENCE NO. 18

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

November 6, 1986

Mr. Kenneth Cloutman
NJDEP, Div. of Waste Management
Twin Rivers Professional Bldg.
E. Windsor, N.J. 08520

Dear Mr. Cloutman:

This letter is in reference to your visit on June 18, 1986 and your inspection report on our facility.

I would like to clarify the description of our facility operations in your inspection report. Our sludge is hazardous because it is a wastewater treatment sludge from electroplating operations and therefore, is manifested off site with a waste number of F006. Our sludge is not EP toxic for lead.

Prior to 1985 the clarification process was held in a 12,000 gallon (not 1200) settling tank.

Sludge is presently being dewatered through a filter press; prior to 1985 a centrifuge was used.

We would like you to include this letter in your file with your inspection report of our facility.

Thank you.

Sincerely,

METHODE ELECTRONICS, INC., EAST

Jeffrey A. Holmes
Wet Process Engineer

JAH:mwk
cc: J. Glasser
J. Mulcahy

IPC MEMBER

REFERENCE NO. 19

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Acting Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
P-592-171-764

Methode Electronic
John Wilkinson
1 Industrial Park
P.O. Box M
Willingboro, NJ 08046

21 MAY 1987

Dear Mr. Wilkinson:

RE: Methode Electronic, Willingboro, EPA ID No. NJD 048 608 897

The Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.) authorized the New Jersey Department of Environmental Protection (NJDEP) to establish a program requiring permits for hazardous waste treatment, storage or disposal facilities. NJDEP has issued regulations to implement this permit program, which can be found under N.J.A.C. 7:26-1.1 et seq.

Pursuant to these regulations, specifically N.J.A.C. 7:26-12.3, your facility has been operating as an existing facility since the New Jersey Hazardous Waste Management Regulations (N.J.A.C. 7:26-1.1 et seq.) became effective on October 8, 1981. Our records show that you have submitted either Part A of the USEPA RCRA Permit Application or Part A of the New Jersey Hazardous Waste Facility Permit Application. If necessary, your Part A application shall be revised to reflect the requirements of N.J.A.C. 7:26-1.1 et seq. Forms may be obtained from this office or U.S.E.P.A. Region II at (212) 264-9880.

This letter shall constitute an official request for the complete New Jersey Hazardous Waste Facility Permit Application, which shall include items set forth in Attachment I. Please note that Item 7 requires the submittal of information pursuant to the Hazardous and Solid Waste Amendments of 1984 (HSWA). The State of New Jersey is not yet authorized to administer the provisions in HSWA, therefore the attached letter shall constitute EPA's request for the HSWA portion of the permit application. Your permit application should be prepared to both the HSWA and pre-HSWA requirements.

21 MAY 1987

Your alternative information statement and affidavit should be submitted no later than three (3) months from the date of this letter. The remaining sections of your application should be submitted no later than six (6) months from the date of this letter. Failure to submit the required application by this date shall constitute grounds for termination of existing facility status pursuant to N.J.A.C. 7:26-12.3(f)2.

As stated above, your full application is not due until six (6) months from the date of this letter. However, I would encourage you to start work on it as early as possible because there is a significant amount of information to be submitted. Initially, all applicants shall submit three (3) copies of the application. Two copies shall be submitted to:

Ernest J. Kuhlwein, Acting Chief
Bureau of Hazardous Waste Engineering
Division of Hazardous Waste Management
New Jersey Department of Environmental Protection
401 East State Street, 5th Floor
Trenton, NJ 08625

The remaining copy shall be submitted to:

Lori Amato
Hazardous Waste Facilities Branch
New Jersey Section
USEPA - Region II
26 Federal Plaza
New York, NY 10278

The Department will notify the applicant as to how many additional copies are needed for distribution to appropriate state and local authorities when it completes its initial evaluation of the application.

Should you wish to treat part of your application as confidential information, please refer to Attachment II, which outlines the procedures to be followed in making this claim.

I have taken the liberty of scheduling two (2) application conferences in order to assist you in preparing this application. These conferences have been scheduled for July 14, 1987 and September 15, 1987 at 10:00 am. These conferences will be held in the conference room, 401 East State Street, 5th floor, Trenton, New Jersey 08625. If it is determined that one or both of these conferences is unnecessary, please notify my office of the cancellation.

Should you have any questions regarding this official request to submit your Hazardous Waste Facility Permit Application, please do not hesitate to contact Ali Chaudhry or William Sharples of my staff at (609) 292-9880.

Very truly yours,

Ernest J. Kuhlwein Jr.

Ernest J. Kuhlwein, Jr., Acting Chief
Bureau of Hazardous Waste Engineering

EP11/vb
Attachments
c: Lori Amato, USEPA

REFERENCE NO. 20

3 38:01 - Ron

C

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Acting Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

M E M O R A N D U M

TO: File

FROM: Ali Chaudhry through William Sharples AC

JUL 14 1987

SUBJECT: Methode Electronics (Willingboro) Site Visit

On June 15, 1987 Ali Chaudhry of the Bureau of Hazardous Waste Engineering conducted a site visit of the above subject facility. The purpose of this site visit was to follow up on the Part B Application call-in issued on May 21, 1987. The writer was escorted by Mr. John Wilkinson and Joseph L. Mulcahy during this site visit. A brief conference was held with Messrs. Wilkinson and Mulcahy to discuss the company's hazardous waste activities. Mr. Wilkinson informed the Bureau that Methode Electronics intends to submit a delisting request and operates as a generator of hazardous waste only. Mr. Chaudhry advised that a closure plan according to the requirements of N.J.A.C. 7:26-9.8 and compliance documentation for generators according to N.J.A.C. 7:26-9.3 must be submitted.

Mr. Chaudhry explained the procedure for closure and delisting of Methode Electronics. Messrs. Wilkinson and Mulcahy accompanied Mr. Chaudhry during a tour of the facility. Methode Electronics stores on-site generated waste in containers and a tank.

Mr. Chaudhry emphasized that all the activities included in the previously submitted Part A application must be included in the closure submittal.

Messrs. Wilkinson and Mulcahy stated that they would inform the Department in writing of the company's intention to delist shortly to be followed by submission of a closure plan.

EP11/abl

REFERENCE NO. 21

Let's protect our earth

03-38-017

State of New Jersey

JAN 06 1988

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF HAZARDOUS WASTE MANAGEMENT

John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
609-633-1408

MEMORANDUM

TO: William Sharples, Supervisor

FROM: Ali Chaudhry AC

SUBJECT: Methode Electronics, Inc., Willingboro

Ali Chaudhry and Helen Decere of the Department conducted a site-visit of the above subject facility on November 25, 1987. The purpose of this site-visit was to follow-up on the closure plan submitted by Methode Electronics, Inc. dated October 15, 1987. Mr. John Wilkinson of the subject company escorted the Department Personnel during this site visit. A conference was held to discuss the hazardous waste activities reported in the company's Part A application and those presently being conducted by Methode Electronics, Inc. The following hazardous waste activities were reviewed with Mr. Wilkinson by Mr. Chaudhry:

I. S01

Mr. Wilkinson informed the Department Personnel that the subject company stores following generic hazardous wastes in containers at this location: nitric acid, sulfuric acid, alkalies, pyrophosphate, caustic soda. The maximum quantity of hazardous waste stored in containers is 6,800 gallons.

II. S02

The Part A application indicates that Methode Electronics, Inc. stores hazardous waste in tanks at this location. The maximum design capacity for hazardous waste storage in tanks is 19,000 gallons. Mr. Wilkinson explained that Methode Electronics, Inc. presently uses a 9,000 gallon tank for storage of hazardous waste (D002). According to Mr. Wilkinson, a 6,000 gallon hazardous waste storage tank, previously used for sludge storage, was removed in 1981 and a 4,000 gallon tank is used intermittently for liquid sludge storage. Mr. Wilkinson informed the Department that the 4,000 gallon tank was last used in May, 1986. Mr. Wilkinson identified another tank (20 yd³) used for Solid Sludge Storage which is manifested as F006.

Methode Electronics, Inc. operates a waste water treatment plant consisting of a 6,000 gallon treatment tank.

Ali Chaudhry gave a brief description of the delisting procedures and informed Mr. Wilkinson of all the regulatory requirements applicable to facility closure and generators of hazardous wastes.

Mr. Chaudhry noticed that Methode Electronics, Inc. did not post "NO SMOKING" and "WARNING" signs at the hazardous waste storage locations and warned Mr. Wilkinson about the New Jersey Hazardous Waste Regulations requirements for posting signs at the hazardous waste facility. The hazardous waste storage drums were stacked together and many drums were not labeled. Mr. Chaudhry warned Mr. Wilkinson that sufficient aisle must be maintained between the drums and that all the drums must be labeled bearing the date of initiation of hazardous waste accumulation. Mr. Wilkinson stated that he would comply with all those requirements in the near future.

EP11/bt

Form HSM-002
4/87

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS SITE MITIGATION
BUREAU OF ENVIRONMENTAL MEASUREMENTS AND QUALITY ASSURANCE

BEMQA LOG # _____
DATE REC'D _____

INTER-DIVISIONAL WORK REQUEST

3-38-01

TO: [X] Section Chief, Environmental Measurements Section (984-1693)
[ ] Section Chief, Quality Assurance Section (633-0752)

FROM: Name Ernest J. Kuhlwein, Jr., Chief EK Phone # 292-9880

Division/Bureau Bureau of Hazardous Waste Engineering

DATE OF REQUEST: NOV 17 1987 ~~OCT 17 1987~~ NOV 17 1987 DUE DATE: Site visit on 11/25/87

If less than ten (10) working days lead time please explain. Requestor must indicate ramifications if task is not completed by DUE DATE:

SITE/PROJECT INFORMATION

Project Activity Code: _____

Site Name: Methode Electronics Address: 1 Industrial Park, Willingboro, NJ 08046

Contractor: N/A

Contact Person: John Wilkinson Phone #: (609) 871-3500

DEP Site Manager: Ali Chaudhry DEP Tech. Coordinator: Ali Chaudhry

Site Classification: [X] DEP Lead S.F. [ ] EPA Lead S.F. [ ] Responsible Party [ ] RCRA [ ] ECRA [ ] Other _____

Additional Information: _____

TASK DESCRIPTION: *(Check applicable box. Each task must be accompanied by separate work request.)*

[ ] QC Field Audit
[ ] Site Inspection
[ ] Review Waste Anal. Plan.
[ ] Document Review *(Specify Below)*
[ ] Data Validation
[ ] Data Management
[ ] Sampling by EMS
[ ] Preparation of Sampling Plan by EMS
[ ] Other, explain

Additional Information: Site Visit for Closure Plan on 11/25/87

PROJECT DOCUMENTS must be submitted with request. DOCUMENT TITLE: N/A

Document Status: [ ] Draft [ ] Revised [ ] Approved Written Comments Required: [ ] Yes [ ] No

FUNDING SOURCE: Approved by _____ *(Date)* Authorization # _____ Amt. $ _____

SAMPLING INFORMATION

[ ] Monitor Wells
[ ] Surface Water
[ ] Potable Wells
[ ] Waste
[ ] Soil
[ ] Other
[ ] QC Samples *(Number)* FB____ TB____ Dup.____ PE____ Other _____

Number of Samples: N/A DEP Contract # _____

Analytical Parameters: _____ Task: _____ Tier: [ ] I or [ ] II

BEMQA USE ONLY

SUPERVISOR ASSIGNED: _____ STAFF PERSON: _____ DATE ASSIGNED: _____

PRIORITY ASSIGNED: I II III

PERSON DAYS REQUIRED TO COMPLETE TASK: _____ DATE COMPLETED: _____

COPIES: White - BEMQA File Yellow - Project File Pink - Retained by Requestor

REFERENCE NO. 22

Date 1/29/88 JF

RCRA LAND DISPOSAL RESTRICTION INSPECTION

Facility: Methode Electronics, Inc

U.S. EPA I.D. No.: NJD048608397

Street: 1 Industrial Park

City: Willingboro State: NJ Zip Code: 08046

Telephone: 609-871-3500

Operator: J. Mulcahy

Street:

City: State: Zip Code:

Telephone:

Owner:

Street:

City: State: Zip Code:

Telephone:

Inspection Date: / / Time: - Weather Conditions:

	Name	Affiliation	Telephone
Inspectors:	Peter Taylor		
Facility Representatives:	J. Mulcahy		

	RCRA Status	LDR Status F-Solvent	LDR Status California List
Generator	✓		
Transporter			
Treater			
Storer	✓ - requesting	delisting	NA
Disposer			

Revised 11-03-87

RCRA LAND DISPOSAL RESTRICTION INSPECTION

APPLICABILITY CHECKLIST

. Does the facility handle the following wastes? - No - Co. eliminated using solv and replaced them w/ water bas product

	Gen.	Treat	Store	Disp.	Trans.
A. F-Solvent Wastes					
1. F001	____	____	____	____	____
2. F002	____	____	____	____	____
3. F003	____	____	____	____	____
4. F004	____	____	____	____	____
5. F005	____	____	____	____	____

Note: Use Appendix A to determine whether the facility is misclassifying any of its wastes.

B. California List Wastes

1. Liquid hazardous waste (including free liquids associated with any solid or sludge) that contains the following metals at concentrations greater than or equal to those specified

		Gen.	Treat	Store	Disp.	Trans.
Arsenic	500 mg/L	____	____	____	____	____
Cadmium	100 mg/L	____	____	____	____	____
Chromium VI	500 mg/L	____	____	____	____	____
Lead	500 mg/L	____	____	____	____	____
Mercury	20 mg/L	____	____	____	____	____
Nickel	134 mg/L	____	____	____	____	____
Selenium	100 mg/L	____	____	____	____	____
Thallium	130 mg/L	____	____	____	____	____

J D 0 4 8 6 0 8 8 9 7 | W | DUP | DUP

DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	OMIT	Previously (D000 Toxic) omit			6000 Gal Sludge storage Tank # 2 on Facility drawing now removed
2	D002	12,000		S02	4500 Gal waste ammonium Hydroxide NA 2672 Storage Tank # 4 on Facility drawing
3	OMIT	Previously F002 omit			4000 Gal Chlorothene NU Storage Tank #1 in Facility drawing - Now Empty
4	OMIT	Previously F005 omitted 12/13/83			(No Longer used acetone omitted)
5	OMIT	Previously F005 omitted 12/13/83			(No Longer used Toluene omitted)
6	F006	120,000	P	T01S02	Waste water Treatment Sludges from electroplating (20 cu yd. box)
7	F007	2815	G	S01	Spent plating bath solutions from electro plating (except cyanide) 55 Gal drums
8	OMIT	Previously F008 omitted 12/13/83			Plating bath sludges with cyanide omitted
9	D002	Previously 40 pounds 8525	G	S01	Solid waste corrosive 55 Gal drums Nitric Sulfuric Etc
10	OMIT	Previously U002 omitted 12/13/83			(acetone omitted)
11	OMIT	Previously U122 omitted			(Formaldyhyde omitted)
12	OMIT	Previously U220 omitted 12/13/83			(Toluene omitted)
13	OMIT	Previously U226 omitted			(Chlorothene omitted)
14	X726	165	G	S01	Waste Compressor + other petroleum based oils
15	D008	1430	G	S01	waste solder reflow oil
16	D001	110	G	S01	Isopropanol Alcohol N.O.S.
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

REFERENCE NO. 23

Let's protect our earth

Cwdn KC

C3-38-01

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

MAR 04 1988

John L. Glasser
Vice President/General Manager
Methode Electronics, Inc.
One Industrial Park
Willingboro, NJ 08046

Dear Mr. Glasser:

RE: Closure Plan Review for Methode Electronics, Inc., Willingboro, EPA ID NO. NJD 048 608 897 - CP# 88-6

The Bureau of Hazardous Waste Engineering (the Bureau) has reviewed the closure plan submittal dated October 15, 1987 for the above subject facility. The Department inspected this facility on November 25, 1987. This letter responds to the aforementioned correspondence and questions/issues raised during the site inspection.

The Bureau has reviewed the Part A application submitted by Methode Electronics, Inc. and finds that the following activities are included in the subject facility's Part A application:

1. Hazardous Waste Storage in Containers (S01) - 6,800 gallons.

2. Hazardous Waste Storage in Tanks (S02) - 19,000 gallons.

3. Hazardous Waste Treatment in Tanks (T01) - 144,000 gallons per day.

The October 15, 1987 submittal states that Methode Electronics, Inc. intends to close TSD facility and will operate as a generator of hazardous waste. Please be advised that the subject facility will be required to comply with the requirements of N.J.A.C. 7:26-9.8 and N.J.A.C. 7:26-9.3. The Bureau has reviewed the submittal according to the above stated requirements and finds it deficient as follows:

I. <u>Hazardous Waste Storage in Tanks</u>

The original Part A application submitted to the USEPA shows hazardous waste storage in tanks capacity of 19,000 gallons. The submittal states that the present tank storage capacity is 9,000 gallons. Please submit an explanation for the remaining 10,000 gallons hazardous waste storage capacity included in the original Part A application.

MAR 04 1988

Additionally, each hazardous waste storage tank must be individually addressed and must comply with the following requirements:

A. Each tank shall have sufficient shell thickness to ensure that the tanks will not collapse or rupture. Methode Electronics, Inc. must submit design specifications and design standards for the tanks to be used for hazardous waste storage for less than 90 days.

B. Please be advised that it is a policy of the Division of Hazardous Waste Management to require installation of automatic waste feed cut-off controls to the storage tanks used to store ignitable or reactive wastes. If any of the tanks are used to store reactive or ignitable hazardous wastes, the subject tanks must be equipped with automatic waste feed cut-off controls. A description and confirmation of the automatic waste feed cut-off controls must be submitted.

C. Calculations showing compliance with the secondary containment requirements of N.J.A.C. 7:26-10.5(d) must be submitted. The calculations must take into account any volume displaced by tanks and other structures within the containment capacity. The displaced volume must be subtracted from the total available volume, disregarding any object or structure, within the containment system. If any of the storage tanks are outside, the containment calculations must take into account 24 hour rain accumulation for the subject tanks and it must be confirmed that the accumulated precipitation shall be removed from sump or collection area in a timely manner. It must be confirmed that the permeability rating of the containment system is no greater than 10^{-7} centimeter per second, in addition to adequate structural integrity to withstand the maximum anticipated stress applied to the base due to activities or structures placed in the containment area as required by N.J.A.C. 7:26-10.5(d).

D. The tanks shall be designed so that at least 99 percent of the volume can be readily emptied by direct pumping or drainage. A description and a diagram must be submitted.

E. The tanks shall be rendered empty, as defined at N.J.A.C. 7:26-1.4, every 90 days or less.

II. Waste Water Treatment Plant

Detailed information on the Waste Water Treatment Plant at this facility must be submitted. The submission must include drawings of the plant, description of wastes treated, process description and quantities and classification of the wastes handled in the plant.

It is further advised that an extension for the Part B application is not necessary while the closure plan for the subject plant is under review by the Bureau.

Mar 27 1993

The above requested information three (3) copies must be submitted to this Bureau within thirty (30) days from the date of this letter. Failure to submit this information on time and in full may result in enforcement action.

If you have any questions relative to this matter, please call Ali Chaudhry of my staff at (609) 292-9880.

Very truly yours,

Ernest J. Kuhlwein, Jr., Chief
Bureau of Hazardous Waste Engineering

EP11/slw

c: Barry Tornick, USEPA
Linda Jordan, CFO

REFERENCE NO. 24

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

March 16, 1988

Department of Hazardous
Waste Management
Twin Rivers Professional Bldg.
East Windsor, NJ 08520

Attn: Linda Jordan

Dear Ms. Jordan;

The attached letter has been sent to the Willingboro Fire Department.

Methode Electronics had been visited by the Fire Department on June 11,1987. We did not receive a response to our November 30, 1987 letter to the Fire Department. Lieutenant Jeff Silagy was the senior member of the Fire Department until Jan. 1988 and a new head of the department is now in charge, his name is David Andrade, and I hope to get a positive response this time.

Very truly yours,

METHODE ELECTRONICS INC. EAST

John E. Wilkinson
Waste Treatment Manager

JEW/cr
cc: J. Mulcahy
NJDEP

IPC MEMBER

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

March 16,1988

Willingboro Volunteer Fire Company
Charleston Road & JFK Way
Willingboro NJ 08046

Attn: David Andrade

Dear Mr. Andrade;

Methode Electronics is listed with the State of New Jersey Department of Environmental Protection as a generator and TSD(Treatment, Storage and Disposal Facility) for hazardous wastes.

Because we are a generator and TSD facility, we must comply to New Jersey Hazardous Waste Regulations listed under the Division of Waste Management, N.J. Administrative Code, Title 7, Chapter 26, Subchapter 9, entitled: "Requirements for Hazardous Waste Facilities". Section 9.6 (f) 5 of Subchapter 9 states: "Arrangements to have the local fire department inspect the facility on a regular basis with at least two(2) inspections annually".

Please consider this registered letter as Methode's arrangement for inspections according to the above regulations. Please contact us to schedule inspection dates. We will be waiting for your reply.

We have not been inspected on schedule in November 1987 and New Jersey Department of Environmental Protection, Division of Hazardous Waste Management, Inspection, Compliance, and Enforcement Section is concerned.

Very truly yours,

METHODE ELECTRONICS INC., EAST

John E. Wilkinson

John E.Wilkinson
Waste Treatment Manager

JEW/cr
cc: J.Mulcahy
Dept. of Hazardous Waste Management
NJDEP

IPC

REFERENCE NO. 25

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Acting Director
Twin Rivers Professional Bldg.
East Windsor, N.J. 08520
609 - 426 - 0700

March 21, 1988

Methode Electronics, Inc. East
One Industrial Park
Willingboro, New Jersey 08046
Attention: John E. Wilkinson

Dear Mr. Wilkinson:

As indicated in your letter dated March 16, 1988, the local fire department has only made one inspection in 1987. Be advised that pursuant to N.J.A.C. 7:26-9.6(f)6 the owner must document the refusal in the operating record. According to Peter Taylor of my staff, who conducted an inspection of the site, we are also aware that your insurance company also conducts regular fire inspections.

Pursuant to N.J.A.C. 7:26-9.4(g)8, which requires that semi-annual fire drills involving appropriate local authorities be conducted, you were found to be deficient. However, there is an allowance in the regulations under N.J.A.C. 7:26-9.4(g)8ii, which allows for the operator to petition the Department for an exemption from the involvement of the local authorities provided we receive written approval of the exemption from same.

Should you have any questions, please contact me at (609) 426-0700.

Sincerely,

Linda Z. Jordan

Linda Z. Jordan
Pr. Environmental Specialist

df

REFERENCE NO. 26

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

March 30, 1988

State of New Jersey
Dept. of Environmental Protection
Div. of Hazardous Waste Management
401 East State St. - CN 028
Trenton, N.J. 08625

Attn: Ernest J. Kuhlwein, Jr., Chief
Bureau of Hazardous Waste Engineering

Dear Mr. Kuhlwein:

The following is in response to your letter to Methode Electronics, Inc. dated March 4, 1988 and received by Methode on March 9, 1988.

I. Hazardous Waste Storage In Tanks

Attached is a revised Part A application (Appendix "A"). Appendix A, should clarify our hazardous waste storage in tanks (S02), previously 19,000 gallons, presently 9,000 gallons.

It shows that Tank #2, 6000 gallons is empty and removed from the building. Tank #1 is 4000 gallons and is empty. Tank #1 is for sale and is located inside the building. It will be removed when the room is renovated.

Para. A - Page 2 - Design Specifications and Standards

The remaining storage tanks, Tank #3, 4500 gallon capacity and Tank #4, 4500 gallon capacity are identical. The tanks are constructed of quarter inch thick welded steel plate and have a one-eighth inch thick neoprene liner throughout. Neoprene compatability rating is excellent with ammonium hydroxide, (Specific Gravity 1.2). The tanks are sitting on a twelve inch reinforced concrete base. See (Appendix "B") for a drawing of Tank #3 and #4. Note: Tank #3 contains new chemistry, ammonium hydroxide replenisher for the etching system.

Initial charge of 3000 gallons (maximum) of this replenisher is fed on demand to a copper etching unit which in turn pumps spent or copper-laden solution in a balanced amount to Tank #4.

C 4/8/88

IPC MEMBER

When Tank #3 is empty and Tank #4 is full, a new 3000 gallon charge is delivered by the chemistry supplier to Tank #3; the spent solution is drawn from Tank #4 and manifested for recycling.

Tank inspection is conducted daily as directed by Methode instruction 1001002. Inspection records are kept on file for at least three years from date of inspection.

Para. B - Page 2 - Reactive or Ignitable Hazardous Wastes

Spent ammonium hydroxide solution (corrosive liquid D002).

In order to compute secondary containment for Tank #4, we used a transit, (special tool) to survey and compute depths in the entire containment areas. The calculations take into account tanks and other structures within the containment areas.

The total containment areas compute to 6,011 gallons holding capacity, which is more than twice the 3,000 gallons maximum that would be stored in Tank #4 (spent ammonium hydroxide). See (Appendix "D"), for calculation of our containment capacity.

Tanks #3 and #4 are inside the facility.

The permability rating should be more than adequate as the floor thickness in our wet process areas of plating and etchback have a twelve inch, reinforced concrete floor. The other containment areas have an eight inch reinforced concrete floor. An eight inch concrete block retaining wall and raised concrete barriers make up the containment barrier.

Nepco Inc., Rt. 130, Robbinsville, N. J. has been contracted for emergency spill response as indicated in our contingency plan, Methode Instruction 1001000.

Para. D - Page 2 - Emptying Spent Ammonium Hydroxide

Tank #4 has a flanged pipe on the bottom of the tank. This pipe extends into the tank approximately twelve inches and extends down to the bottom of the tank to allow virtually a complete empyting of the tank. There is a manual ball shut off valve on the end of the flange. The solution level is measured on a regular basis to determine reorder schedule and is measured to verify that the tank is empty before a new charge is added. See (Appendix "B") for a detailed drawing of Tank #3 and Tank #4.

Para. E - Page 2 Rendering Tank Empty Every 90 Days or Less

Tanks will be rendered empty every 90 days or less pursuant to NJAC 7:26 - 1.4.

Para. II - Page 2 Waste Water Treatment Plant

A. The waste water treatment plant consists of three separate systems.

1. Chelated waste water treatment (Etcher Rinse Waters): Ferrous sulfate is added and mixed. Then lime and sodium hydroxide are added and mixed for pH adjustment. A poly electrolyte floculant is then added. The water is then clarified and the sludge is pumped out to a filter press. The clear effluent goes to a floor tank for sampling.

2. Non chelated waste water treatment: Non chelated waste waters are sent to the main pit for the addition of ferrous sulfate, lime and sodium hydroxide. The water is mixed and pH adjusted and then pumped to the main clarifier. On route to the clarifier a poly electrolyte floculant is added. The water enters a floculator integral within the clarifier and then spills into the main section of the clarifier. Sludge is pumped off the bottom of the clarifier and the clear effluent goes to a floor tank for sampling.

3. Untreated system Rinse waters not requiring treatment are channeled through plumbing to a sampling point where it then joins the effluent from the other two systems. See (Appendix E) for a diagram of the waste water treatment plant.

B. Description of wastes treated:

1. The various process chemicals are rinsed as shown in (Appendix "E") and then treated as required.

2. Waste ammonium hydroxide with copper D002, is sent to C.P. Inorganics in Joliet, Illinois for beneficial re-cycling.

3. Waste water treatment sludges F006 are sent to Envirite Corp. in York, Pennsylvania where it is rendered non hazardous and then put into landfill.

4. Spent chemicals, D001, D002, D008, F007 and X726 are sent to Waste Conversion, Inc., in Hatfield, Pennsylvania where they are treated and then disposed of. See (Appendix "A"), page 3, which is a revised Part A hazardous waste permit application. NOTE: Part A is for information purposes only.

C. As requested three copies of this document are submitted for your review.

If you have any questions relative to this matter, please call John Wilkinson, Methode Electronics, Inc., Environmental Manager at 609-871-3500.

Very truly yours,

METHODE ELECTRONICS, INC., EAST

John Wilkinson
Environmental Manager

JW:mwk
enc: 3 sets of each

EPA

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F N J D 0 4 8 6 0 8 8 9 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility o revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

☐ 2. NEW FACILITY *(Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

FOR NEW FACILITI PROVIDE THE DAT *(yr., mo., & day)* OPE TION BEGAN OR IS EXPECTED TO BEG

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, the describe the process *(including its design capacity)* in the space provided on the form *(Item III-C).*

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below):* A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP Y/A C I

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	55 Gal drum storage 3850	G		7				
2	S 0 2	Ammonium Hydroxide 9,000 Tanks	G		8				
3	T 0 1	Treatment Tanks 6,000	E		9				
4					10				

III. PROCESSES

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.
2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above.

I.D. NUMBER (enter from page 1): W J D 0 4 8 6 0 8 8 9 7 — T/A C 1

FOR OFFICIAL USE ONLY: W DUP — T/A C 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	OMIT	Previously (D000 Toxic) omit			(6000 Gal. sludge storage tank # on facility drawing now removed
2	D002	12,000		S02	(4500 Gal waste ammonium Hydroxide NA 2672 storage tank #4 on facility drawing
3	OMIT	Previously F002 omit			4000 Gal Chlorothene NU storage tank #1 in facility drawing - Now [illegible]
4	OMIT	Previously F003 omitted 12/13/83			(No longer used (acetone omitted)
5	OMIT	Previously F005 omitted 12/13/83			(No longer used (Toluene omitted)
6	F006	120,000	P	T01 S02	Waste water treatment sludge from electroplating (20 cu yd. bo[illegible]
7	F007	2815	G	S01	Spent plating bath solutions [illegible] electro plating (except cyanide) 55 Gal drums
8	OMIT	Previously F008 omitted 12/13/83			Plating bath sludges [illegible] Cyanide omitted
9	D002	Previously 40,000 lbs 8525	G	S01	Solid waste corrosive 55 Gal. drums Nitric [illegible]
10	OMIT	Previously U002 omitted 12/13/83			(acetone omitted)
11	OMIT	Previously U122 omitted			(Formaldyhyde omitted)
12	OMIT	Previously U220 omitted 12/13/83			(Toluene omitted)
13	OMIT	Previously U226 omitted			(Chlorothene omitted)
14	X726	165	G	S01	Waste compressor + other petroleum based oils
15	D008	1430	G	S01	Waste solder reflow oil
16	D001	110	G	S01	Isopropanol Alcohol N.O.S.
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

EPA I.D. NO. *(enter from page 1)*

F N J D 0 4 8 6 0 8 8 9 7 T/A C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 6 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
40 02 00	74 54 50

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

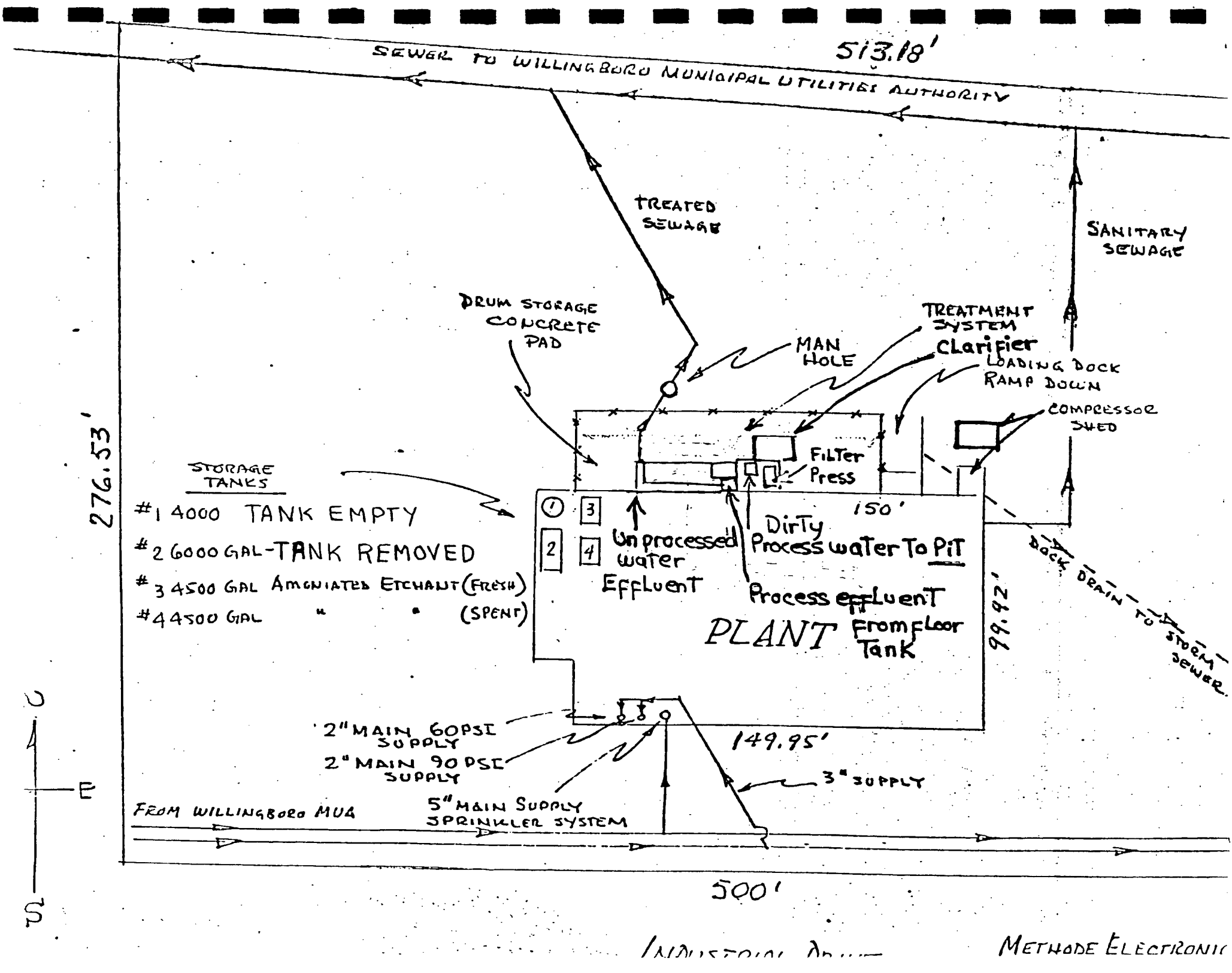
A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED

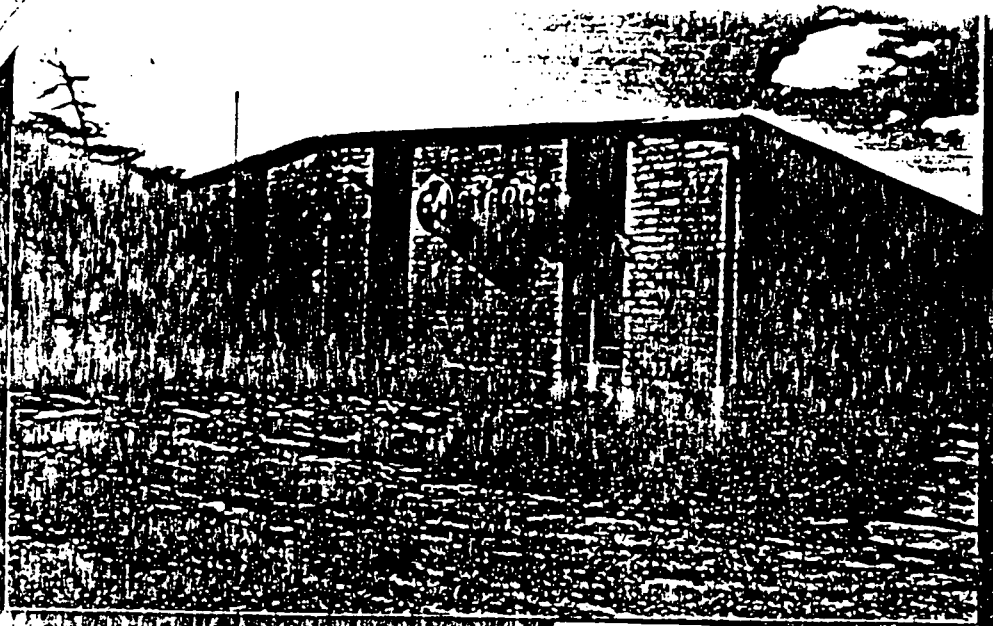
X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

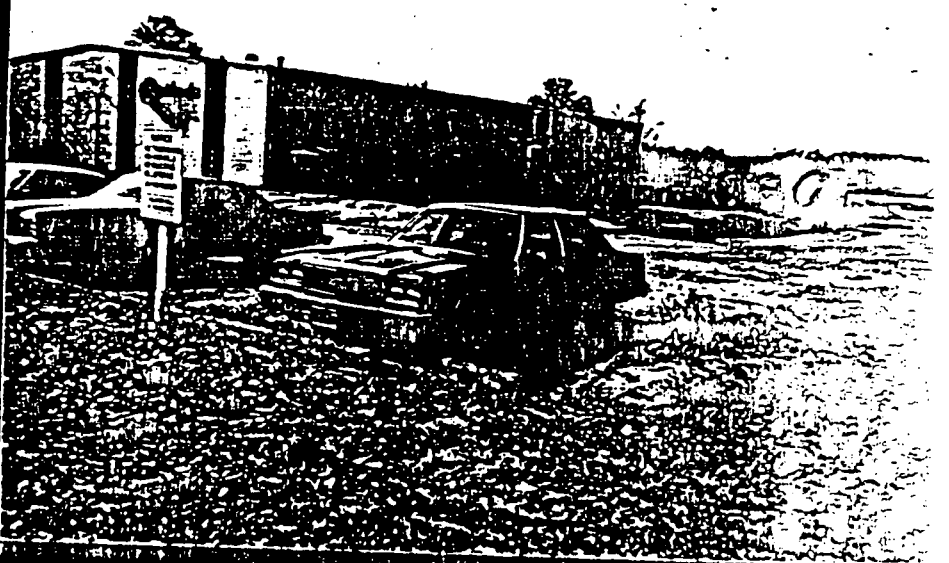
A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
John Edward Wilkinson	John Edward Wilkinson	Mar 30, 1988

CONTINUE ON PAGE 5


SEWER TO WILLINGBORO MUNICIPAL UTILITIES AUTHORITY
513.18'
TREATED SEWAGE
SANITARY SEWAGE
DRUM STORAGE CONCRETE PAD
MAN HOLE
TREATMENT SYSTEM
Clarifier
LOADING DOCK RAMP DOWN
COMPRESSOR SHED
FILTER PRESS
276.53'
STORAGE TANKS
#1 4000 TANK EMPTY
#2 6000 GAL-TANK REMOVED
#3 4500 GAL AMONIATED ETCHANT (FRESH)
#4 4500 GAL " " (SPENT)
1
2
3
4
150'
Unprocessed water Effluent
Dirty Process water To PIT
Process effluent From floor Tank
PLANT
99.92'
DOCK DRAIN TO STORM SEWER
2" MAIN 60PSI SUPPLY
2" MAIN 90 PSI SUPPLY
5" MAIN SUPPLY SPRINKLER SYSTEM
149.95'
3" SUPPLY
FROM WILLINGBORO MUA
500'
N
E
S
INDUSTRIAL DRIVE
METHODE ELECTRONIC



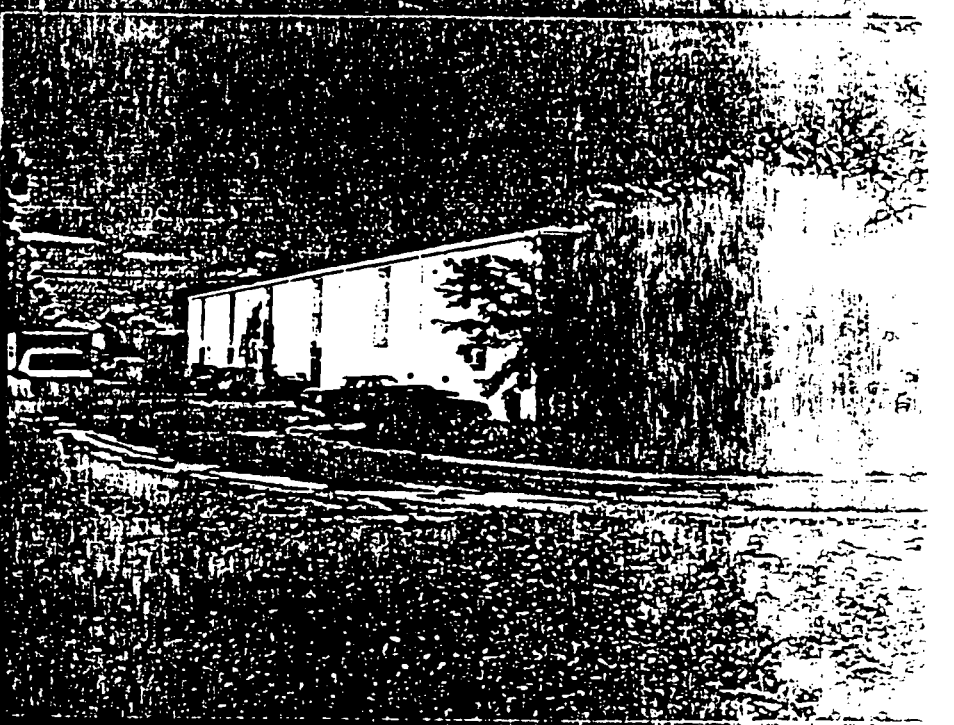
FACILITY-EXTERIOR
Northeast corner



FACILITY-EXTERIOR
Northeast corner-showing north side of plant

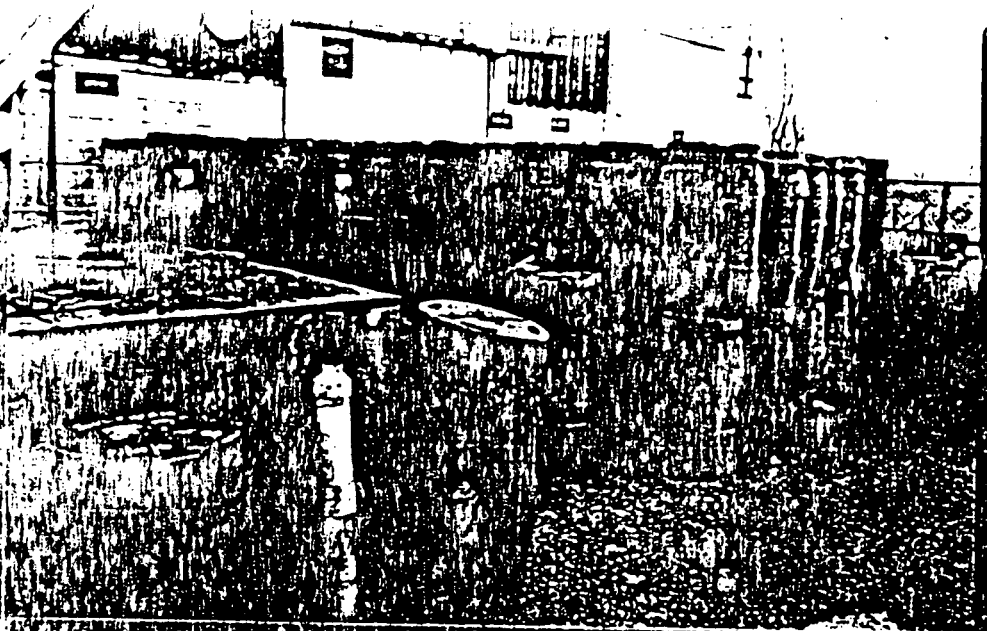
FACILITY-EXTERIOR
Northwest corner

FACILITY-EXTERIOR
Southwest corner

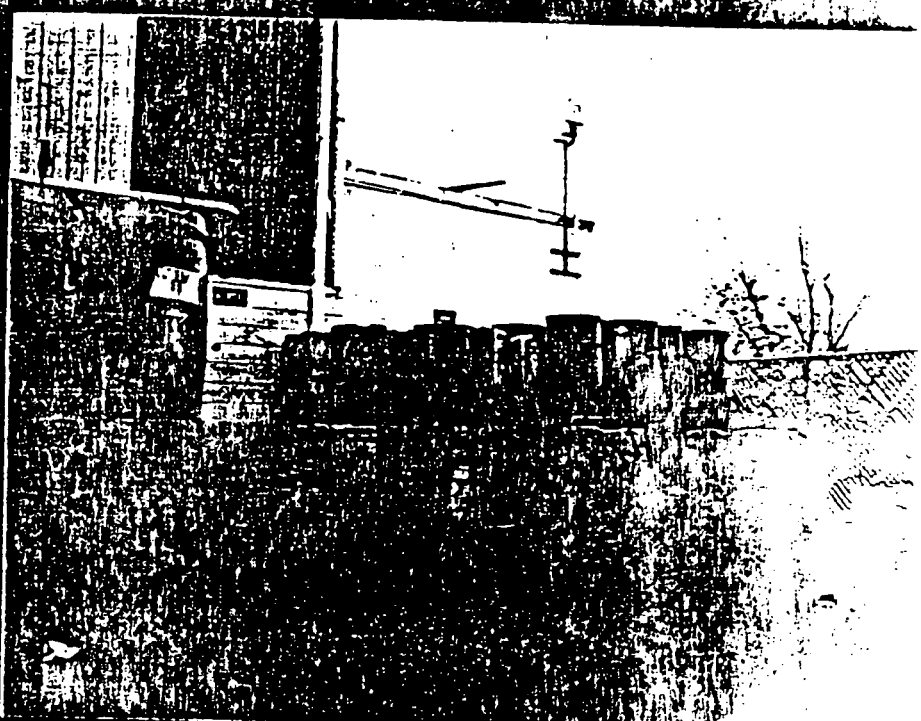


FACILITY-EXTERIOR
Southeast corner

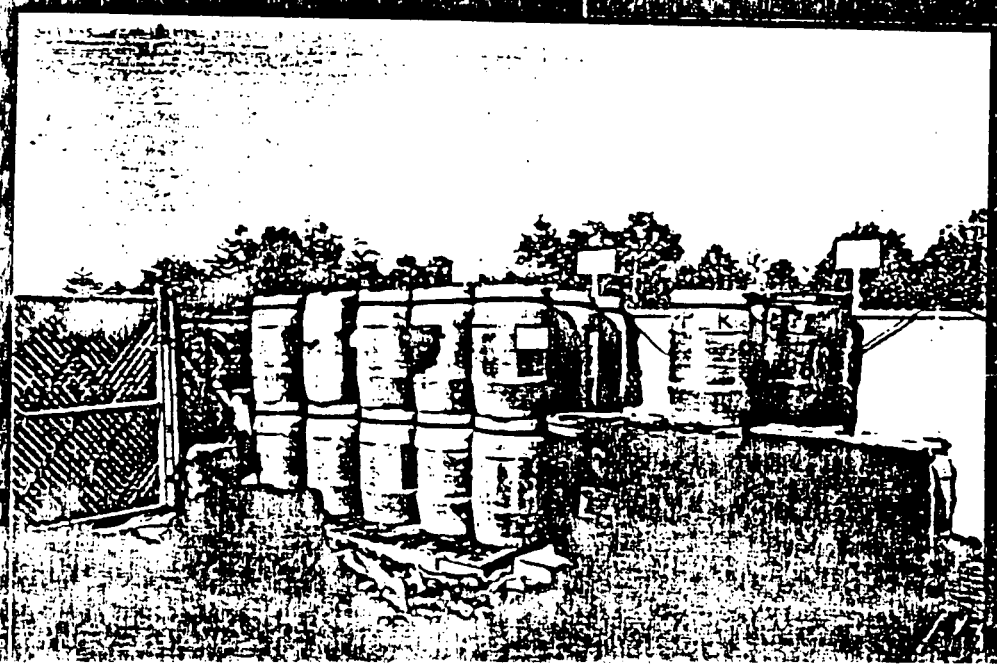
FACILITY-EXTERIOR
View from Beverly-Rancocas
Road showing southeast co
of plant



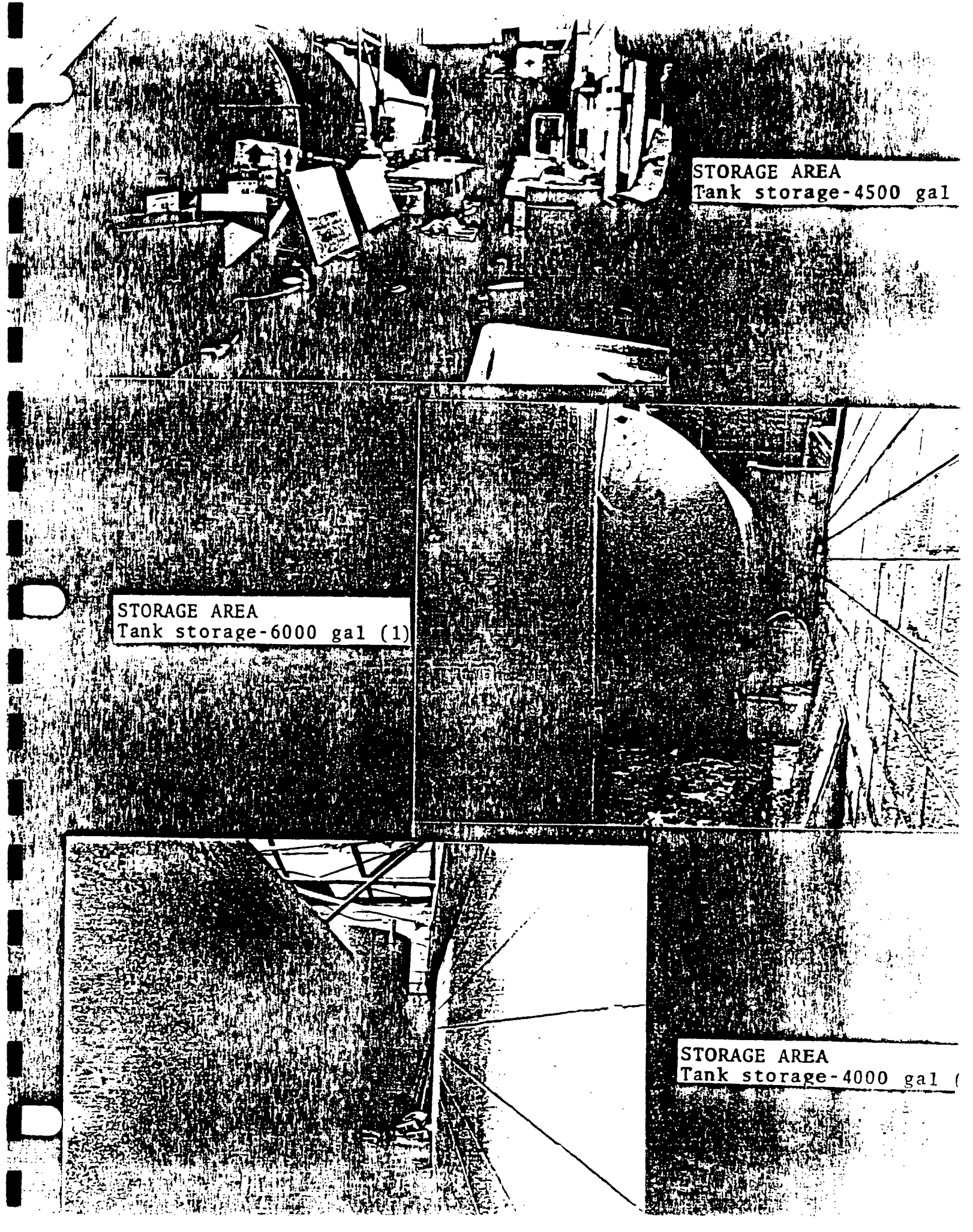
STORAGE AREA
Drum storage-Northeast v



STORAGE AREA
Drum storage-Northeast view



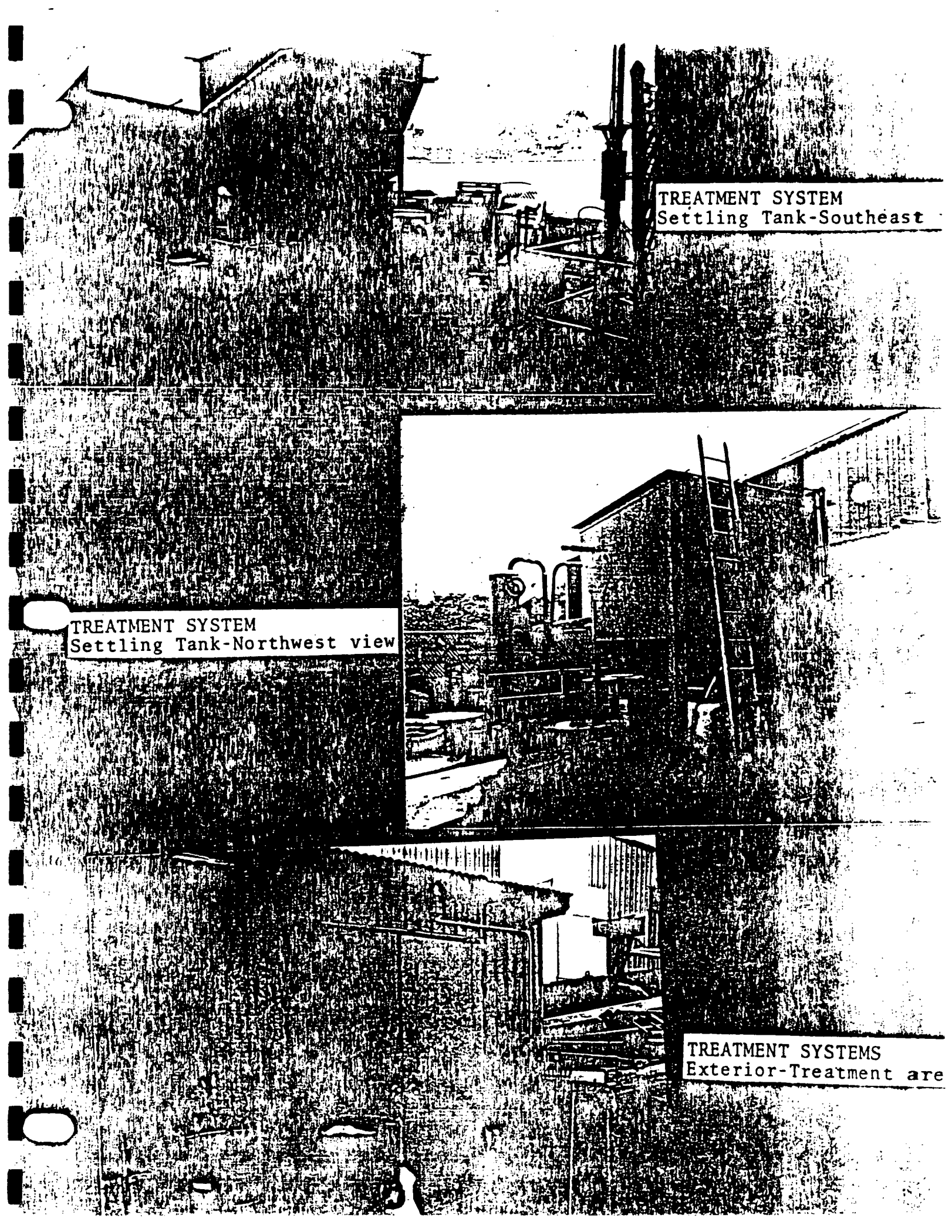
STORAGE AREA
Drum storage-Southeast v



STORAGE AREA
Tank storage-4500 gal

STORAGE AREA
Tank storage-6000 gal (1)

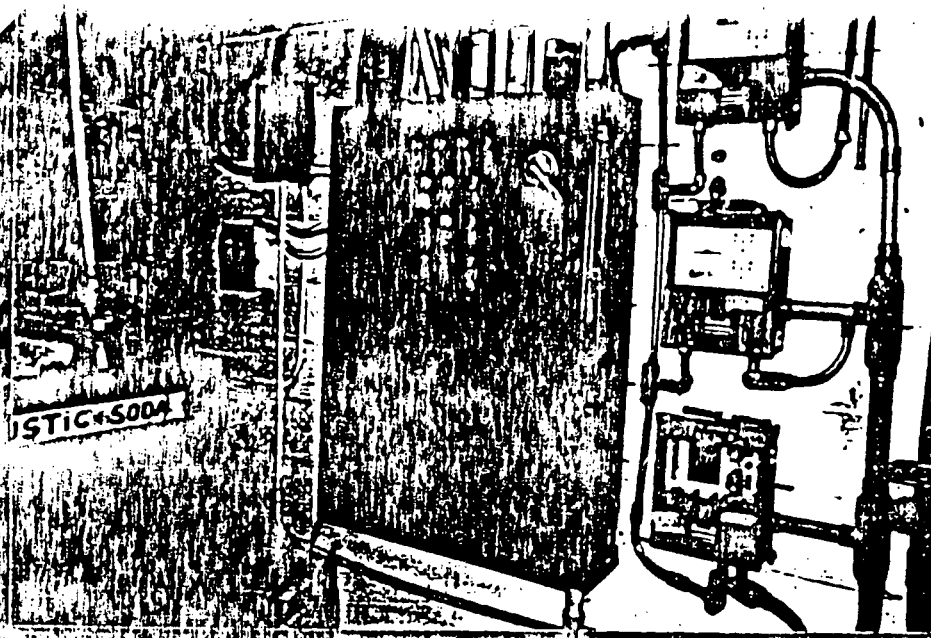
STORAGE AREA
Tank storage-4000 gal (



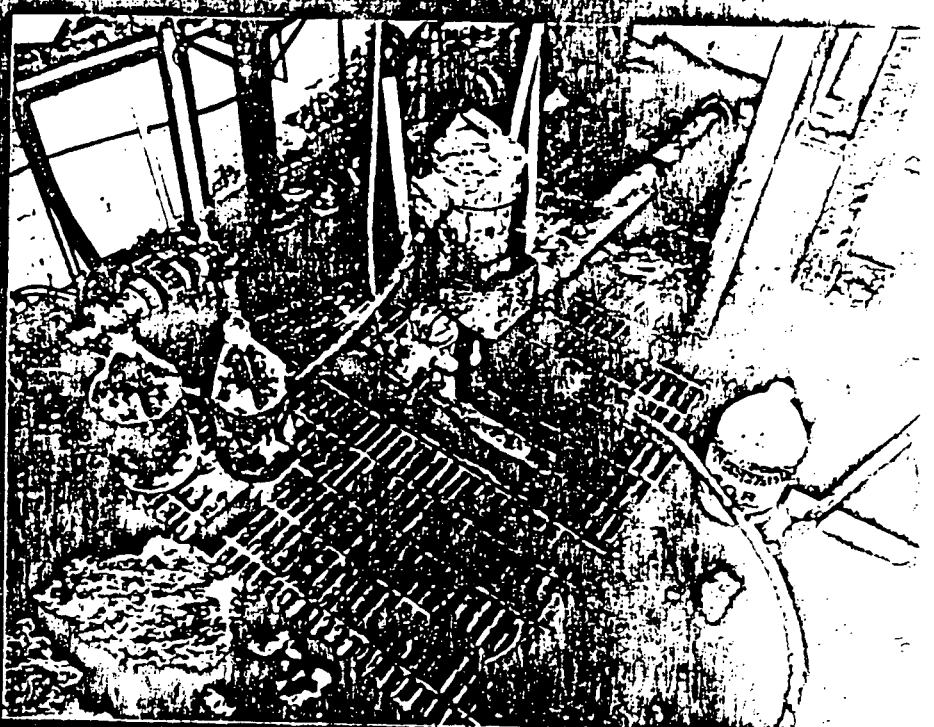
TREATMENT SYSTEM
Settling Tank-Southeast

TREATMENT SYSTEM
Settling Tank-Northwest view

TREATMENT SYSTEMS
Exterior-Treatment are



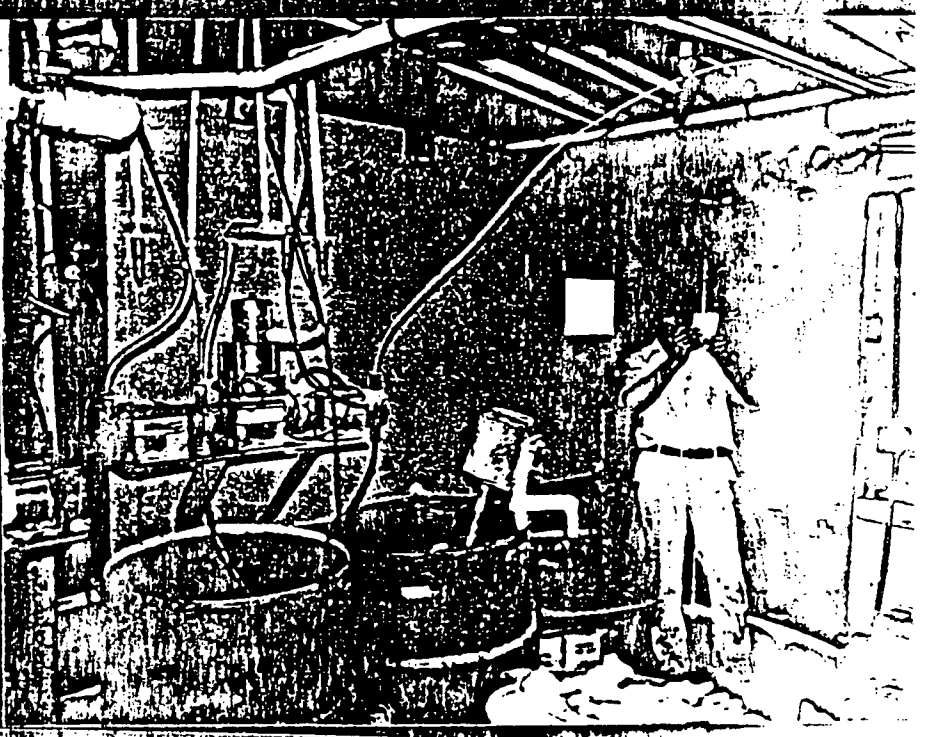
TREATMENT SYSTEM
Control Panel



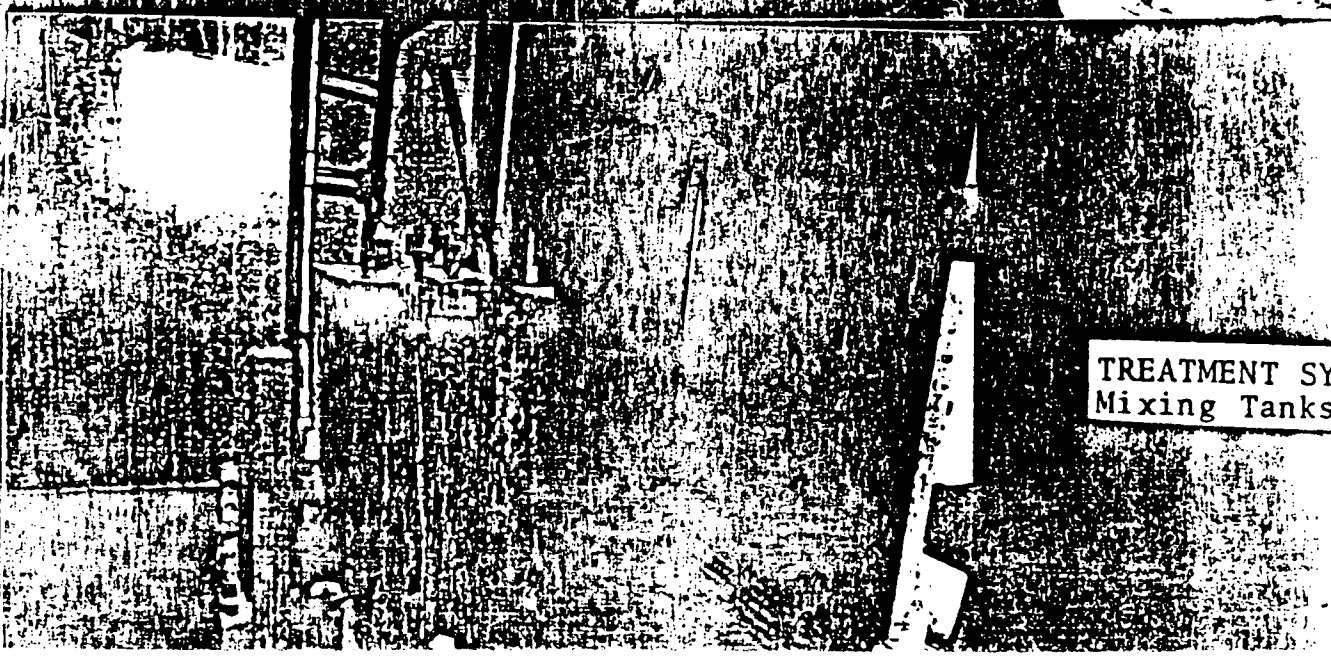
TREATMENT SYSTEM
Mixing Pit

TREATMENT SYSTEM
Mixing Tanks

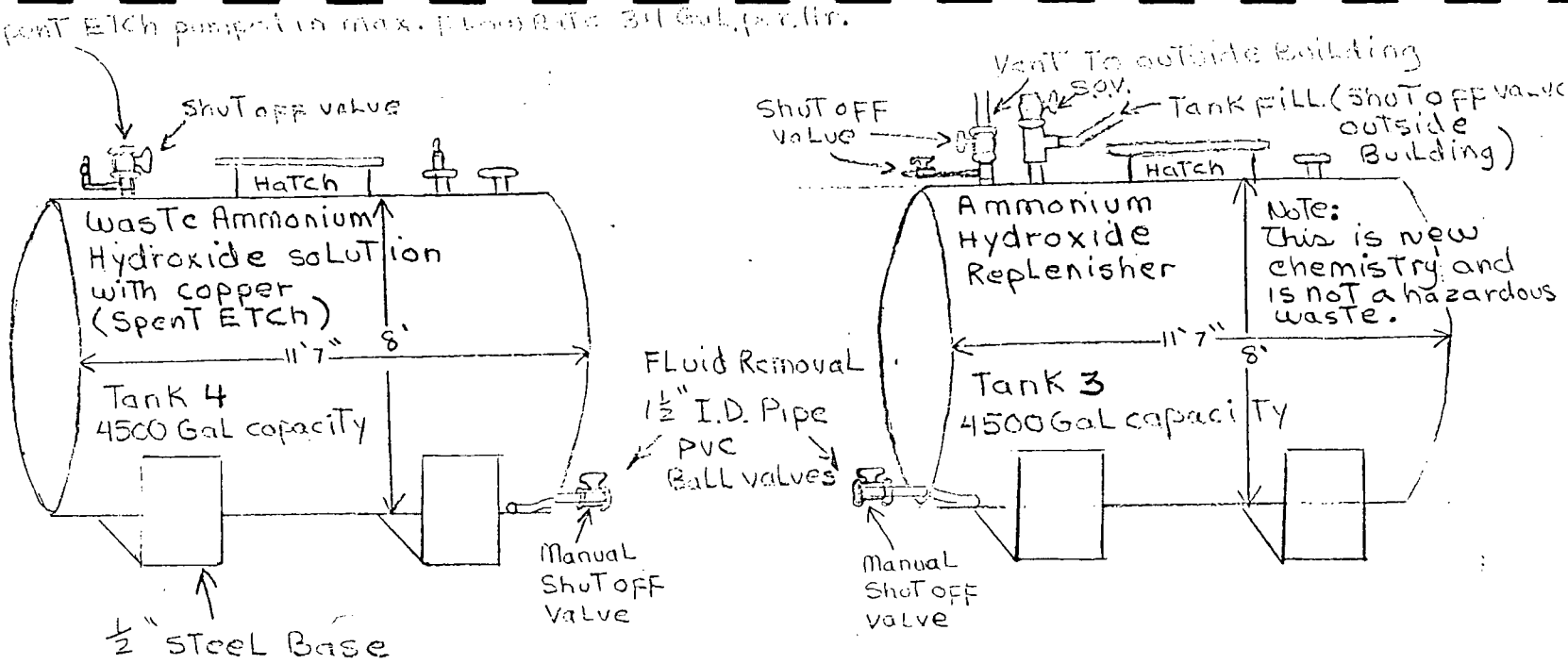
TREATMENT SYSTEM
Mixing Tanks



TREATMENT SYSTEM
Mixing Tanks

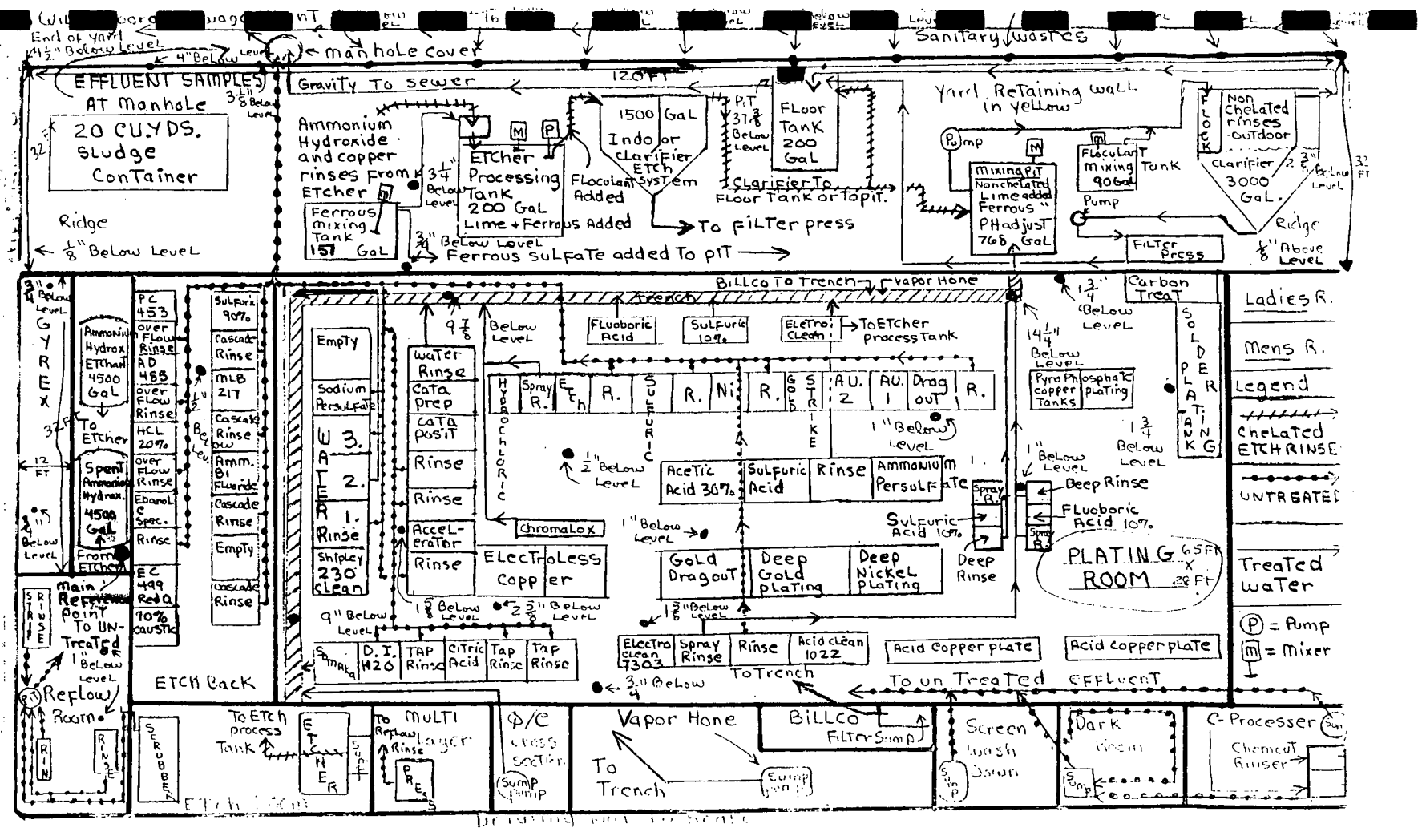


TREATMENT SYSTEM
Mixing Tanks

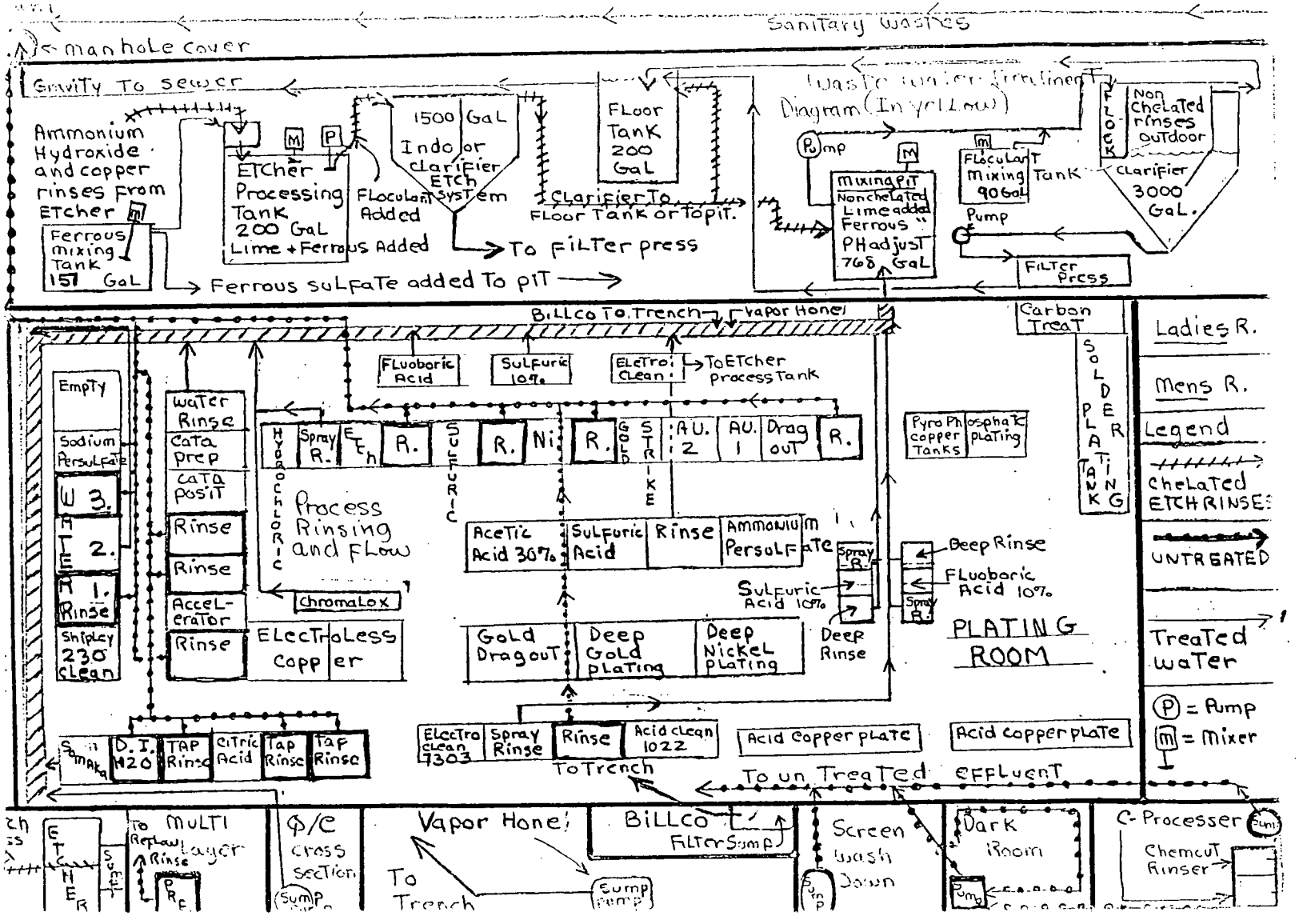


Te: Although Tanks have 4500 Gal. Capacity They are only filled To 3000 Gal. Level

APENDIX B



End of yard
4 1/2" Below Level
4" Below Level
manhole cover
Sanitary wastes
EFFLUENT SAMPLES AT Manhole
3 1/8" Below Level
20 CU.YDS. Sludge Container
32 FT
Ridge
1/8" Below Level
Gravity To sewer
120 FT
Ammonium Hydroxide and copper rinses From Etcher
3 1/4" Below Level
Ferrous mixing Tank 157 Gal
Etcher Processing Tank 200 Gal Lime + Ferrous Added
Floculant Added
1500 Gal Indoor clarifier Etch System
Pit 37 3/8 Below Level
Floor Tank 200 Gal
Clarifier To Floor Tank or To pit.
To Filter press
3/4" Below Level
Ferrous sulfate added To pit
Yard Retaining wall in yellow
Pump
Mixing Pit Nonchelated Lime added Ferrous " PH adjust 768 Gal
Floculant mixing Tank 90 Gal
Pump
Filter Press
Non Chelated rinses -outdoor
Clarifier 3000 Gal.
2 3/8" Below Level
32 FT
Ridge
1/8" Above Level
Billco To Trench
Vapor Hone
Trench
Carbon Treat
1 3/4" Below Level
Ladies R.
Mens R.
Legend
Chelated Etch Rinse
Untreated
Treated water
P = Pump
M = Mixer
3/4" Below Level
GYREX
Ammonium Hydrox Etchant 4500 Gal
To Etcher
Spent Ammonium Hydrox. 4500 Gal
From Etcher
12 FT
3/4" Below Level
PC 453 over Flow Rinse
AD 485 over Flow Rinse
HCL 20% over Flow Rinse
Ebanol C Spec. Rinse
EC 499 Red O. 70% caustic
Sulfuric 90%
Cascade Rinse
MLB 217
Cascade Rinse
Amm. Bi Fluoride
Cascade Rinse
Empty
Cascade Rinse
1/2" Below Level
Empty
Sodium Persulfate
Water 3.
Water 2.
Water 1. Rinse
Shipley 230 Clean
9 7/8 Below Level
Water Rinse
Cata prep
Cata posit
Rinse
Rinse
Accel-erator
Rinse
Electroless Copper
Chromalox
Fluoboric Acid
Sulfuric 10%
Eletro Clean
To Etcher process Tank
Hydrochloric
Spray R.
Etch
R.
Sulfuric
R.
Ni
R.
Gold Strike
AU. 2
AU. 1
Drag out
R.
1" Below Level
1/2" Below Level
Acetic Acid 30%
Sulfuric Acid
Rinse
Ammonium Persulfate
1" Below Level
Gold Dragout
Deep Gold plating
Deep Nickel plating
Sulfuric Acid 10%
Deep Rinse
Spray R.
Pyro Phosphate copper Tanks
Phosphate plating
14 1/4" Below Level
1 3/4 Below Level
1" Below Level
Deep Rinse
Fluoboric Acid 10%
Spray R.
Solder Plating Tank
PLATING ROOM 65 Ft x 28 Ft
9" Below Level
1 5/8 Below Level
2 5/8" Below Level
1 5/8" Below Level
Samaka
D.I. H2O
Tap Rinse
Citric Acid
Tap Rinse
Tap Rinse
Electro clean 7303
Spray Rinse
Rinse
Acid clean 1022
To Trench
3/4" Below
Acid copper plate
Acid copper plate
To un Treated effluent
Main Reference Point To Un-Treated
1" Below Level
Strip Rinse
Reflow Room
Rin
Rinse
Etch Back
Scrubber
To Etch process Tank
Etcher
Sump
To Reflow Rinse
Multi Layer
Press
Q/C cross section
Sump pump
Vapor Hone
To Trench
Billco Filter Sump
Screen wash Down
Sump
Dark Room
Sump
C-Processer
Chemcut Rinser



Sanitary wastes
manhole cover
Gravity To sewer
Waste water treatment Diagram (In yellow)
Ammonium Hydroxide and copper rinses from Etcher
Ferrous mixing Tank 157 GaL
Etcher Processing Tank 200 GaL Lime + Ferrous Added
Floculant Added
1500 GaL Indoor clarifier Etch system
Floor Tank 200 GaL
Clarifier To Floor Tank or To pit.
To filter press
Ferrous sulfate added To pit
Pump
Mixing pit Nonchelated Lime added Ferrous " PH adjust 768 GaL
Floculant Mixing Tank 90 GaL
Pump
Filter Press
Flock
Non Chelated rinses outdoor
Clarifier 3000 GaL.
Billco To Trench
Vapor Hone
Carbon Treat
Ladies R.
Mens R.
Legend
Chelated Etch Rinses
Untreated
Treated water
P = Pump
m = Mixer
Empty
Sodium Persulfate
Water 3.
Water 2.
Water 1. Rinse
Shipley 230 clean
Water Rinse
Cata prep
Cata posit
Rinse
Rinse
Accelerator
Rinse
Fluoboric Acid
Sulfuric 10%
Eletro Clean
To Etcher process Tank
Hydrochloric
Spray R.
Etch
R.
Sulfuric
R.
Ni
R.
Gold Strike
Au. 2
Au. 1
Drag out
R.
Process Rinsing and Flow
Chromalox
Electroless Copper
Acetic Acid 30%
Sulfuric Acid
Rinse
Ammonium Persulfate
Gold Dragout
Deep Gold plating
Deep Nickel plating
Sulfuric Acid 10%
Deep Rinse
Pyro Phosphate copper Tanks
Phosphate plating
Solder plating tank
Deep Rinse
Fluoboric Acid 10%
Spray R.
Spray R.
PLATING ROOM
Samaka
D.I. H2O
Tap Rinse
Citric Acid
Tap Rinse
Tap Rinse
Electro clean 7303
Spray Rinse
Rinse
Acid clean 1022
To Trench
Acid copper plate
Acid copper plate
To un Treated effluent
Etcher
To Reflow Rinse
Multi Layer
Q/C cross section
Vapor Hone
To Trench
Billco Filter Sump
Sump pump
Screen wash Down
Dark Room
C-Processer
Chemcut Rinser

OLIN HUNT SPECIALTY PRODUCTS INC.
A SUBSIDIARY OF OLIN CORPORATION
5 GARRET MOUNTAIN PLAZA
WEST PATERSON, N.J. 07424

Olin Hunt

MATERIAL SAFETY DATA SHEET

EMERGENCY NO: 1-(800)-OLIN-911

RECEIVED NOV 18 1987 METHODE ELECTRONICS INC.

Mike Slinger
11 Mar 1987

41723008
METHODE ELECTRONICS
BOX M

WILLINGBORO NJ 08046
ATTENTION: SAFETY DIRECTOR

SECTION-1 IDENTIFICATION

TRADE NAME: HIGH SPEED AC-CU-GUARD REPLENISHER ETCH SOLUTION

CHEMICAL NAME: ETCHANT FOR COPPER CIRCUIT BOARDS

CHEMICAL FAMILY: INORGANIC HD035

CHEMICAL FORMULA: MIXTURE

CHEMICAL DESCRIPTION: CLEAR, COLORLESS LIQUID, STRONG AMMONIACAL ODOR

CAS NO.: NOT ASSIGNED - MIXTURE

SECTION -2 NORMAL HANDLING PROCEDURE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
HARMFUL IF SWALLOWED. AVOID CONTACT WITH EYES, SKIN OR CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WATER. STORE IN A COOL, DRY, WELL-VENTILATED PLACE. AVOID BREATHING MIST OR VAPOR.

PROTECTIVE EQUIPMENT:

EYES: GOGGLES OR FACE SHIELD

GLOVES: RUBBER OR NEOPRENE

OTHER: RUBBER OR NEOPRENE BOOTS

VENTILATION REQUIRED:
LOCAL EXHAUST VENTILATION RECOMMENDED TO LIMIT EXPOSURE TO AMMONIA.

SECTION -3 HAZARD INGREDIENTS

LIN HUNT SPECIALTY PRODUCTS INC.
A SUBSIDIARY OF OLIN CORPORATION
5 GARRET MOUNTAIN PLAZA
WEST PATERSON, N.J. 07424

MATERIAL SAFETY DATA SHE

EMERGENCY NO: 1-(800)-OLIN-911

BASIC MATERIAL: AMMONIUM HYDROXIDE

CAS NO.: 1336-21-6 PERCENT: NO DATA

OSHA PEL: NONE ESTABLISHED

LD 50: 350 MG/KG (RAT-ORAL) LC 50: TOXIC CONCENTRATION*
SIGNIFICANT EFFECTS: *TOXIC CONCENTRATION LO=408 PPM (HUMAN)
SEVERE EYE, SKIN AND MUCOUS MEMBRANE IRRITATION; MAY CAUSE BURNS.

BASIC MATERIAL: AMMONIUM CHLORIDE

CAS NO.: 12125-02-9 PERCENT: NO DATA

OSHA PEL: NONE ESTABLISHED

LD 50: 1650 MG/KG (RAT-ORAL) LC 50: NO DATA
SIGNIFICANT EFFECTS: SKIN, EYE AND MUCOUS MEMBRANE IRRITATION.

BASIC MATERIAL: AMMONIUM CARBONATE

CAS NO.: 506-87-6 PERCENT: NO DATA

OSHA PEL: NONE ESTABLISHED

LD 50: NO DATA LC 50: NO DATA
SIGNIFICANT EFFECTS: SKIN, EYE AND MUCOUS MEMBRANE IRRITATION

****

SECTION -4 FIRE AND EXPLOSION HAZARD DATA

****

FLASH POINT METHOD: NOT APPLICABLE

FLAMMABLE EXPLOSIVE LIMITS: - LOWER: N/A UPPER: N/A

OSHA CLASSIFICATION: NON-COMBUSTIBLE

EXTINGUISHING MEDIA: WATER SPRAY, DRY CHEMICAL, ALCOHOL FOAM OR CARBON DIOXIDE
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURE: USE NIOSH/MSHA APPROVED POSITIV
PRESSURE SELF-CONTAINED BREATHING APPARATUS WHEN ANY MATERIAL IS INVOLVED IN A
FIRE.

****

SECTION-5 HEALTH HAZARD DATA

****

THRESHOLD LIMIT VALUE: AMMONIUM CHLORIDE - 10 MG/M3, AMMONIA 25 PPM TWA (ACGI
1 36-87)
SYMPTOMS OF OVER EXPOSURE: SKIN, EYE, MUCOUS MEMBRANE AND RESPIRATORY
IRRITATION, COUGHING. MAY CAUSE BURNS, ESPECIALLY THE EYES. INGESTION MAY CAU

NAUSEA AND VOMITING.
EMERGENCY FIRST AID PROCEDURES
SKIN: IMMEDIATELY FLUSH WITH WATER FOR 15 MINUTES, CALL A PHYSICIAN.
EYES: IMMEDIATELY FLUSH WITH WATER FOR 15 MINUTES, CALL A PHYSICIAN.
INGESTION: IMMEDIATELY DRINK LARGE QUANTITIES OF WATER. INDUCE VOMITING BY STICKING FINGER DOWN THROAT. CALL A PHYSICIAN.
INHALATION: IMMEDIATELY REMOVE VICTIM TO FRESH AIR. CALL A PHYSICIAN.

SECTION-6 TOXICOLOGY (PRODUCT)

ACUTE ORAL LD 50: NO DATA FOR MIXTURE

ACUTE DERMAL LD 50: NO DATA FOR MIXTURE

ACUTE INHAL LC 50: NO DATA FOR MIXTURE

CARCINOGENIC: NOT KNOWN TO BE A CARCINOGEN

MUTAGENIC: NOT KNOWN TO BE A MUTAGEN

EYE IRRITATION: SEVERE IRRITANT

(IN IRRITATION: IRRITANT
PRINCIPAL ROUTES OF ABSORPTION: INHALATION, DERMAL
EFFECTS OF ACUTE EXPOSURE: SKIN, EYE AND MUCOUS MEMBRANE IRRITATION. MAY CAUS EYE BURNS. MAY CAUSE RESPIRATORY IRRITATION.
EFFECTS OF CHRONIC EXPOSURE: NONE EXPECTED EXCEPT THOSE SECONDARY TO BURNS AN IRRITATION.

SECTION-7 SPILL OR LEAKAGE PROCEDURE (CONTROL PROCEDURES)

ACTION FOR MATERIAL RELEASE OR SPILL:
WEAR NIOSH/MSHA APPROVED POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS THE EVENT OF A MASSIVE SPILL OR SMALL SPILL OF A HIGHLY HAZARDOUS CHEMICAL. FOLLOW OSHA REGULATIONS FOR RESPIRATOR USE (SEE 29 CFR 1910.134). WEAR GOGGLE IMPERVIOUS COVERALLS, GLOVES AND BOOTS - NEOPRENE OR NBR. ISOLATE AREA OF SPI BY DIKING. STOP SOURCE OF LEAK. TRANSFER CONTENTS TO NON-LEAKING CONTAINER OR STORAGE VESSEL. ADD DRY ABSORBENT. CLEAN UP AND PLACE IN AN APPROVED DOT CONTAINER AND SEAL. WASH ALL CONTAMINATED CLOTHING BEFORE REUSE. IN THE EVENT A LARGE SPILL, USE THE EMERGENCY TELEPHONE SHOWN ON THE FRONT OF THIS SHEET.

SECTION-7A SPILL OR LEAKAGE PROCEDURE (WASTE)

) SITE DISPOSAL METHOD:
DISPOSE OF CONTAMINATED PRODUCT, EMPTY CONTAINERS AND MATERIALS USED IN CLEANINGUP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT

APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

****

SECTION-8 SHIPPING DATA

****

DOT CLASS:
CORROSIVE LIQUID, N.O.S., UN 1760
DOT STATEMENT:

****

SECTION-9 REACTIVITY DATA

****

STABILITY STABLE: X UNSTABLE: AT: DEGREES CELSIUS, DEGREES FAHREN

HAZARDOUS POLYMERIZATION: MAY OCCUR: WILL NOT OCCUR: X

CONDITIONS TO AVOID: HEAT, FIRE HAZARD EXISTS ONLY IF MATERIAL IS HEATED TO DECOMPOSITION.
INCOMPATIBILITY: COPPER, ZINC, ALUMINUM, STEEL, SILVER, MERCURY
HAZARDOUS DECOMPOSITION PRODUCT: AMMONIA, HYDROCHLORIC ACID

****

SECTION-10 PHYSICAL DATA

****

MELTING POINT: N/A

BOILING POINT: >212 F

SPECIFIC GRAVITY: 1.03
(WATER = 1)

VAPOR PRESSURE: 96 MMG HG

SOLUBILITY IN WATER: COMPLETE

PH FACTOR: 9.9

VOLATILES: 75%

EVAPORATION RATE: 1
(BUTYLACETATE = 1)

VAPOR DENSITY: 0.6

(AIR = 1)

****

INFORMATION FURNISHED BY: ENVIRONMENTAL HYGIENE AND TOXICOLOGY
(203) 789-5436

DATE: JULY 27, 1987

EPA

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

EPA I.D. NUMBER: F N J D 0 4 8 6 0 8 8 9 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

C | YR. | MO. | DAY — FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

YR. | MO. | DAY — FOR NEW FACILITI PROVIDE THE DAT *(yr., mo., & day)* OPE TION BEGAN OR IS EXPECTED TO BEG

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☐ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C).*

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below):* A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP T/A C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	55 Gal drum storage 3850	G		7				
2	S 0 2	Ammonium Hydroxide 9,000 Tanks	G		8				
3	T 0 1	Treatment Tanks 6,000	E		9				
4					10				

CONTINUE ON REVERS

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.
2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above.

CONTINUE ON PAG

I.D. NUMBER (enter from page 1): N J D 0 4 8 6 0 8 8 9 7 — T/A 1

FOR OFFICIAL USE ONLY: W DUP — T/A 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	OMIT	Previously (D000 Toxic) omit			(6000 Gal. Sludge storage Tank# 2 on facility drawing now removed
2	D002	12,000		S02	(4500 Gal waste ammonium Hydroxi NA 2672 Storage Tank#4 on facil drawing
3	OMIT	Previously F002 omit			4000 Gal. Chlorothene NU Storag Tank #1 in Facility drawing - Now
4	OMIT	Previously F003 omitted 12/13/83			(No Longer used (acetone omitted)
5	OMIT	Previously F005 omitted 12/13/83			(No Longer used (Toluene omitted)
6	F006	120,000	P	T01 S02	waste water treatment sludge from electroplating (20
7	F007	2815	G	S01	Spent plating bath solution electro plating (except cyan 55 Gal drums
8	OMIT	Previously F008 omitted 12/13/83			Plating bath sludge w Cyanide omitted
9	D002	Previously 40,000 lbs 8525	G	S01	Solid waste corrosive 55 Gal. drums Nitric
10	OMIT	Previously U002 omitted 12/13/83			(acetone omitted)
11	OMIT	Previously U122 omitted			(Formaldyhyde omitted)
12	OMIT	Previously U220 omitted 12/13/83			(Toluene omitted)
13	OMIT	Previously U226 omitted			(Chlorothene omitted)
14	X726	165	G	S01	waste compressor + petroleum based oils
15	D008	1430	G	S01	waste solder replacement
16	D001	110	G	S01	Isopropanol Alcohol N.O.S.
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

EPA Form 3510-3 (6-80)

CONTINUE ON REVERS

(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

EPA I.D. NO. *(enter from page 1)*

F N J D 0 4 8 6 0 8 8 9 7 T/A C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground–level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
40 02 00	74 54 50

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F			

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

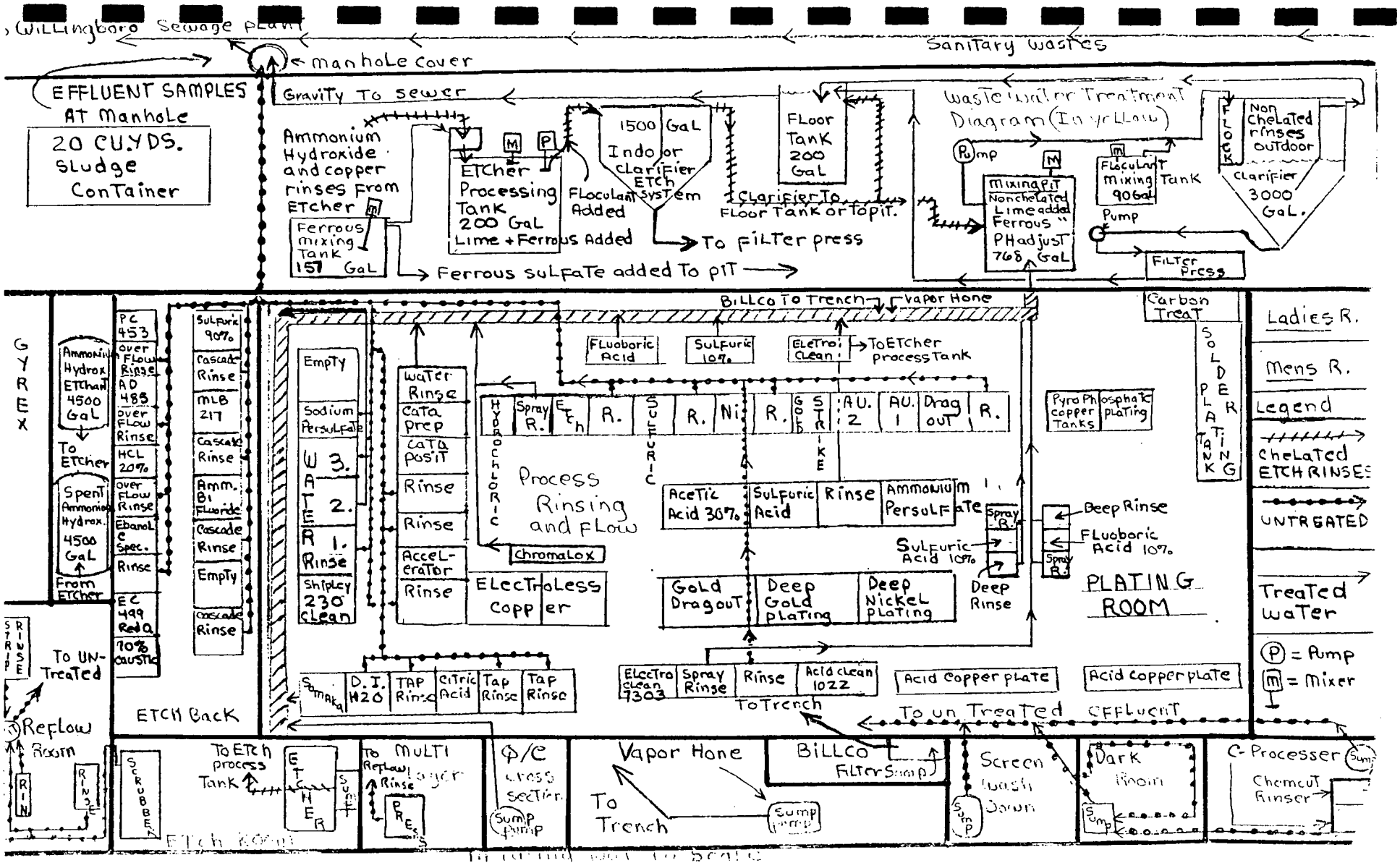
A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
John Edward Wilkinson	John Edward Wilkinson	Mar 30, 1988

CONTINUE ON PAGE 5



Willingboro Sewage plant
Sanitary wastes
manhole cover
EFFLUENT SAMPLES AT Manhole
20 CU.YDS. Sludge Container
Gravity To sewer
Ammonium Hydroxide and copper rinses from Etcher
Ferrous mixing Tank 157 Gal
Etcher Processing Tank 200 Gal Lime + Ferrous Added
Floculant Added
1500 Gal Indoor clarifier Etch system
To filter press
Floor Tank 200 Gal
Clarifier To Floor Tank or To pit.
Waste water Treatment Diagram (In yellow)
Pump
Mixing pit Nonchelated Lime added Ferrous " PH adjust 768 Gal
Floculant mixing Tank 90 Gal
Pump
Filter Press
Flock
Non Chelated rinses outdoor
Clarifier 3000 Gal.
Ferrous sulfate added To pit
Billco To Trench
Vapor Hone
Carbon Treat
Ladies R.
Mens R.
Legend
Chelated ETCH RINSES
UNTREATED
Treated water
P = Pump
m = Mixer
GYREX
Ammonium Hydrox Etchant 4500 Gal
To Etcher
Spent Ammonium Hydrox. 4500 Gal
From Etcher
PC 453
over Flow Rinse
AD 485
over Flow Rinse
HCL 20%
over Flow Rinse
Ebanol C Spec.
Rinse
EC 499 Red A
70% caustic
Sulfuric 90%
Cascade Rinse
MLB 217
Cascade Rinse
Amm. Bi Fluoride
Cascade Rinse
Empty
Cascade Rinse
Empty
Sodium Persulfate
WATER 3. 2. 1. Rinse
Shipley 230 Clean
Water Rinse
Cata prep
Cata posit
Rinse
Rinse
Accelerator
Rinse
Electroless Copper
Chromalox
Fluoboric Acid
Sulfuric 10%
Eletro Clean
To Etcher process Tank
Hydrochloric
Spray R.
Etch
R.
Sulfuric
R.
Ni
R.
Gold Strike
AU. 2
AU. 1
Drag out
R.
Process Rinsing and Flow
Acetic Acid 30%
Sulfuric Acid
Rinse
Ammonium Persulfate
Gold Dragout
Deep Gold plating
Deep Nickel plating
Pyro Phosphate copper Tanks
Phosphate plating
Sulfuric Acid 10%
Deep Rinse
Spray R.
Deep Rinse
Fluoboric Acid 10%
Spray R.
PLATING ROOM
Sam Aka
D.I. H2O
TAP Rinse
Citric Acid
Tap Rinse
Tap Rinse
Electro clean 7303
Spray Rinse
Rinse
Acid clean 1022
To Trench
Acid copper plate
Acid copper plate
To un Treated effluent
Strip Rinse
To UN-Treated
Reflow Room
Rin
Rinse
ETCH Back
Scrubber
To Etch process Tank
Etcher
Sump
To Reflow Rinse
Multi layer
Press
Q/C cross section
Sump pump
Vapor Hone
To Trench
Sump pump
Billco Filter Sump
Screen wash Down
Sump
Dark Room
Sump
C-Processer
Chemcut Rinser
Sump
Etch Room

REFERENCE NO. 27

03-38-01

Ron

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF HAZARDOUS WASTE MANAGEMENT

Michele M. Putnam
Deputy Director

Hazardous Waste Operations

John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
(609)633-1408

Lance R. Miller
Deputy Director

Responsible Party Remedial Action

M E M O R A N D U M

TO: William Boehle, Chief
Industrial Waste Management Facilities

APR 22 1988

FROM: Ernest J. Kuhlwein, Jr., Chief EK
Bureau of Hazardous Waste Engineering

SUBJECT: Methode Electronics, Inc., Willingboro
EPA ID No. NJD 048 608 897 CP# 88-6

The BHWE is in receipt of a closure plan from the above subject facility. The facility includes a waste water treatment system (144,000 gallons per day). The BHWE will appreciate your staff reviewing the enclosed submittal and informing us if the subject activity (T01) would be classified as an IWMF and thus be exempted from the Hazardous Waste Regulations. If you have any questions relative to this matter, please call Ali Chaudhry of my staff at 2-9880.

EP11/bt
Enclosure

New Jersey is an Equal Opportunity Employer
Recycled Paper

REFERENCE NO. 28

3-38-01

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

May 10, 1988

Department of Environmental Protection
Div. of Hazardous
Waste Management
Twin Rivers Professional Bldg.
East Windsor, N.J. 08520

Attn: Linda Jordan

Dear Ms. Jordan:

Methode Electronics has been inspected by the recently hired Willingboro Fire Inspector, William Sked, on Friday 22, April 1988 at 0900 hours. This was an informal tour and William Sked said that he would return sometime in June or July of 1988 to perform a formal inspection.

Methode Electronics also filled out a fire department information sheet and questionaire which Mr. Sked picked up from us on 28 April, 1988.

On 19, April 1988 I received a phone call from David Cole, a Willingboro Volunteer fire department officer and set up an appointment for Monday 13 June, 1988 for the fire department to tour our plant.

He said this was the earliest possible date that they could schedule for us.

We have assigned fire captains for the various work areas and we are scheduling a fire drill involving local authorities.

I have initiated an operating log which documents the significant events concerning fire safety.

If you have any questions, please contact me at 609-871-3500.

Sincerely yours,

METHODE ELECTRONICS INC., EAST

John Wilkinson

John Wilkinson
Environmental Manager

JW:mwk
cc: Pete Taylor

IPC MEMBER

REFERENCE NO. 29

RCRA INSPECTION TRACKING

EPA Id Number [illegible]
Due for inspection in Fiscal Quarter [illegible]
Mandatory (Y or N)

Name/Aka [illegible]
Street, City, State, Zip) [illegible]
[illegible]
County/Municipal Code [illegible]
Contact Name/Phone [illegible]
Regulatory Status 3 Land Ban (Y or N)

VHT Facility Number _____ File Number _____ Region Code - C
Inspection Date [illegible] Incident Case Number [illegible]
Grant Inspection Type Code ([illegible])
Inspectors Last Name: Taylor

AREA OF EVALUATION GRID:

CLASS OF VIOL:	GW	CLO	$$$	PTB	SCH	MNF	LDB	OTH
I*						O		X
I								O
II								O

(Enter X or O in the APPROPRIATE BOXES)
or Z

Areas of Evaluation:

GW	=	Ground Water	SCH	=	Compliance Schedule
CLO	=	Closure	MNF	=	Manifest
$$$	=	Financial Responsibility	LDB	=	Land Ban
PTB	=	Part B	OTH	=	Other

VIOLATION(S):

Violations Code/Class(s): * [illegible]
[illegible]
[illegible]

Violator Priority _____ (High, Med, Low)

Comment

[illegible]

INVESTIGATION

CASE: #88-12-16-1122 DATE: 12-28-88 DHWM FILE: 03-38-01

INVESTIGATOR: Pete Taylor TIME ARRIVED: 0930 TIME DEPARTED: 1040

LOCATION: Methode Electronics LOCATION TELEPHONE: 609-871-3500
ADDRESS: 1 Industrial Way EPA ID NUMBER: NJD048608897
Willingboro, NJ BLOCK: 13 LOT: 8-2, 8-3

ORIGIN OF COMPLAINT: Tracy Wagner - TELEPHONE: 609-292-8427

NATURE OF COMPLAINT: Evaporating Solvent For Disposal

FINDINGS:

I met with John Wilkinson, Environmental Manager. I asked to inspect the hazardous waste storage area.

During my inspection I asked if they used lacquer thinner. Mr. Wilkinson showed me the 55-gallon drum of lacquer thinner that they were using. I asked them where they stored the waste lacquer thinner. He showed me a plastic container approximately 30" x 30" x 6" with a couple of sheets of plastic over it. Mr. Wilkinson said that they were evaporating it. I asked how many gallons they were evaporating per month. He said about 3-4 gallons was evaporated. I told him that this was a violation of the Hazardous Waste Regulations and this procedure would have to stop immediately. Mr. Wilkinson said that he would get a drum and start to manifest this waste along with his other wastes. I told him that it would probably have to be designated as a F005. He said that he would check on this and assured me that the solvent would be disposed of correctly from now on.

I asked him how they used "green fill". Mr. Wilkinson said that this was a solvent base material that they used to paint the edges of the electronic boards. He said that "green fill" is 80% methylene chloride and 12% alcohol, and that they use approximately 1 gallon/month. Mr. Wilkinson said that this solvent was brushed on the boards during production and allowed to dry by evaporation. I asked if Methode had any air permits. Mr. Wilkinson said that he did not know of any.

I wrote a NOV for N.J.A.C. 7:26-9.2(a)2 for managing their waste in a manner that causes or may cause an unauthorized discharge to land, water or air.

CONCLUSIONS:

Methode Electronics was illegally discharging solvent to the air. I cited them for this.

RECOMMENDATIONS:

Do a compliance inspection in two weeks to insure that this situation is corrected.

Investigator Signature

df

Form DEP-061 A
8/87

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DUTY OFFICER NOTIFICATION REPORT

CASE NO. YY - 12 - 16 - 1122 (Yr) (Mo) (Day) (Time)

DATE 12 - 16 - YY (Mo) (Day) (Yr) REC'D BY [illegible] / [illegible] (Office)

INCIDENT REPORT BY:
Name: Tracy Jauser Phone: [illegible]
Street:
City: State: NJ
Affiliation/Title: NJDEP DEPA

INCIDENT LOCATION: ___ Transportation X Facility ___ Other
Name (Site): Methode Electronics Phone:
Street: 1 Industrial Park
City: Willingboro County: Burlington State: NJ Zip Code:

Date of Incident: ___ - ___ - ___ (Mo) (Day) (Yr) Time:

IDENTITY OF SUBSTANCE(S) SPILLED, RELEASED, ETC.: ___ Known X Suspected ___ Unknown
Name of Substance(s) [Gas, Liquid, Solid]: Cobin Filter 1 Lacquer Thinner
CAS Number:
Amount Released/Spilled: 45 gal/month ___ Actual ___ Potential X Estimated
Substance Contained (Y/N/U):
Type of Release/Spill: X Terminated ___ Continuous ___ Intermittent

Hazardous Material (Y/N)

NATURE OF INCIDENT: X Complaint ___ Munic. Notification ___ Emergency ___ Sub. 20

INCIDENT DESCRIPTION:
___ Fire ___ Explosion X Air Rel ___ Spill ___ MVA ___ Derailment ___ Smoke/Dust
___ Odors ___ Sewage ___ NJPOES ___ Noise ___ Illegal Dumping ___ Wildlife
___ Equip Start-up/Shutdown, Equip Fail/Upset, etc.
X Other (specify) possible illegal disposal

Injuries (Y/N/U)
Facility Evacuation (Y/N/U)
Public Evacuation (Y/N/U)
Contamination of ___ Air ___ Land ___ Water
Potable Water Source (Y/N/U)
Receiving Water: None
Location Type: ___ Residential X Industrial ___ Rural ___ Sensitive Population (Hosp.,School,Nurs. Home)

Public Exposure (Y/N/U)
Police at Scene (Y/N/U)
Firemen at Scene (Y/N/U)
Assistance Requested (Y/N/U)
Wind Direction/Speed:
Precipitation (rain/snow):

STATUS AT INCIDENT SCENE Evapora tegWAPE Cobin Filter 51% Methylene Chloride 1 Lacquer Thinner (Acetone, Toluene, Isobutyl MEK, Acetone) [illegible]

RESPONSIBLE PARTY: X Known ___ Suspected ___ Unknown
Company Name: Methode Electronics Phone:
Contact: Title:
Street: 1 Industrial Park
City: Willingboro County: Burl State: NJ Zip Code:

OFFICIALS NOTIFIED (Name/Title):
NJSP: ___ / ___ Phone ___ Date/Time ___ / ___ (T/M)
Local Health ___ / ___ Phone ___ Date/Time ___ / ___ (T/M)
Local Munic: ___ / ___ Phone ___ Date/Time ___ / ___ (T/M)
USEPA: ___ / ___ Phone ___ Date/Time ___ / ___ (T/M)

INCIDENT REFERRED TO:
X DEQ ___ DWR ___ DSWM ___ DHSM X DHWM ___ DOH ___ DFG ___ DPF ___ DCJ ___ DCR
Region: ___ Northern ___ Metro X Central ___ Southern ___ ER1 ___ ER2
1. Name/Affil: Scott Hopkins / EASC Phone: Date/Time: 12/16/88 / 1125 (T/M)
2. Name/Affil: M. Gaczkowski / D Hunt Phone: Date/Time: 12/16/88 / 1125 (T/M)
3. Name/Affil: ___ / ___ Phone: Date/Time: ___ / ___ (T/M)

IMMEDIATE DEP RESPONSE (Y/N) [Emergency (Y/N) Enforcement (Y/N)]

COMMENTS

COPIES: White - Lead Agency Blue - Comm. Center Pink - A310 Goldenrod - Other

REFERENCE 30

rm DWM-002 B

NEW RSEY DEPARTMENT OF ENVIRONMENTAL PR CTION
DIVISION OF WASTE MANAGEMENT
120 ROUTE 156, YARDVILLE, N.J. 08620

NOTICE OF VIOLATION

ID NO. 2578 DATE 12/28/88

NAME OF FACILITY Methode Electronics

LOCATION OF FACILITY 1 Industrial Park, Willingboro, N.J.

NAME OF OPERATOR Joe Mulcahy

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION

NJAC 7:26-9 2(a)2 storing solvents in a manner that causes or may cause an unauthorized discharge to land, water, or air

Remedial action to correct these violations must be initiated immediately and be completed by immediately. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of $25,000 per violation.

Peter C. Tayl

Investigator, Division of Waste Management
Department of Environmental Protection

Form ADM-015
11/82

State of New Jersey
Department of Environmental Protection

REFERRAL FORM

Date _____

TO

FROM

TELEPHONE EXT. _____

For Your ☐ ACTION ☐ APPROVAL ☐ INFORMATION ☐ REVIEW
☐ COMMENTS ☐ SIGNATURE ☐ FILE ☐ _____

TRACY WAGNER - GROUNDWATER
DEP

EVAPORATING 3-4 GAL/MONTHS

GRAIN FILLER - 81% METHYLENE CHLORIDE

LACQUER THINNER - 100 PPM TOLUENE
200 MEK
750 ACETONE

ELECTRO PLATING

METHODE ELECTRONICS
1 INDUSTRIAL PARK OFF BEVERLY MT HOLLY RD
WILLINGBORO, NJ (RT 130)

REFERENCE 31

03-38-01

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

January 4, 1989

Dept. of Environmental Protection
Div. of Hazardous Waste Mgt.
CFO - Twin Rivers Professional Bldg.
East Windsor, N.J. 08520

Attn: Mr. Peter Taylor

Dear Mr. Taylor:

I have prepared this letter in response to the notice of violation dated December 28, 1988, I.D. number 2572. See Appendix A.

To eliminate the storage of used laquer thinner in a container that allows evaporation into the air, Methode has purchased a tank from McMaster Carr which is designed for flammable liquids. The tank has a hinged lid which when open for use, is held open by a chain, and fusible link arrangement. It is a leakproof construction of galvanized steel, reinforced angle and band iron soldered to insure long life with hard industrial use.

When the lacquer thinner is contaminated, it will be put into a metal 55 gallon drum with a tight fitting lid in the chemical storage yard and properly labeled for accumulation.

We have a current waste charicterization sheet from waste conversion which has the proper waste type F003 and F005. See Appendix C.

It is anticipated that the change in equipment and the process will result in a reduction of laquer thinner currently used.

If it is necessary to clean panels while the tank is being installed, the silk screen personnel have been instructed to empty the tank into a drum provided by the environmental manager.

Sincerely yours,

METHODE ELECTRONICS, INC., EAST

John Wilkinson

John Wilkinson
Environmental Manager

JW:bah
Enclosure

Certifed#P727 322 257

IPC MEMBER

Form DWM-002 B
2/84

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
120 ROUTE 156, YARDVILLE, N.J. 08620

NOTICE OF VIOLATION

ID NO. 2578 DATE 12/28/88

NAME OF FACILITY Methode Electronics

LOCATION OF FACILITY Industrial Park, Willingboro, N.J.

NAME OF OPERATOR Joe Mulcahy

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION

NJAC 7:26-9.2(a)2 storing solvents in a manner that causes or may cause an unauthorized discharge to land, water, or air

Remedial action to correct these violations must be initiated immediately and be completed by immediately. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of $25,000 per violation.

Investigator, Division of Waste Management
Department of Environmental Protection

PURCHASE REQUISITION 20782

METHODE ELECTRONICS, INC., EAST

ONE INDUSTRIAL PARK P.O. BOX M WILLINGBORO, N.J. 08046 201-329-3200

VENDOR McMASTER-CARR Supply
PO BOX 440
NEW BRUNSWICK, N.J. 08903

DELIVERY REQUIRED
SHIP ON [X] IN OUR PLANT [ ] 1-389

REQUESTED BY J. Mulcahy

DATE	TERMS	SHIP VIA	F.O.B.	SUBJECT TO NEW JERSEY USE TAX
12/29/88	Net 30	best way		[ ] YES [ ] NO

QUANTITY	PART NO.	DESCRIPTION	UNIT COST	EXTENSION
1 EACH	3403K5	BENCH RINSE TANK (20GAL)	121.73	121.73

RECEIVER

P/O 1230

[ ] CONFIRMING – DO NOT DUPLICATE

TO BE FILLI INVOICE

PURPOSE OR USE SCREENING DEPT

DATE ORDEF

DEPT. MAINT ACCTG. CODE

APPROVED

ATTN. MR.

MEI-204 REV 8/84

ACCOUNTING

METHODE ELECTRONICS, INC. EAST

PER Joseph E. Rocks

"THIS PURCHASE ORDER IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON THE REVERSE SIDE HEREOF. THIS ORDER EXPRESSLY LIMITS ACCEPTANCE TO THE TERMS STATED HEREIN, AND ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY THE SELLER ARE REJECTED UNLESS EXPRESSLY ASSENTED TO IN WRITING."

MEI-150 Rev 7/87

ACCOUNTING COPY

Waste Conversion INC.
2951 C Advance Lane / Colmar, Pennsylvania 18915 / 215-822-2676

HazMat
Hazardous Materials Managemen
International Conference/Exhibitic
June 14-16, 1988 • Atlantic City Convention Ce
Atlantic City, New Jersey

March 8, 1988

RECEIVED
MAR 11 1988
METHODE ELECTRONICS, INC.
EAST

Methode Electronics
One Industrial Drive
P.O. Box M
Willingboro, NJ 08046
Attention: Mr. John Wilkinson

Reference: "Lacquer Thinner"
Lab Analysis No. KC-9404/EC-2778
Reference No. JEE 0457-8

Dear Mr. Wilkinson:

Waste Conversion, Inc. in Hatfield, PA is pleased to quote on disposal and transportation for the above referenced waste stream. As a permitted hazardous waste treatment, storage and disposal facility, we are capable, have the capacity and are permitted to handle your waste material. Our normal payment terms and conditions are on the reverse side of page 1.

Manifesting Information:
D.O.T. Shipping Name: RQ Waste Flammable Liquid, n.o.s. (F003)(F005)
D.O.T. Hazard Class: Flammable Liquid UN 1993
E.P.A. Waste Type: F003, F005

Hazard codes, I
Physical state L

Our pricing is as follows:
Disposal..... $ 52.00/drum
Transportation..... $450.00/load

Should you have any questions, please do not hesitate to call.

Very truly yours,

WASTE CONVERSION, INC.

For Joseph E. Eichler
Sales Engineer

ACKNOWLEDGEMENT:

Signature: _____

Date: _____

P.O. # _____

Attach. Ecolotec Spec. 16 (REV. 2/10/88)

FORM CL-1

#19

KILN FUELS-SUBJECT TO 40 CFR PART 268 LAND DISPOSAL BAN (F001, F002, F003, F004, F005)

General Conditions:

- Waste is not corrosive, per 40 CFR Part 261.
- Waste is not reactive, per 40 CFR Part 261.
- Waste does not contain PCB's at a level greater than 40 ppm.
- Waste does not contain Herbicides or Pesticides.
- pH must be greater than 4.
- Drums must be of sound structure and non-leaking.
- Drums must conform to all applicable D.O.T. requirements.
- Ecolotec, Inc. may have to reject and/or repack those drums not conforming to the above specifications. Additional costs for such will be assessed accordingly.
- Drums must not contain closed containers that have not been emptied or crushed.
- Ecolotec's Waste Profile Code Number must be written on drum labels.
- All markings, other than D.O.T. Hazard Class label and generator identification label, must be obscured.

Specifications:

Heat content, BTU per gallon	>80,000
Halogen, % by weight, as Cl	≤ 3.0
Ash, % by weight	≤ 5.0
Free Aqueous Phase	≤ 3 inches
Non-pumpable Solids	≤ 1 inch
Screen Solids not passing through 1/8 inch mesh screen	≤ 1 gallon

Additional Charges:

A) Heat Content:

BTU 70,000 to 79,999 per gallon	Base price + $20.00
BTU 60,000 to 69,999 per gallon	Base price + $40.00
BTU less than 60,000 per gallon	$220.00 per drum

KILN FUELS-SUBJECT TO 40 CFR PART 268 LAND DISPOSAL BAN (F001, F002, F003, F004, F005)

B) Halogen, % weight, as Cl:

3.1 to 5.0%	Base price + $10.00
5.1 to 7.5%	Base price + $25.00
7.6 to 10.0%	Base price + $55.00
Greater than 10.0%	$220.00 per drum
Greater than 20.0%	$220.00 per drum + $5.00 per 1% Halogen per drum above 20%
Greater than 50.0%	$220.00 per drum + $250.00

C) Free Aqueous Phase:

> 3 inches to 6 inches	Base price + $25.00
> 6 inches to 12 inches	Base price + $55.00
>12 inches	Maximum $150.00/drum

D) Screen Solids - greater than one gallon solids not passing through 1/8 inch mesh screen — $10.00 per gallon

E) Non-pumpable solids/sludges (greater than 1 inch) - reliquefiable for kiln fuels program containing no foreign objects/debris, liquefied sludge passing 1/8 inch screen:

1) BTU >60,000 per gallon Halogens, as Cl ≤10% — Base price + $145.00

2) BTU ≤60,000 per gallon -OR- Halogens, as Cl >10% but ≤20% — Base price + $170.00

KILN FUELS-SUBJECT TO 40 CFR PART 268 LAND DISPOSAL BAN (F001, F002, F003, F004, F005)

3) Halogens as Cl >20%:

> 1 inch to 12 inches solids	Base price + $200.00
>12 inches solids	$500.00 per drum

F) Non-pumpable solids/sludges - Non Reliquefiable and/or containing Debris - including screen:

> 1 inch to 12 inches solids	Base price + $150.00
>12 inches solids	$500.00 per drum

G) Unless specified on the generator's Waste Product Survey form, unopened containers found inside any drum will be charged an additional $10.00 each container.

H) Relabelling, label completion, and label correction will be charged at $5.00 per drum.

I) Drum deheading - closed head drum with greater than one inch non-pumpable solids - will be charged at $5.00 per drum.

REFERENCE 32

RCRA INSPECTION TRACKING

EPA Id Number NJD 048608897
Due for inspection in Fiscal Quarter 3
Mandatory (Y or N) N

Name/Aka Methode Electronics
Street, City, State, Zip) 1 Industrial Park
Willingboro NJ 08046
County/Municipal Code 03-38
Contact Name/Phone MA Wilkinson
Regulatory Status TSD02 Land Ban (Y or N) N

VHT Facility Number _____ File Number 03-38-01 Region Code - C
Inspection Date 1/11/89 Incident Case Number 88-12-16-1122
Grant Inspection Type Code (U) Compliance
Inspectors Last Name: Taylor

AREA OF EVALUATION GRID:

CLASS OF VIOL:	GW	CLO	$$$	PTB	SCH	MNF	LDB	OTH
I*						O		X
I						O		O
II						O		O

(Enter X or O in the APPROPRIATE BOXES)

Areas of Evaluation:

GW = Ground Water
CLO = Closure
$$$ = Financial Responsibility
PTB = Part B
SCH = Compliance Schedule
MNF = Manifest
LDB = Land Ban
OTH = Other

VIOLATION(S):

Violations Code/Class(s): _____

Violator Priority _____ (High, Med, Low)

INVESTIGATION

CASE: #88-12-16-1122 DATE: 01-11-89 DHWM FILE: 03-38-01

INVESTIGATOR: Pete Taylor TIME ARRIVED: 0945 TIME DEPARTED: 1015

LOCATION: Methode Electronics LOCATION TELEPHONE: 609-871-3500
ADDRESS: 1 Industrial Way EPA ID NUMBER: NJD048608897
Willingboro, NJ BLOCK: 13 LOT: 8-2, 8-3

ORIGIN OF COMPLAINT: Tracy Wagner TELEPHONE: 609-292-8427

NATURE OF COMPLAINT: Evaporating Solvent For Disposal

FINDINGS:

John Wilkinson and myself inspected the hazardous waste storage area. The same metal pan partially covered with plastic was still used to evaporate solvents.

Mr. Wilkinson said that the employees were told to keep this container tightly closed. A new storage and disposal system for parts cleaning had been found defective on delivery and returned to the company. A new container is expected in the near future. This will allow for the use and storage of solvents during parts cleaning. When the solvent finally needs to be discarded it will be disposed of as a hazardous waste (F003/5). This system should be in effect by the end of the month (1/89). I will do another compliance inspection at that time.

Investigator Signature

df

REFERENCE 33

RCRA INSPECTION TRACKING

EPA Id Number NJD048668897
Due for inspection in Fiscal Quarter 3
Mandatory (Y or N)

Name/Aka Methode Electronics
Street, City, State, Zip) Industrial Way, Willingboro, NJ
County/Municipal Code 03-38
Contact Name/Phone John Wilkinson (609) 871-3500
Regulatory Status Y Land Ban (Y or N)

VHT Facility Number _____ File Number 03-38-01 Region Code - C
Inspection Date 01-20-89 Incident Case Number 88-12-16-1122
Grant Inspection Type Code (C5) _____
Inspectors Last Name: Taycor

AREA OF EVALUATION GRID:

CLASS OF VIOL:	GW	CLO	$$$	PTB	SCH	MNF	LDB	OTH
I*						O		O
I						O		O
II						O		O

(Enter X or O in the APPROPRIATE BOXES)
or Z

Areas of Evaluation:

GW = Ground Water
CLO = Closure
$$$ = Financial Responsibility
PTB = Part B
SCH = Compliance Schedule
MNF = Manifest
LDB = Land Ban
OTH = Other

VIOLATION(S):

Violations Code/Class(s): _____

Violator Priority _____ (High, Med, Low)

Comments

Co. is now in compliance w/ NOV issued on 12-28-88

INVESTIGATION

CASE: #88-12-16-1122 DATE: 01-20-89 DHWM FILE: 03-38-01

INVESTIGATOR: Pete Taylor TIME ARRIVED: 1250 TIME DEPARTED: 1405

LOCATION: Methode Electronics
ADDRESS: 1 Industrial Way
Willingboro, NJ

LOCATION TELEPHONE: 609-871-3500
EPA ID NUMBER: NJD048608897
BLOCK: 13 LOT: 8-2, 8-3

ORIGIN OF COMPLAINT: Tracy Wagner TELEPHONE: 609-292-8427

NATURE OF COMPLAINT: Evaporating Solvent For Disposal

FINDINGS:

I made a compliance inspection to determine whether or not Methode Electronics was in compliance with N.J.A.C. 7:26-9.2(a)2. Mr. Wilkinson, Maintenance Foreman for Methode, showed me around.

The open solvent tray which was used to evaporate solvent is gone. The old solvent is in a 55-gallon drums which will be disposed of when full. A new parts cleaning tank has been installed. Any discarded solvent from this tank will be added to the 55-gallon drum of solvent and disposed of as a hazardous waste.

CONCLUSIONS:

Methode Electronics is in compliance with N.J.A.C. 7:26-9.2(a)2.

Investigator Signature

df

REFERENCE 34

Form ADM-012

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO File through Vince Krisak, Bureau Chief DATE 1-30-89

FROM Linda Z. Jordan LZJ

SUBJECT Case Closure

Based on the attached information it is recommended that no further action be taken.

L.Z.J.

df
Attachment

REFERENCE 35

03-38-01
Taylor

METHODE ELECTRONICS, INC. EAST

EASTERN OFFICE
ONE INDUSTRIAL PARK
WILLINGBORO, NEW JERSEY 08046
TELEPHONE (609) 871-3500

May 11, 1989

Willingboro Volunteer Fire Company
Charleston Rd. & J.F.K. Way
Willingboro, N.J. 08046

Attn: David Andrade

Methode Electronics is listed with the State of New Jersey Department of Environmental Protection as a generator and TSD (Treatment, Storage and Disposal Facility) for hazardous wastes.

Because we are a generator and TSD facility, we must comply to New Jersey Hazardous Waste Regulations listed under the Division of Waste Management, N.J. Administrative Code, Title 7, Chapter 26, Subchapter 9, entitled: "Requirements for Hazardous Waste Facilities". Section 9.6 (f) 5 of Subchapter 9 states: "Arrangements to have the local fire department inspect the facility on a regular basis with at least two (2) inspections annually".

Please consider this certified letter as Methode's arrangement for inspections according to the above regulations. Please contact us to schedule inspection dates. We will be waiting for your reply.

The last inspection tour was done by Anthony Burnett on June 13, 1988 and approximately 20 firefighters also toured the plant.
Call John Wilkinson 871-3500 to set up an appointment.

Very truly yours,

METHODE ELECTRONICS, INC., EAST

John E. Wilkinson

John E. Wilkinson
Waste Treatment Manager

JEW:pff
cc: J. Mulcahy
Dept. of Hazardous Waste Management
NJDEP

Certified # P 727 323 291

REFERENCE 36

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 7/6/89

Site Name: Methode Electronics TDD: 02-8906-08

Site Address: 1 INDUSTRIAL PARK
Street, Box, etc.

WILLINGBORO
Town

BURLINGTON
County

NEW JERSEY
State

NUS Personnel:

Name	Discipline
J. FROST	ENVIRONMENTAL SCIENCE
R. SCERBO	ENVIRONMENTAL SCIENCE

Weather Conditions (clear, cloudy, rain, snow, etc.):

CLOUDY, CALM, HUMID

Estimated wind direction and wind speed: NONE

Estimated temperature: 75°

Signature: James C. Frost Date: 7/6/89

Countersigned: Robert A. Scerbo Date: 7/6/89

PRELIMINARY ASSESSMENT

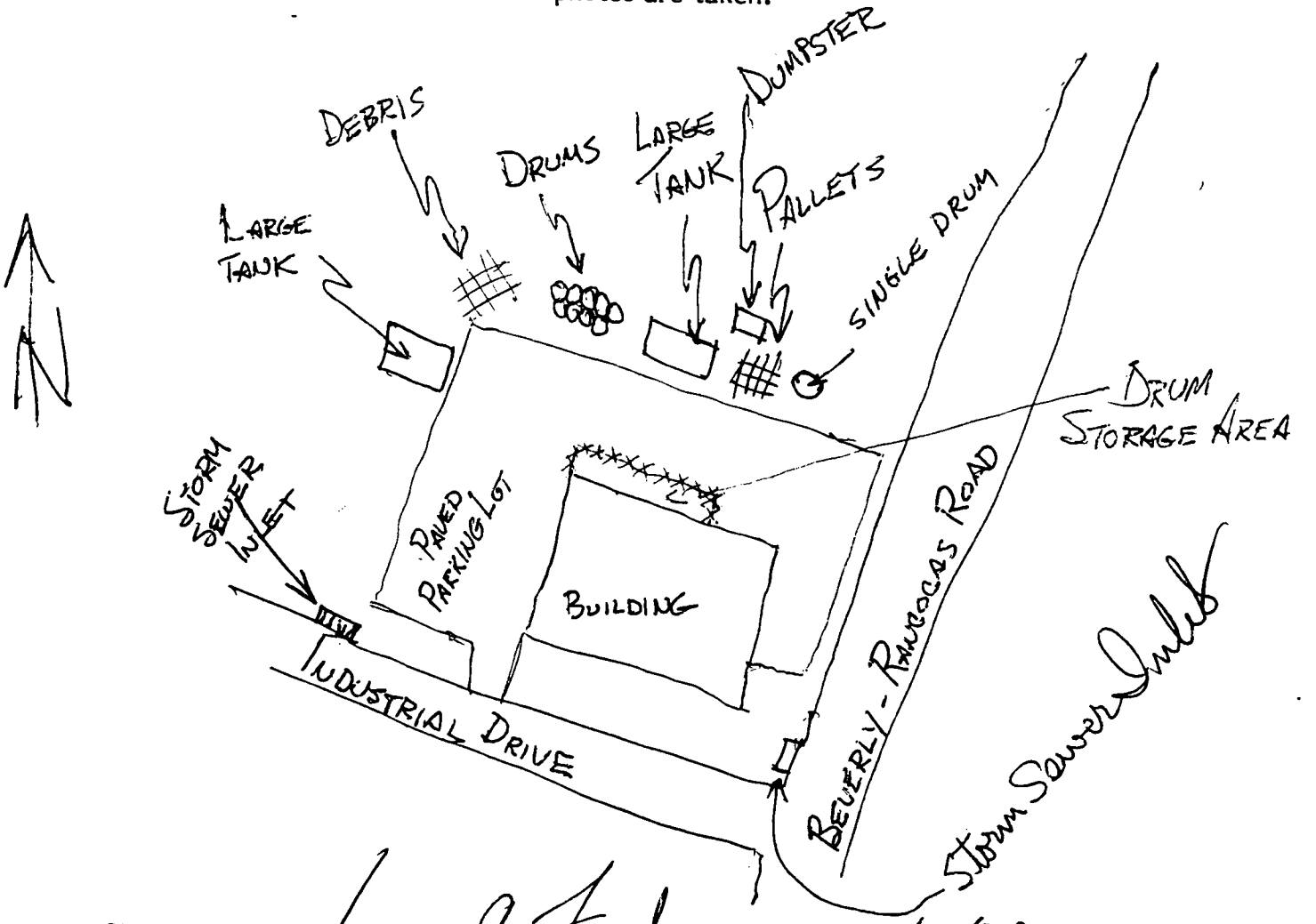
INFORMATION REPORTING FORM

Date: 7/6/89

Site Name: Methode Electronics TDD: 02-8906-08-

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.). Provide locations from which photos are taken.



Signature: James C. Frost Date: 7/6/89

Countersigned: Robert A. Hunter Date: 7/6/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 7/6/89

Site Name: Methode Electronics TDD: 02-8906-08

Notes (Periodically indicate time of entries in military time):

Arrived at site at 11:55 am. Large tank observed observed at rear of property - usage unknown but no apparent piping connected to it and no containment for it. 8-10 drums observed near large tank - no containment - contents unknown. Tank and drums are not placed on the paved parking lot. Gravel under tank. Storm sewer inlet observed and noted on drawing. No ~~of~~ odors evident from facility. Site slope estimated at less than 1%. ~~Flow from~~ Runoff from parking lot on west of building flows into storm sewer inlet.

Drove around to east side of property. ~~No~~ storm sewer inlet at intersection of Industrial & B-R Road. However, slope from site, slight though it is, is away from this inlet. A single drum was seen on this side - contents unknown, but it appears to be open. Tank does not appear to be used, its like other tank above.

Signature: James C. Frost Date: 7/6/89

Countersignature: Robert A. Fenton Date: 7/6/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 7/6/89

Site Name: Methode Electronics TDD: 02-8906-08

Notes (Cont'd):

Drove around area to determine the uses of Pancocas Creek. Docks and boats were observed "upstream" from site on the creek. Fishing also appears to be done along stream. At Rte 130 boats and marinas were observed. Holiday Lake is a public swimming lake or pond which appears to be made from a borrow pit which ~~prob~~ probably contains groundwater. Due to the state of disrepair of the exterior, and the fact that no one is around. This place may be closed. Left area at 1330. No stressed vegetation or animals were observed. A boat was observed fishing in Olympia Lake.

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: James C. Frost Date: 7/6/89

Countersignature: Robert A. Fowler Date: 7/6/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 7/6/89

Site Name: Methode Electronics TDD: 02-8906-08

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
P1 S-1	7/6/89	12:08	J. Frost	Looking at large tank, rear of property. N,NW
P-2 S-2	7/6/89	12:10	J. Frost	Drums, near large Tank looking North, NW
P_3 S_3	7/6/89	1215	J. FROST	TANK AND DRUMS & DEBRIS LOOKING NNW
P_4 S_4	7/6/89	1222	J Frost	Looking West at Tank dumpster side of Bui
P_5 S_5	7/6/89	1223	J. Frost	Looking West front of Methode Building

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: James C. Frost Date: 7/6/89

Countersignature: Robert A. Hartz Date: 7/6/89

REFERENCE 37

RECEIVED

MAY 20 1986

NUS CORPORATION
REGION II
SENT TO_____

SURFACE WATER QUALITY STANDARDS

N.J.A.C. 7:9-4.1 et seq.

May 1985

MACDONALD BRANCH - See RANCOCAS CREEK	
MERRILL CREEK (Harmony) - Entire length	FW2-TP(C1)
MIDDLE BROTHERS CREEK (Egg Island) - Entire length	SE1(C1)
MIDDLE MARSH CREEK	
(Dix) - All fresh waters which originate in and are located entirely within the boundaries of the Dix Wildlife Management Area	FW1
MILE BRANCH - See NANTUXENT CREEK	
MILL BROOK (Montague) - See CLOVE BROOK	
MILL BROOK (Broadway) - Entire length	FW2-TP(C1)
MILL CREEK	
(Carmel) - Entire length, except segment described below	FW2-NT
(Union Lake) - Creek and tributaries within the boundaries of the Union Lake Wildlife Management Area	FW2-NT(C1)
MINE BROOK	
(Mt. Olive) - Source to, but not including, Upper Mine Brook Reservoir	FW2-TM
(Mt. Olive) - Upper Mine Brook Reservoir to Musconetcong River	FW2-NT
MIRY RUN (Mercerville) - Entire length	FW2-NT
MOORE CREEK (Hopewell) - Entire length	FW2-TM
MOUNT MISERY BROOK	
(Woodmansie) - Entire length, except segments described below	PL
SOUTH BRANCH, MOUNT MISERY BROOK	
(Lebanon State Forest) - All tributaries to the South Branch that are located entirely within the boundaries of Lebanon State Forest	FW1
(Pasadena) - The two easterly branches of the Branch which are located entirely within the boundaries of the Pasadena Fish and Game Tract	FW1
MOUNTAIN LAKE (Liberty)	FW2-TM
MOUNTAIN LAKE CREEK	
(Liberty) - Source to Mountain Lake	FW2-TM
(White) - Mountain Lake dam to Pequest River	FW2-NT
MUD POND (Johsonburg) - Pond and its outlet stream to the Erie-Lackawanna Railroad trestle north of Johnsonburg	FW1
MUDDY CREEK	
(Mad Horse Creek) - Entire length, except segments described below	SE1(C1)
(Mad Horse Creek) - Segments outside of the boundaries of the Mad Horse Creek Wildlife Management Area	SE1
MUDDY RUN	
(Elmer) - Entire length, except segments described below	FW2-NT

origin to their confluence with the Pequest River	
(Whittingham) - Stream and tributaries within the Whittingham tract, except those classified as FW1, above	FW2-TM(C1)
(Vienna) - Tranquility bridge to Townsbury bridge, except segment described below	FW2-NT
(Pequest) - Segment and tributaries within the boundaries of the Pequest Wildlife Management Area	FW2-NT(C1)
(Townsbury) - Townsbury bridge to Delaware River	FW2-TM
PIERSONS DITCH (Egg Island) - Entire length	FW2-NT/SE1(C1)
PINE BRANCH - See BUCKSHUTEM CREEK	
PLUM BROOK (Sergeantsville) - Entire length	FW2-TM
POHATCONG CREEK	
MAIN STEM	
(Mansfield) - Source to Karrsville bridge	FW2-TP(C1)
(Pohatcong) - Karrsville bridge to Delaware River	FW2-TM
TRIBUTARY	
(New Village) - Entire length	FW2-TP(C1)
POND BROOK (Middleville) - Swartswood Lake outlet to Trout Brook	FW2-NT
POPHANDUSING BROOK (Belvidere) - Entire length	FW2-TM
RACCOON CREEK (Logan) - Entire length	FW2-NT/SE2
RANCOCAS CREEK	
NORTH BRANCH	
(North Hanover) - Source to boundary of the Pinelands Protection and Preservation Area at Pemberton	PL
(Pemberton) - Boundary of the Pinelands Protection and Preservation Area to the Delaware River, except tributaries described below	FW2-NT
(Pemberton) - Tributaries within the boundaries of the Pinelands Protection and Preservation Areas	PL
SOUTH BRANCH RANCOCAS CREEK	
(Southhampton) - Source to Pinelands Protection and Preservation Area boundaries at Rt. 206 bridge south of Vincentown	PL
(Vincentown) - Vincentown to Delaware River, except tributaries described separately below	FW2-NT
(Vincentown) - All tributaries within the Pinelands Protection and Preservation Areas	PL
COOPER BRANCH RANCOCAS CREEK	
(Woodmansie) - Entire length, except portions described separately, below	PL
(Lebanon State Forest) - Branch and tributaries downstream to Pakim Pond, and tributaries to Cooper Branch located entirely within the Lebanon State Forest boundaries	FW1

REFERENCE 38

GEMS> I

METHODE ELECTRONICS INC
LATITUDE 40: 1:50 LONGITUDE 74:54:48 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	1762	4396	25582	42693	27777	102210
RING TOTALS	0	1762	4396	25582	42693	27777	102210

> I

METHODE ELECTRONICS INC
LATITUDE 40: 1:50 LONGITUDE 74:54:48 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	700	1122	7773	13096	9712	32403
RING TOTALS	0	700	1122	7773	13096	9712	32403

DISTANCE	POPULATION	HOUSING
0.25	~200*	~60*
0.50	1762	700
1.00	6158	1822
2.00	31740	9595
3.00	74433	22691
4.00	102210	32403

*ESTIMATES BASED UPON OBSERVATIONS AND SOIL SURVEY MAPS WHICH ARE AERIAL PHOTOGRAPHS.

REFERENCE 39

STATE OF NEW JERSEY

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

DIVISION OF WATER POLICY AND SUPPLY

RECORDS OF WELLS and GROUND-WATER QUALITY in BURLINGTON COUNTY, NEW JERSEY

WATER RESOURCES CIRCULAR No. 7

Prepared in cooperation with
United States Department of the Interior
Geological Survey

1962

NJ Con-57-7

THE INTERIOR, FWPCA
NEWTOWN, N. J. 08840

RECORDS OF WELLS AND GROUND-WATER QUALITY IN BURLINGTON COUNTY, NEW JERSEY

A Preliminary Report

By

F. Eugene Rush

Geologist

U. S. Geological Survey

Prepared by the U. S. Geological Survey

in cooperation with the

State of New Jersey

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Table 1. – Age, thickness, water-bearing character, and lithology of stratigraphic units in Burlington County, N. J.

System	Series	Formation	Thickness (feet)	Water-bearing character	Description
Quaternary	Pleistocene	Cape May Formation	0-40	Variable	Sand and gravel, local clay
		Pensauken Formation	0-40	Variable	Sand and gravel
Tertiary	Pliocene (?)	Cohansey Sand	0-300	Excellent to fair	Sand, medium to coarse, with local ironstone
	Miocene	Kirkwood Formation	0-200	Excellent to fair	Sand, fine, some clay seams
	Eocene	Manasquan Formation	0-100	Poor	Sand, glauconite, clayey
	Paleocene	Vincentown Formation	0-100	Good to poor	Sand, limy, clayey; glauconite
		Hornerstown Sand	0-60	Poor	Glauconite sand, with green clay matrix
Cretaceous		Red Bank Sand	0-40	Fair	Sand and clay with glauconite sand
		Navesink Formation	0-40	Poor	Glauconite sand, with dark gray clay matrix
		Mount Laurel Sand and Wenonah Formation	0-100	Good to poor	Sand, clayey, some glauconite; silt
		Marshalltown Formation	0-100	Poor	Clay, sandy; glauconite sand
		Englishtown Formation	0-100	Good to poor	Sand and clay
		Woodbury Clay	0-120	Poor	Clay, black, micaceous
		Merchantville Formation	0-80	Poor	Clay, dark gray, glauconite sand
		Magothy Raritan Formations	30-800	Excellent to good	Clay and sand, alternating
Early Paleozoic (?)		Wissahickon Formation		Poor	Schist or gneiss, commonly weathered

Table 2.--Records of selected wells in Burlington County, N. J.--Continued

Well no.	Location	Owner or name and number	Driller	Year completed	Altitude of land surface (feet)	Total depth drilled (feet)	Well diameter (inches)	Casing length (feet)	Screen setting (feet)	Water-bearing formation	Static water level below land surface (feet)	Yield (gpm)	Drawdown (feet)	Use	Remarks
56	1 mi. SW of Florence	National Gypsum Co. No. 2	Layne-New York Co., Inc.	1955	22	157	12 & 8	113	113-123	Kmr	21	183	21	Ind	Drilled to bedrock. L.
57	2 mi. SW of Burlington on U.S. Hwy. 130	Mechanics National Bank No. 2	Charles L. Mollitor, Inc.	1958	35	209	4	189	189-209	Kmr	30	180	27	CI	Air conditioning recharge well.
58	1 mi. S of Burlington	Charles Heal, Jr.	do.	1955	50	80	8	59	59-80	Kmr	36	400	50	Irr	Water pumped into irrigation pond. L.
59	2 mi. SW of Burlington	Anthony Cannuli	Edward Robbins	1950	66	173	6	153	153-173	Kmr	55	200	30	Irr	Water pumped into irrigation pond.
60	2 mi. SW of Burlington on U.S. Hwy. 130	Albert Heisler	do.	1950	46	252	8	212	212-252	Kmr	41	500	42	Irr	Pump capacity is 500 gpm.
61	11 mi. S of Chatsworth, at Harrisville	Harrisville well	--	1866	15	375	8	---	---	Tkw	(flowing)	---	---	U	Well is still flowing. A., L.
62	2 mi. NE of Bordentown	N.J. State Reformatory No. 4	Layne-New York Co., Inc.	1951	97	454	12 & 8	357	357-387	Kmr	86	503	36	U	A., L.
63	4 mi. SE of Bordentown, at Chesterfield	H. W. Briel	Howard Farmer	1959	93	272	4	266	266-272	Kmr	72	50	10	D	
64	1 mi. SW of Chesterfield, on Whitepine Rd.	Ralph J. DeMarco	Louis Bainbridge	1958	82	393	4	388	388-392	Kmr	75	4	45	D	
65	3 mi. SE of Bordentown, on Old York Rd.	Ernest Liptak	Greenhalgh & Kaye	1957	114	214	4	208	208-214	Kmr	100	10	20	D	
66	2 mi. N of Wrightstown	Jacob Dana Packing Co. No. 3	do.	1958	208	276	6	255	255-276	Ket	100	60	80	CI	L.
67	7 mi. N of Wrightstown, on Ellisdale Rd.	Francis D. Gray	Louis Bainbridge	1960	92	329	6	319	319-325	Kmr	75	40	5	D	Used for swimming pool also. A., L.
68	8 mi. N of Wrightstown, on Ellisdale Rd.	John Marincas	Greenhalgh & Kaye	1954	97	208	6	204	204-208	Kmr	80	25	69	D	L.
69	4 mi. N of Wrightstown	Joseph S. Kucowski	do.	1957	104	149	6	143	143-149	Ket	38	10	7	D	
70	2 mi. NE of Riverton	Hoeganaes Sponge Iron Co.	Layne-New York Co., Inc.	1951	35	136	8	119	119-134	Kmr	16	326	68	CI	Pump capacity is 50 gpm. L.
71	3 mi. NE of Mount Holly, on State Route 537	Eastampton School	Charles L. Mollitor, Inc.	1957	73	417	--	407	407-417	Kmr	70	75	30	U	L.
72	1 mi. NE of Mount Holly, on North Pemberton Rd.	J. A. Methvin	do.	1953	39	364	6	352	352-363	Kmr	63	30	15	D	L.
73	1 mi. NW of Marlton, on Cropwell Rd.	Byron T. Roberts Farms Inc. No. 2	A. C. Schultes & Sons	1957	93	406	18 & 8	322	322-375	Kmr	100	750	80	Irr	Screen blank 348-359. A., L.
74	1 mi. W of Marlton, on Old Marlton Pike	David D. Griscom	J. Henry Robbins	1952	92	340	4	320	300-340	Kmr	100	40	---	D	L.
75	2 mi. SE of Marlton	U.S. Army Nike Base, control area well	Edward Robbins, Sr.	1954	84	158	8	138	138-158	Kmr	41	200	43	U	
76	1 mi. SE of Beverly, on U.S. Highway 130	Earl R. Blyler	Charles L. Mollitor, Inc.	1950	39	117	10	90	90-114	Kmr	14	575	19	Irr	L.
77	1 mi. SE of Beverly, on Cooper St.	John W. Heal	do.	1951	36	135	10	107	107-135	Kmr	18	500	89	Irr	A.
78	1 mi. SW of Beverly, at Cambridge	Amico Sand and Gravel Co.	do.	1957	15	75	6	27	27-37	Kmr	7	120	11	CI	L.
79	1 mi. S of Riverside, on U.S. Hwy 130	Hillside Farms No. 3	A. C. Schultes & Sons	1956	20	112	12	90	90-106	Kmr	6	444	68	CI	
80	1 mi. SE of Riverside, on U.S. Hwy 130	Holy Cross High School	Charles L. Mollitor, Inc.	1958	82	174	10	154	154-174	Kmr	55	185	20	Irr	L.
81	1 mi. E of Riverside, on U.S. Hwy 130	Holiday Lake	do.	1958	25	198	8	188	188-198	Kmr	15	180	---	CI	L.

Table 3. – Selected drillers' logs of wells in Burlington County, N. J. – Continued

Well no. 81, Holiday Lake
(Log by Charles L. Mollitor, Inc.)

	Altitude 25 feet	
	Thickness (feet)	Depth (feet)
Quaternary (?):		
Cape May (?) Formation:		
Yellow sand	9	9
Sand	12	21
Gravel	4	25
Cretaceous:		
Magothy and Raritan Formations:		
Yellow sand	21	46
Sand	15	61
White clay	4	65
White sand	7	72
Gray clay	13	85
White clay	14	99
White sand	8	107
Muddy sand	6	113
Hard clay	6	119
Muddy sand	10	129
White sand	9	138
White clay	4	142
White sand	4	146
White clay	10	156
Fine sand	5	161
White clay	6	167
Dirty sand	3	170
Sand and gravel	7	177
White clay	10	187
Sand and gravel	11	198

REFERENCE 40

Biological Services Program

FWS/OBS-80/51
September 1980

Atlantic Coast Ecological Inventory

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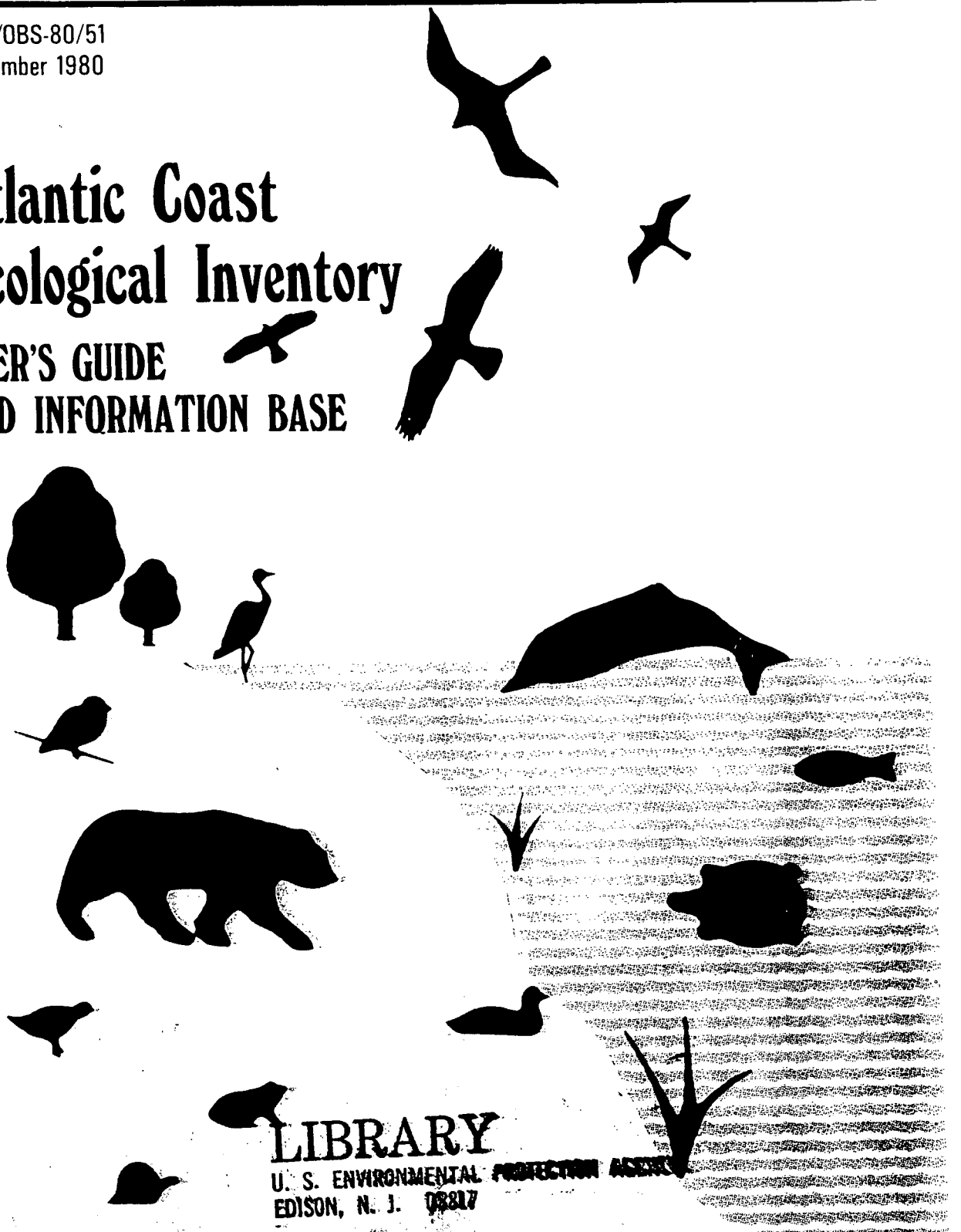

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December, the flights decline; however, many birds remain during the winter months.

5.5 DELAWARE BAY AND DELAWARE RIVER (GRID REFERENCE WV25 TO VT99)

The Delaware River estuary extends from the limit of tidal influence at Trenton, New Jersey (grid reference WV25), to the mouth of the Delaware Bay between Cape May, New Jersey, and Cape Henlopen, Delaware (grid reference VT99). The Delaware River and the Delaware Bay form a highly productive and diverse system. The biotic resources of this section are keyed geographically using east-west UTM grid swaths.

Aquatic Resources

a. Widespread species. Several anadromous species, including shortnose and Atlantic sturgeon, American shad, alewife, blueback herring, white perch, and striped bass, migrate along the entire length of the Delaware estuary during spring spawning runs. The endangered shortnose sturgeon is distributed throughout the estuary, below Trenton.

b. Geographic inventory. The upstream portion of the estuary from Trenton, New Jersey (grid reference WV25), south to Wilmington, Delaware (grid reference VU59), is populated by freshwater species such as sunfish, catfish, bullhead, and bass and provides spawning and nursery areas for anadromous species.

South of Wilmington (grid reference VU59), numerous marshes, creeks, and shallows along Delaware Bay are major nursery grounds for estuarine-dependent species such as the blue crab, Atlantic menhaden, several drum species, bluefish, and summer and winter flounder. Adults of these species inhabit the lower parts of the river, but the species are more abundant south of grid reference VU74.

Commercially important invertebrates, such as blue crab, American oyster, hard clam, mussel, whelk, and lobster occur in the lower portions of the estuary (downstream from grid reference VU65). Blue crab, the major commercial species in the Delaware Bay, is commercially fished throughout the bay during the entire year; in the summer, crab is fished recreationally in shallow water areas. Oysters are another major fishery in the Delaware Bay. Delaware and New Jersey maintain seed beds (grid references VU65, VU64, VU62, and VU74) and planting grounds (grid references VU72, VU73, and VU93). The area from grid reference VU56 to Cape May Canal (grid reference WU01) is an area of high oyster set. The potential exists to double oyster seed production in the bay, if the oyster drill can be controlled in this area.

Hard clams prefer salinities greater than 20 parts per thousand; therefore, major beds for this species are found in the lower portion of the Delaware Bay (grid references VU73, VU72, VU71, VU70, VT89, and VU91). Mussels, whelks, and lobsters also inhabit the lower bay; lobsters, in particular, are found mainly at the Delaware breakwater off Cape Henlopen (grid reference VT99).

Terrestrial Resources

Terrestrial habitats along the Delaware River consist primarily of saltwater and freshwater marshes, hardwood forests, and farmlands. The Delaware Bay has several significant areas for plant and wildlife resources.

a. Widespread species. The most common shorebird species in the Delaware Bay area include greater and lesser yellowleg, short-billed dowitcher, pectoral, least, stilt, semipalmated, and western sandpiper, marbled godwit, and black-necked stilt, as well as many gulls and terns. Several unusual tern species in the Delaware Bay area include the royal, caspian, roseate, and black terns. Occasionally, black-headed and little gulls gather here, but few birds nest in the Delaware Bay and no major colonies are known to exist. Also, a large resident population of loons and grebes remains in the Delaware Bay throughout the year.

b. Geographic inventory. White Clay Creek (grid reference VU39) is an unpolluted and undeveloped waterway containing diverse fauna and rare flora such as the purple fringeless orchid. The creek is considered to be a prime location for songbird diversity on a year-round basis, and serves as a habitat for the rare bog turtle.

The largest deer concentration in Delaware occurs at Whitely Farms (grid reference VU39), where populations are estimated at 300 head per 688 hectares (1,700 acres).

A large concentration of the rare orchid, the pink lady's slipper, can be found in bloom during May at Moccasin Woods (grid reference VU38) in northern Delaware.

From spring to fall, many species of wading birds occupy marsh habitats throughout the Delaware Bay area; however, the only major nesting site occurs at Pea Patch Island (grid reference VU58) where more than 7,000 pairs of wading birds nest, including little blue heron (600 pairs), cattle egret (4,000 pairs), great egret (250 pairs), snowy egret (1,000 pairs), Louisiana heron (50 pairs), black-crowned night heron (400 pairs), yellow-crowned night heron (50 pairs), and glossy ibis (700 pairs). This is the largest breeding population of cattle egret in the Middle Atlantic Zone. Pea Patch Island is one of the larger heronries in the northeastern United States and is considered to be a unique breeding area of national significance.

An important shorebird habitat in northern Delaware is located at Thousand Acre Marsh (grid reference VU47).

The only known major breeding site of the eastern tiger salamander, an endangered species in Maryland, is found at grid reference VU35.

Woodland Beach Wildlife Area (grid reference VU55) is an important stopover place for peregrine falcons. The Delaware Bay is a nesting site for the endangered bald eagle. Only one of the three major wintering areas for the bald eagle in the section occurs in New Jersey at grid reference VU85 along the Delaware Bay.

One pair of adult eagles usually nests at Bombay Hook National Wildlife Refuge (grid reference VU64) from early December to about mid-May. Bombay Hook also is a prime stopping place for peregrine falcons, ducks, and Canada geese. The Canada goose population in this area peaks at 50,000 birds. Many of the more than 300 species of birds identified at the refuge breed here. Many mammals

common to coastal areas also reside here, such as deer, squirrel, fox, muskrat, and a few otter.

One of New Jersey's major ornithological events is the large concentration of snow geese in the Delaware Bay near Fortescue, New Jersey (grid reference VU84), in late March. The snow geese arrive in early November and remain until the ice forces them to migrate south. They reappear in late February and remain until early April.

Peregrine falcons migrate through and stopover at Little Creek Wildlife Area (grid reference VU63). Farther to the south, at Higbee Beach, New Jersey (grid reference WU01), is one of the most productive muskrat areas in the country. More than one lodge per acre has been counted on the several hundred acres of Pond Creek Meadow.

Delaware's most abundant growth of the rare pitcher plant and the last remaining large concentrations of Atlantic white cedar in the Delaware River Basin are found at Beaver Dam Branch (grid reference VU60).

5.6 DELMARVA SHORE (GRID REFERENCE VT99 TO VS10)

The Delmarva Shore encompasses portions of Delaware, Maryland, and Virginia and extends from Cape Henlopen, Delaware (grid reference VT99), in the north to Cape Charles, Virginia (grid reference VS10), in the south. This section is physically and biologically similar to the New Jersey Shore (subsection 5.4.3). The Delmarva Shore is characterized by a system of barrier islands which protect an extensive estuarine-tidal marsh system. The biotic resources of this section are keyed geographically using east-west UTM grid swaths.

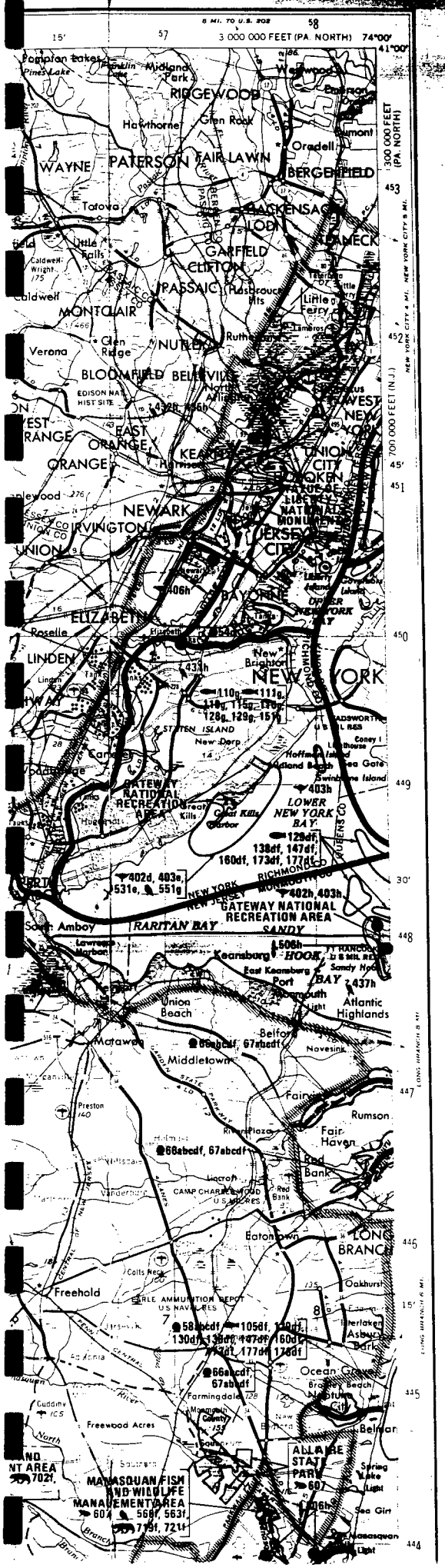
Aquatic Resources

a. Widespread species. The Delmarva bays are an important habitat for invertebrate species such as hard clams, blue crabs, and oysters.

Finfish, such as the American eel, Atlantic menhaden, white perch, striped bass, weakfish, spot, Atlantic croaker, northern kingfish, silver perch, summer and winter flounder, and bluefish, use the estuaries of the Delmarva Shore in the spring and summer as juvenile nursery areas. With the exception of winter flounder, these estuaries also are used as adult summer feeding grounds. These species, excluding the menhaden, are all of recreational and commercial importance. The menhaden, fished exclusively as a commercial species, is the most valuable finfish with the highest pound yield of any commercial species along the Delmarva coast. Recreationally and commercially important oceanic fishes such as black sea bass, scup, and Atlantic mackerel also occur in the coastal waters of the Delaware Bay during the summer.

Offshore, the same endangered and threatened species that were discussed in the Resources Overview (subsection 4.2.1) occur, including the six marine mammals, five sea turtles, and two fishes. The fishes include the Federally listed shortnose sturgeon and the Virginia-listed Atlantic sturgeon.

b. Geographic inventory. Maryland waters (grid reference VT95 to VT70) contain the major surf clam beds along the Delmarva Shore. These beds are mainly



ORGANISMS

species with special status shown
species protected by
(see text)

SPECIES

PLANTS (301–350)
- 301 Eastern hemlock
- 302 Spleenwort (S)
- 303 Spider lily (S)
- 304 Pond bush (S)
- 305 Watermilfoil (S)
- 306 Hooded pitcher plant (S)
- 307 Tree
- 308 Prickly pear cactus (S)
- 309 Trailing arbutus (S)
- 310 Eastern bumelia
- 311 Pitcher plant
- 312 Baldcypress
- 313 Redbay
- 314 Seaside alder
- 315 Box huckleberry
- 316 Purple fringeless orchid
- 317 Pink lady's slipper
- 318 Ebony spleenwort (S)
- 319 Orchids (S)
- 320 Golden club (S)
- 321 Florida beargrass
- 322 East-coast coontie
- 323 Fall-flowering ixia
- 324 Jackson-vine
- 325 Spoon-flower
- 326 Curtiss milkweed
- 327 Sea lavender
- 328 Hand fern
- 329 Needle palm
- 330 Yellow squirrel-banana
- 331 Beach creeper
- 332 Florida coontie
- 333 Four-petal pawpaw
- 334 Bird's nest spleenwort
- 335 Burrowing four-o'clock
- 336 Beach star
- 337 Silver palm
- 338 Dancing lady orchid
- 339 Tamarindillo
- 340 Fuch's bromeliad
- 341 Everglades peperomia
- 342 Buccaneer palm
- 343 Slender spleenwort
- 344 Pineland jacquemontia
- 345 Mahogany mistletoe
- 346 Florida thatch
- 347 Twisted air plant
- 348 Long's bittercress
- 349 Venus's flytrap

INVERTEBRATES (351–400)
- 351 Monarch butterfly
- 352 Zebra butterfly

BIRDS (401–600)

SHOREBIRDS (401–430)
- 401 Shorebirds
- 402 Terns
- 403 Gulls
- 404 Forster's tern
- 405 Arctic tern
- 406 Least tern (S)
- 407 Roseate tern (S)
- 408 Common tern
- 409 Great black-backed gull
- 410 Herring gull
- 411 Laughing gull
- 412 Black skimmer (S)
- 413 Turnstones
- 414 Plovers
- 415 Piping plover
- 416 American oystercatcher (S)

WADING BIRDS (431–460)
- 431 Wading birds
- 432 Herons
- 433 Egrets
- 434 Rails
- 435 Ibises
- 436 Bitterns
- 437 Great blue heron (S)
- 438 Wood ibis (S)
- 439 Anhinga
- 440 Little blue heron (S)
- 441 Yellow-crowned night heron (S)
- 442 Black-crowned night heron
- 443 Florida sandhill crane (S)
- 444 Louisiana heron (S)
- 445 Limpkin (S)
- 446 Roseate spoonbill (S)
- 447 Snowy egret (S)
- 448 Magnificent frigate-bird (S)
- 449 Reddish egret (S)
- 450 Clapper rail
- 451 King rail
- 452 Virginia rail
- 453 Sora rail

WATERFOWL (461–500)
- 461 Waterfowl
- 462 Swans
- 463 Geese
- 464 Dabbling ducks
- 465 Diving ducks
- 466 Common eider
- 467 Harlequin duck
- 468 Wood duck
- 469 Fulvous tree duck
- 470 Loons
- 471 Grebes
- 472 Brant geese
- 473 Snow goose
- 474 Gadwall
- 475 Black duck

RAPTORS (501–530)
- 501 Raptors
- 502 Owls
- 503 Kites
- 504 Hawks
- 505 Bald eagle (F)
- 506 Osprey (S)
- 507 Peregrine falcon (F)
- 508 Cooper's hawk (S)
- 509 Swallow-tailed kite
- 510 Marsh hawk (S)
- 511 Southeastern American kestrel (S)
- 512 Florida burrowing owl (S)

SEABIRDS (531–550)
- 531 Seabirds
- 532 Petrels, shearwaters, and albatroses
- 533 Pelican and allies
- 534 Alcids
- 535 Brown pelican (F)
- 536 Black guillemot
- 537 Leach's petrel
- 538 Razorbill
- 539 Common puffin
- 540 Double-crested cormorant
- 541 Gannet
- 542 Wilson's petrel
- 543 Northern phalarope
- 544 Audubon's shearwater
- 545 Greater shearwater
- 546 Shearwaters
- 547 Petrels
- 548 Jaegers
- 549 White pelican

SONGBIRDS AND OTHERS (551–600)
- 551 Songbirds and others
- 552 Red-cockaded woodpecker (F)
- 553 Chachalaca
- 554 Bachman's warbler (F)
- 555 Wild turkey
- 556 American woodcock
- 557 Pileated woodpecker
- 558 Swainson's warbler
- 559 Ruffed grouse
- 560 Bobwhite
- 561 Mourning dove
- 562 Warblers
- 563 Ring-necked pheasant
- 564 Bank swallow
- 565 Dusky seaside sparrow (F)
- 566 White-crowned pigeon (S)

REPTILES AND AMPHIBIANS (601–700)
- 601 Eastern narrow-mouthed toad (S)
- 602 Eastern indigo snake (F)
- 603 American alligator (F)
- 604 Northern diamondback terrapin
- 605 Amphibians
- 606 Greater siren
- 607 Bog turtle (S)

Newark

N.J.–N.Y.–PA.

1:250 000-scale map of

Atlantic Coast Ecological Inventory

Produced by

U. S. FISH AND WILDLIFE SERVICE

1980

AQUATIC ORGANISMS

Shown in BLUE: species with special status shown in RED (F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL SPECIES

PLANTS (1–50)
- 1 Irish moss
- 2 Rockweed

INVERTEBRATES (51–100)
- 51 Crabs
- 52 Mussels
- 53 Oysters
- 54 Scallops
- 55 Clams
- 56 Worms
- 57 Shrimp
- 58 American lobster
- 59 Blue crab
- 60 Eastern oyster
- 61 European oyster
- 62 Bay scallop
- 63 Deep-sea scallop
- 64 Calico scallop
- 65 Surf clam
- 66 Hard clam
- 67 Soft shell clam
- 68 Brackish-water clam
- 69 Bloodworm
- 70 Sandworm
- 71 White shrimp
- 72 Brown shrimp
- 73 Northern shrimp
- 74 Rock crab
- 75 Jonah crab
- 76 Whelk
- 77 Ocean quahog
- 78 Pink shrimp
- 79 Stone crab
- 80 Spiny lobster

FISH (101–200)
- 101 Sharks, skates, rays
- 102 Herring
- 103 Salmon and trout
- 104 Catfish
- 105 Cod
- 106 Sunfish and bass
- 107 Drum
- 108 Flatfish
- 109 Longnose gar
- 110 Shortnose sturgeon (F)
- 111 Atlantic sturgeon (S)
- 112 American eel
- 113 Blueback herring
- 114 Hickory shad
- 115 Alewife
- 116 American shad (S)
- 117 Atlantic menhaden
- 118 Atlantic herring
- 119 Gizzard shad
- 120 Tarpon
- 121 Atlantic salmon
- 122 White catfish
- 123 Channel catfish
- 124 Yellow bullhead
- 125 Brown bullhead
- 126 Flat bullhead
- 127 Sea catfish
- 128 White perch
- 129 Striped bass
- 130 Black sea bass
- 131 Redbreast sunfish
- 132 Warmouth
- 133 Bluegill
- 134 Largemouth bass
- 135 Black crappie
- 136 Sheepshead
- 137 Spotted seatrout
- 138 Weakfish
- 139 Spot
- 140 Atlantic croaker
- 141 Southern kingfish
- 142 Northern kingfish
- 143 Gulf kingfish
- 144 Red drum
- 145 Star drum
- 146 Black drum
- 147 Summer flounder
- 148 Southern flounder
- 149 Winter flounder
- 150 Rainbow smelt
- 151 Atlantic tomcod

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5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

5 0 5 10 15 Nautical Miles

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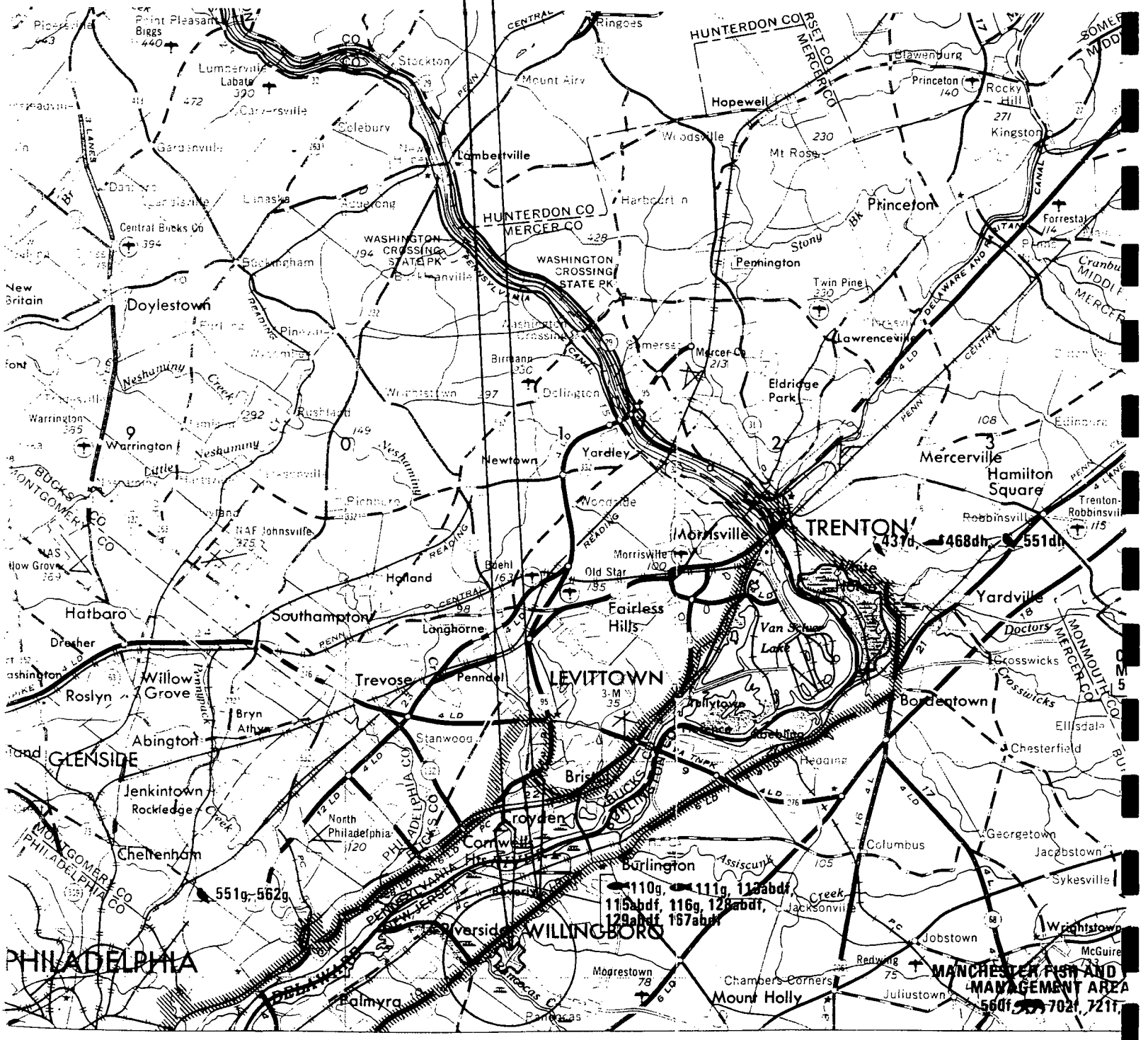
APPROXIMATE SITE LOCATION

APPROXIMATE 2-MILE RADIUS



REFERENCE 41

STATE OF NEW JERSEY

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

DIVISION OF WATER POLICY AND SUPPLY

IRON IN GROUND WATERS OF THE MAGOTHY AND RARITAN FORMATIONS IN CAMDEN AND BURLINGTON COUNTIES, NEW JERSEY

WATER RESOURCES CIRCULAR NO. 19

Prepared in Cooperation with

United States Department of the Interior

Geological Survey

1969

IRON IN GROUND WATERS OF THE MAGOTHY AND RARITAN FORMATIONS IN CAMDEN AND BURLINGTON COUNTIES, NEW JERSEY

By

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U. S. Geological Survey

Prepared by the U. S. Geological Survey

in cooperation with

the State of New Jersey

IRON IN GROUND WATERS OF THE MAGOTHY AND RARITAN FORMATIONS IN CAMDEN AND BURLINGTON COUNTIES, NEW JERSEY

ABSTRACT

Iron is the major water-quality problem in potable ground waters of the Magothy and Raritan aquifer system in Camden and Burlington Counties, New Jersey. Most wells tapping the aquifer system in this area yield total iron concentrations in excess of 0.3 mg/l (milligram per liter). The iron is present primarily as dissolved ferrous iron (Fe^{+2}), and as colloidal-sized ferric hydroxide [$Fe(OH)_3$].

Four water-quality zones are defined in terms of dissolved solids, pH, prevalent chemical character, and iron content as analyzed from ground-water samples from 185 wells. The ground water in zones 1 to 3 is primarily of the calcium-bicarbonate type, whereas in zone 4 it is of the sodium-bicarbonate type.

Zone 1 includes ground waters in outcrop areas having dissolved solids less than 100 mg/l. These waters are oxygenated and uncontaminated, with pH values from 5.0 to 6.0, and both ferrous and total iron concentrations less than 0.5 mg/l.

Ground waters are polluted or vulnerable to pollution in zone 2. This zone is almost entirely within the outcrop area, and includes areas adjacent to the Delaware River opposite Philadelphia, Pa. Dissolved solids in zone 2 range from 100 mg/l to generally less than 400 mg/l; pH values range from 6.0 to 7.0. Ferrous iron and total iron concentrations usually exceed 0.5 mg/l, and are occasionally as high as 5 mg/l and 20 mg/l, respectively.

Zone 3 corresponds largely to confined parts of the aquifer system downdip from zones 1 and 2, where the ground water contains less than 200 mg/l dissolved solids. In zone 3, pH values range from 6.0 to 8.0. Ferrous iron and total iron concentrations are as high as 6.6 mg/l and 16 mg/l, respectively, in shallow ground waters, due to solution of ferrous iron minerals in the sediments coupled with partial oxidation of the ferrous iron. Both ferrous iron and total iron concentrations decrease progressively in the downdip direction as the pH rises above 6.5. Concentrations of both forms of iron are generally less than 0.05 mg/l at a pH of 8.0. The decrease may be due to ion exchange removal of the ferrous iron coupled with reduction of the colloidal ferric hydroxide to ferrous iron, or sorption of the ferrous iron by the colloidal ferric hydroxide followed by coagulation and coprecipitation.

Zone 4, downdip and south of zone 3, is characterized by ground waters with dissolved solids in excess of 200 mg/l, pH values of 8.0 or above, and both total iron and ferrous iron concentrations of less than 0.3 mg/l. The low iron values may be due to the same reaction or reactions responsible for the decrease in iron in zone 3.

The water-quality and geohydrologic data suggest that heavy, long-term pumpage in the vicinity of Philadelphia and adjacent parts of New Jersey, has induced the flow of zone 3 ground waters up to seven miles in a northerly direction towards this area since 1900. A reduction in pumpage in the Philadelphia area, coupled with increased pumpage in adjacent New Jersey during the period from 1958 to 1966, has brought about movement of zone 2 of up to one mile toward the southeast in Camden County.

In northern Camden County, changes in specific conductance, and in ferrous iron, total iron, and bicarbonate-ion concentrations in the ground water, indicate that heavy

summer pumpage by shallow wells in zone 3 induces ground-water flow downdip towards these wells from the outcrop area and zone 1. Similarly, deeper zone 3 wells in the same area probably induce significant amounts of vertical leakage through the overlying Woodbury Clay and Merchantville Formations. Adjustment of the ground water within the aquifer system to marked seasonal changes in pumpage may cause local ground-water movement of up to one mile with corresponding changes in iron content.

INTRODUCTION

Most of the potable water used by public and private interests in the Coastal Plain of New Jersey is ground water, and most of this ground water is pumped from the aquifer system in the Magothy and Raritan Formations. The outcrop area of the aquifer system embraces some of the more populous and intensively developed parts of New Jersey. (See Fig. 1). These areas depend heavily on ground water for public, private and industrial water supply.

The outcrop of the Magothy and Raritan Formations in southern New Jersey is vulnerable to salt-water encroachment from the Delaware estuary below Philadelphia, and to man-made pollution in the vicinity of Philadelphia and adjacent New Jersey. Approximately south of a line connecting the city of Salem and Island Beach State Park, potable fresh waters in the aquifer system give way to highly saline residual waters. Within the area north of this line, the ground water is generally of good quality, except for the common occurrence of total iron in amounts greater than the maximum of 0.3 mg/l (milligram per liter) recommended by the New Jersey State Department of Health (1964) for potable supplies.

Millions of dollars have been spent on the construction of treatment plants for iron removal in Camden and Burlington Counties. Wells have been drilled and subsequently abandoned due to objectionably high iron content in the water, or clogging of the well screen with ferric hydroxide sediments. Because of the lack of detailed information on iron distribution in the ground water, a number of these wells have been drilled in areas of high iron, even though ground water low in iron was available nearby.

It has generally been assumed that the iron in deep well waters is entirely in solution and in the form of ferrous iron (Fe^{+2}). Such a belief is casually supported by the absence of visible turbidity in freshly collected ground-water samples. However, this study indicates that large amounts of iron may also be present in deep well waters as particulate ferric hydroxide [$Fe(OH)_3$]. This material is uniformly dispersed, and colloidal or near-colloidal in size and therefore not visible to the naked eye.

Traditional water-treatment practices are geared to the total iron analysis, which represents the combined concentrations of particulate ferric hydroxide and dissolved ferrous iron. However, except when ion-exchange methods are used, iron is removed from solution during treatment as ferric hydroxide. Because of this, only the ferrous iron in a raw water requires treatment.

Most ground waters in the study area which contain more than 0.3 mg/l total iron are of the calcium-bicarbonate type having pH values ranging from about 6.0-8.0. Iron removal commonly involves aeration, followed by settling and filtration. If no chemicals are added to the raw water, the reactions taking place during aeration are

$$2Fe^{+2} + 5H_2O + \tfrac{1}{2}O_2 = 2Fe(OH)_3 + 4H^+ \qquad (1)$$

and

$$H^+ + HCO_3^- = H_2O + CO_2 \qquad (2)$$

Reaction (1) is prohibitively slow at pH values below 7.0. Only when sufficient natural alkalinity (i.e. bicarbonate) is present in the water for reaction (2) to operate and eliminate hydrogen ions as they form will the pH remain above 7.0 during aeration. Where the alkalinity or bicarbonate content of the water is low, or the pH is below 7.0, it is often necessary to add lime to raise the pH for effective iron removal. The iron present in raw water as particulate ferric hydroxides does not enter into these reactions and need not be considered in the estimation of lime dosage or alkalinity demand for pH control. Thus, if appreciable quantities of particulate ferric hydroxide

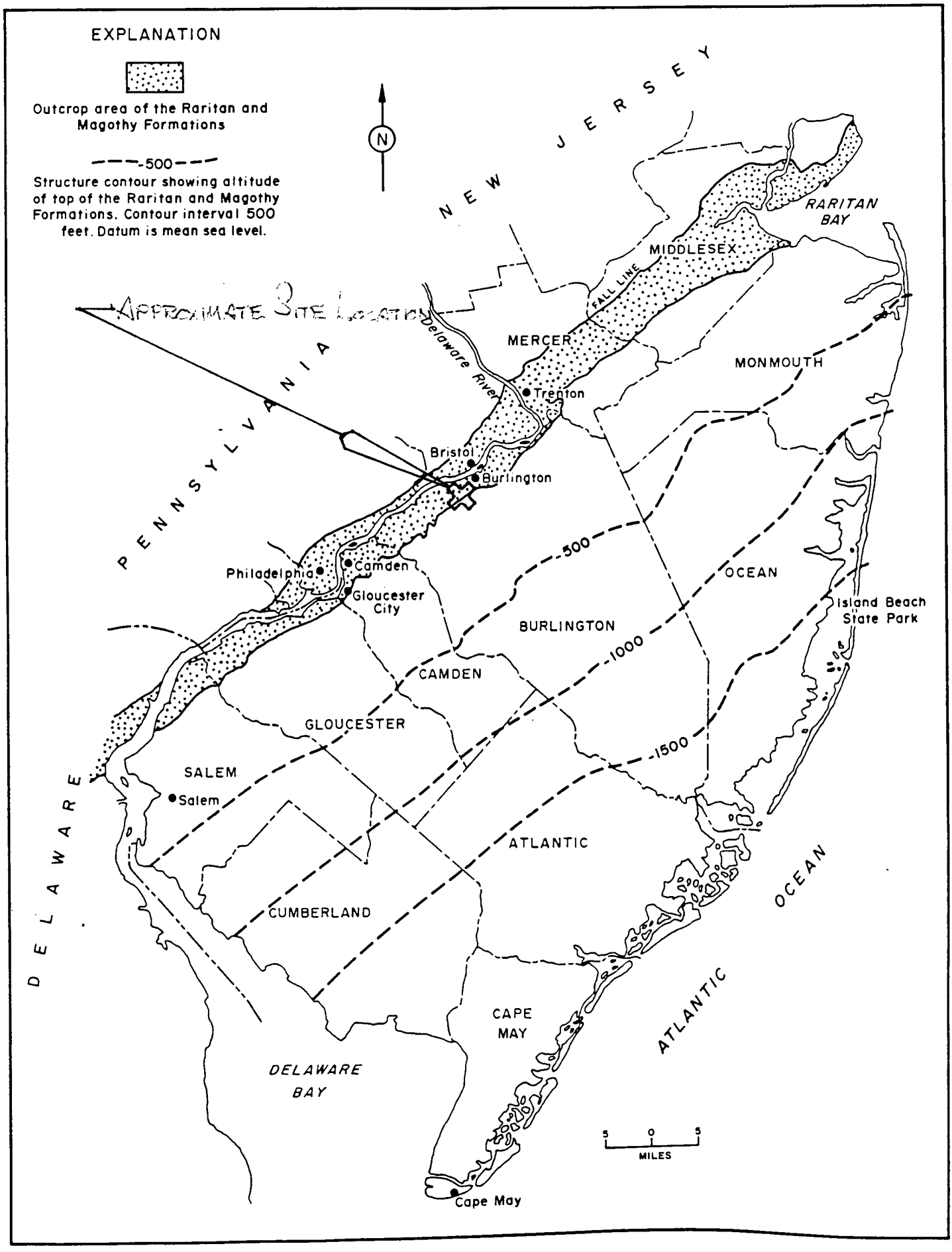

Figure 1.—Map showing outcrop area and generalized altitude of the top of the [illegible] southern New Jersey

are present in the raw water, a total iron analysis by itself is likely to be misleading to the water-treatment plant operator.

The breakdown of ferrous and total iron in a ground water is also important if the iron is to be removed by the sodium ion exchange process, for this process only removes ferrous iron, and any colloidal ferric hydroxide present will tend to clog the exchanger.

In short, it is probable than an awareness of the ferrous iron and particulate ferric hydroxide content in raw ground water (or treated water for that matter) would help to explain many of the perplexing difficulties encountered by water-works personnel engaged in treatment for iron removal.

With a view in part to remedying some of these problems, this report describes the distribution and behavior of ferrous iron, total iron, and several related chemical constituents in ground waters of the Magothy and Raritan aquifer system in Camden and Burlington Counties. The water-quality discussion is preceded by introductory sections dealing with the geologic and hydrologic framework of the aquifer system. It is hoped that the information presented herein will be of interest to owners of existent wells, water-works personnel, and individuals or groups faced with deciding where to drill new wells which are likely to yield ground waters low in iron. Additionally, this study attempts to explain the geochemical behavior of ferrous iron and particulate ferric hydroxides in the ground water. Although a few references will be made to iron geochemistry, a detailed discussion of this subject is considered beyond the scope of this report.

Acknowledgments

This investigation was conducted by the U. S. Geological Survey in cooperation with the Division of Water Policy and Supply, New Jersey State Department of Conservation and Economic Development. The helpful cooperation and assistance of well owners who permitted sampling of their wells are gratefully acknowledged.

GEOLOGY

Coastal Plain geology in New Jersey is characterized by a wedge of unconsolidated and semiconsolidated sediments exposed southeast of the Fall Line, of Cretaceous through Quaternary age, that thicken downdip towards the Atlantic Ocean. The oldest of these sediments, known in New Jersey as the Raritan and Magothy Formations, rest unconformably upon an early Paleozoic and Precambrian crystalline basement, which crops out at the surface northwest of the Fall Line (fig. 1). In New Jersey, the erosion surface on the buried pre-Cretaceous basement dips from 60-100 feet per mile toward the southeast (Parker and others, 1964, p. 42), is about 3,800 feet deep at Island Beach State Park and 6,000 feet deep at Cape May (Richards and others, 1962, p. 13). South of Trenton the surface is characterized by a number of easterly to southerly trending channels which were carved by the ancient Schuylkill and Delaware Rivers and their tributaries (Greenman and others, 1961). The buried upper surface of the crystalline basement has been weathered into a micaceous residual clay. The clay is widespread, and probably serves as a confining bed where it occurs below the overlying unconsolidated sediments.

The Magothy and Raritan Formations, which make up approximately the lower half of the Coastal Plain sequence in New Jersey, are Late Cretaceous in age, and are composed of unconsolidated sand, clay, and silt, and small amounts of gravel. In the outcrop area south of Trenton, the Raritan is about 200 feet thick and the Magothy ranges in thickness from 0-45 feet (H. E. Gill, oral communication). The formations dip from 40-100 feet per mile toward the southeast, with the lower dips assigned to the overlying Magothy formation (Johnson and Richards, 1952, p. 2, 152). At Island Beach State Park, the Raritan attains a thickness of 1,730 feet and the Magothy about 260 feet. The contours in figure 1 show the altitude of the top of the Magothy Formation. In the Delaware Valley, south of Trenton, the outcrop area of both formations is almost completely covered by permeable sand and gravel, and semi-permeable silt and clay deposits of Pleistocene age.

Although a number of distinct sand and clay members within the Raritan Formation have been identified in Middlesex County, several tens of miles northeast of the study area, it has not been possible to trace these beds for great distances away from the type locality. Magothy and Raritan sediments in Camden and Burlington Counties are highly variable in nature both vertically and horizontally because of their predominantly fluvial character. Because of this variability, it has traditionally been assumed that the major sand and gravel aquifers within the two formations are interconnected over relatively short distances around the clay layers. Although this assumption is open to question in some areas, the interconnection is certainly most effective in sediments filling several major stream channels which have been carved into the crystalline basement. These ancient valleys contain thick accumulations of highly permeable coarse-grained sediments which are the most reliable and productive sources of ground water in the area. A thickness map of the uppermost water-bearing zone in Magothy and Raritan sediments, based largely on an interpretation of geophysical logs by Gill (written communication) is shown in figure 2. The map shows two major channels south and east of Philadelphia, respectively, which are characterized by a thickening of sands and gravels to over 100 feet. The channel in Gloucester County may represent an ancient course of the Schuylkill River. Also of hydrologic significance are the 100-120 foot thick sands southeast of Bristol. Considerable movement of ground water has taken place in sediments filling the channel south of Philadelphia. The channel opposite Bristol has also had an important influence on ground-water movement in that area.

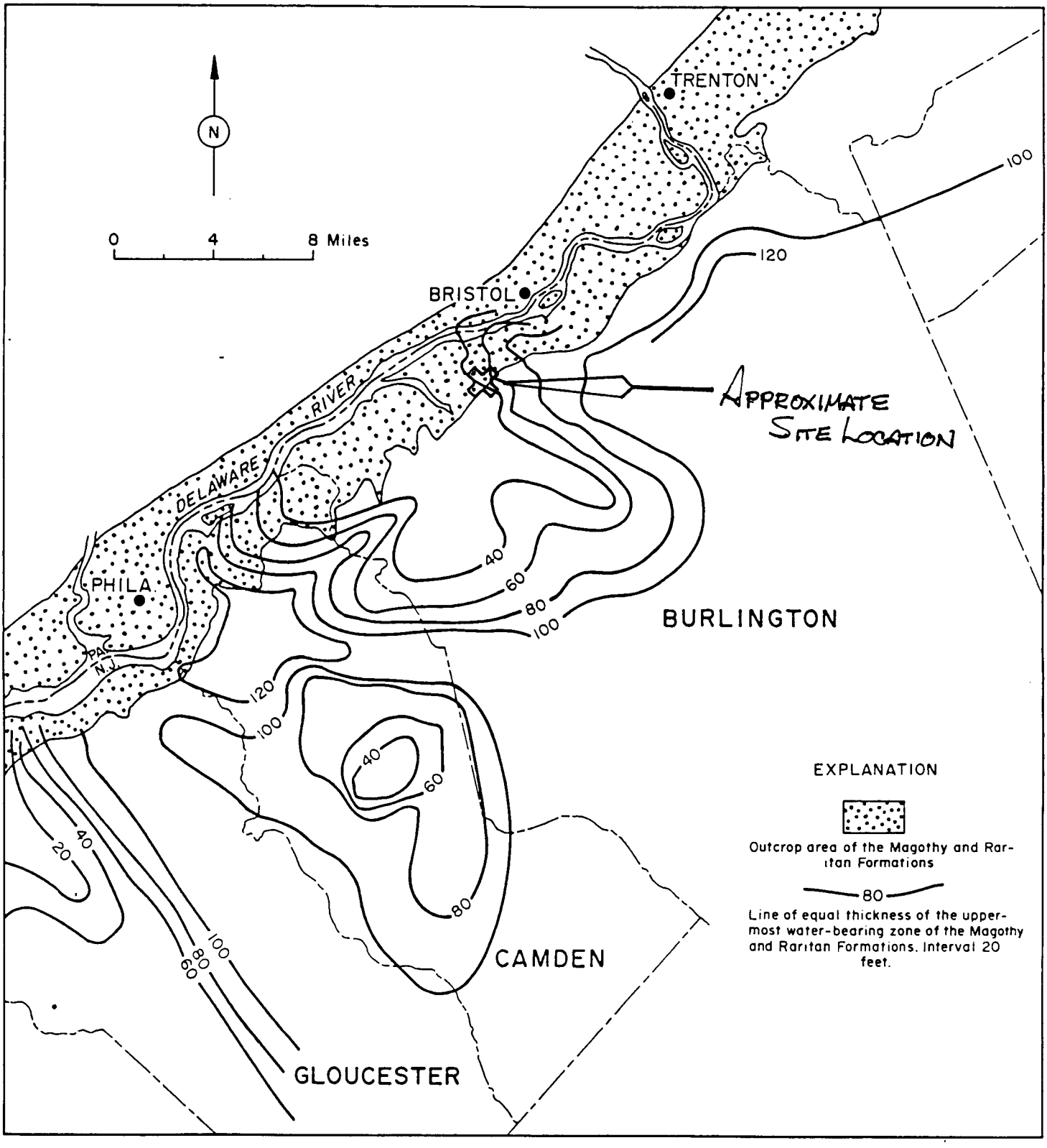

Figure 2.—Thickness of the uppermost water-bearing zone of the Magothy and Raritan Formations.

The aquifers within the Magothy and Raritan Formations are effectively confined below by the crystalline basement and its residual clay, and above by the silts and clays of the Merchantville Formation and Woodbury Clay of Late Cretaceous age, which collectively are about 100 feet thick or more. The Merchantville Formation is a sequence of horizontally stratified thin-to-thick bedded silts and sands which are slightly to very clayey. The Woodbury Clay is a massive bedded, and somewhat silty clay (Owens and Minard, 1964). These two formations, of marine origin are areally extensive, and function primarily as a confining bed in the study area.

GEOHYDROLOGY

A generalized map of static water levels in the aquifer system measured before significant pumpage had occurred, is shown in figure 3. The map is based upon the earliest records for each well shown, and is probably representative of conditions in the study area around 1900. Northeast of Trenton, the outcrop area of the Magothy and Raritan Formations typically attains altitudes greater than 100 feet. This has historically been considered the major recharge area for the aquifer system, with water levels in excess of 60 to 80 feet. Ground water flows away from this region radially from northeast to southwest, discharging into Raritan Bay to the northeast (fig. 1), and southwest into the Delaware River between Bristol and Trenton. The pre-pumpage water-level data indicate a two-way flow pattern in most of Camden County and adjacent parts of Burlington County, with flow from highs of between 10 and 20 feet above mean sea level northwest towards the outcrop area, and flow also in the opposite direction downdip towards the southeast.

Maps of chemical constituents in the ground water, which will be discussed later, suggest that the two-way flow pattern just described is a relatively recent development, and that ground waters now present in Burlington and Camden Counties southeast and south of Bristol were emplaced by flow primarily towards the southeast from the Delaware River and the outcrop area. Emplacement may have taken place during the later stages of Pleistocene glaciation when the ocean stood several hundred feet lower than present levels. The flow pattern shown in figure 3 has subsequently caused this older ground water to move updip towards the northwest and the outcrop area in the vicinity of Bristol. Movement has taken place principally along the axis of the major buried stream channel in Magothy and Raritan sediments opposite Bristol.

Measurements during the fall of 1966, indicate that static water levels in the area north and east of Burlington County have not dropped appreciably since pumpage began. This is primarily a consequence of induced recharge from the high-level intake area northeast of Trenton. However, sources of natural or induced recharge have not kept pace with rapidly increasing rates of withdrawal in Burlington and Camden Counties and adjacent Pennsylvania. As a result, water levels in the vicinity of Bristol and southeast and south of Bristol are now generally below sea level. At the same time, static water levels in almost all of Camden County are deeper than 20 feet below mean sea level and in the northern part of the county are typically deeper than 40 feet and occasionally 50 feet below mean sea level.

In response to pumpage, some induced recharge from the Delaware River enters the aquifer system through silt and clay in the river bed, where wells are located within a few hundred feet of the river channel. Lowered water levels have undoubtedly also induced additional recharge from surface waters in the outcrop area, and small amounts of vertical leakage into the aquifer system through the overlying Woodbury Clay and Merchantville Formation southeast of the outcrop area. Nevertheless, these sources of recharge have not altered the long-term regional trend of declining water levels.

A notable effect of the heavy withdrawals has been the regional migration of artesian ground waters updip towards centers of pumpage. Chemical maps, some of which will be discussed in this report, indicate that the migration has taken place for the most part within the highly porous and permeable sands and gravels which fill and buried stream channels downdip from Philadelphia and Bristol (fig. 2). In addition, the heavy pumpage in parts of Cmaden County adjacent to Philadelphia, coupled with a reduction in ground-water use in the Philadelphia area, has led to a substantial migration of polluted ground waters from beneath Philadelphia towards the east and southeast into adjacent parts of Camden County.

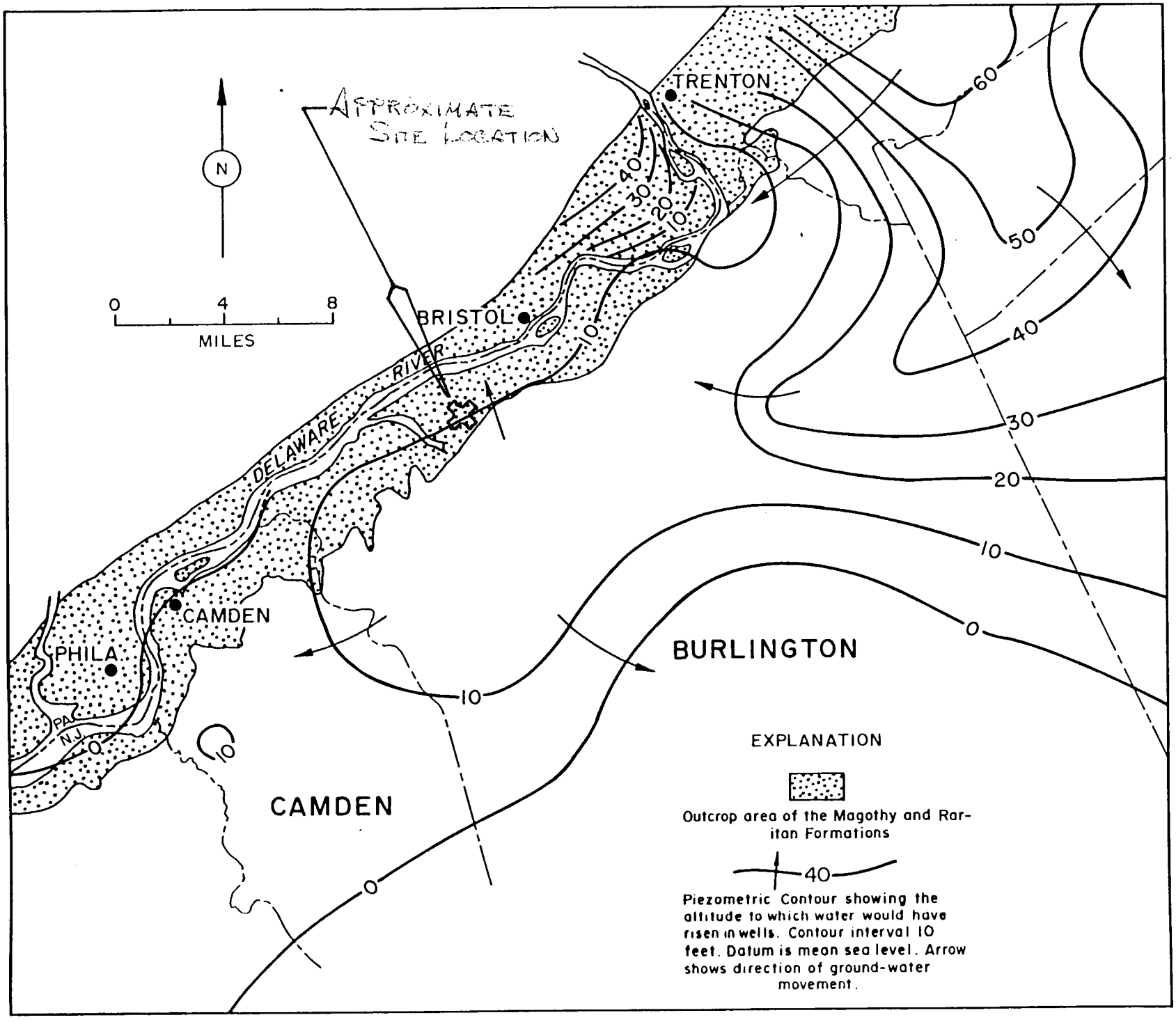

Figure 3.—Map showing probable general configuration of the piezometric surface of the aquifer system around 1900.

Superimposed on these long-term regional trends is short-term local movement in response to seasonal changes in pumpage. Ground-water use in the Coastal Plain of New Jersey is substantially greater in summer months than during the rest of the year. This is primarily a consequence of irrigation practices and the use of ground water for industrial cooling. Marked seasonal changes in water chemistry in parts of northern Camden and Burlington Counties indicate that the steep hydraulic gradients established by heavy local pumpage can induce appreciable ground-water movement within the aquifer system and also vertical leakage through the overlying Woodbury Clay and Merchantville Formations.

The chemical maps in this report (figures 5-9) represent a generalized picture of water quality in the Magothy and Raritan Formations regardless of individual aquifer or depth. This generalization is possible in most of the study area probably because of: (1) a similar history and evolution of ground-water quality in each aquifer regardless of depth; and (2) hydrologic interconnection vertically around beds or lenses of silt and clay separating the various sand and gravel aquifers.

In some areas, water quality changes markedly with depth. This is true in the area of transition between fresh and residual saline water in southern Camden and Burlington Counties (fig. 5). Along this gradational boundary, the saline water is commonly present several miles further updip in the deeper sands than it is in relatively shallow overlying parts of the aquifer system. Elsewhere in the two-county area, marked changes in ground-water quality with depth are probably due principally to differential pumpage of individual sands. In areas downdip from the outcrop of the formations where, before pumpage, the water quality was apparently similar regardless of depth, differential pumpage of poorly inter-connected sands and gravels, coupled with differences in permeability and transmissibility within individual aquifers, has led to moderate differences in water quality with depth. The most pronounced quality differences with depth are found in the outcrop area adjacent to the Delaware River opposite Philadelphia. In this area, shallow wells obtain most of their yield by recharge from the Delaware River. Deep wells, on the other hand, receive highly mineralized ground water that originates in the area of South Philadelphia. Heavy pumpage in adjacent parts of Gloucester, Camden, and Burlington Counties has drawn these highly mineralized ground waters into New Jersey, where they are separated from the river by overlying silt and clay.

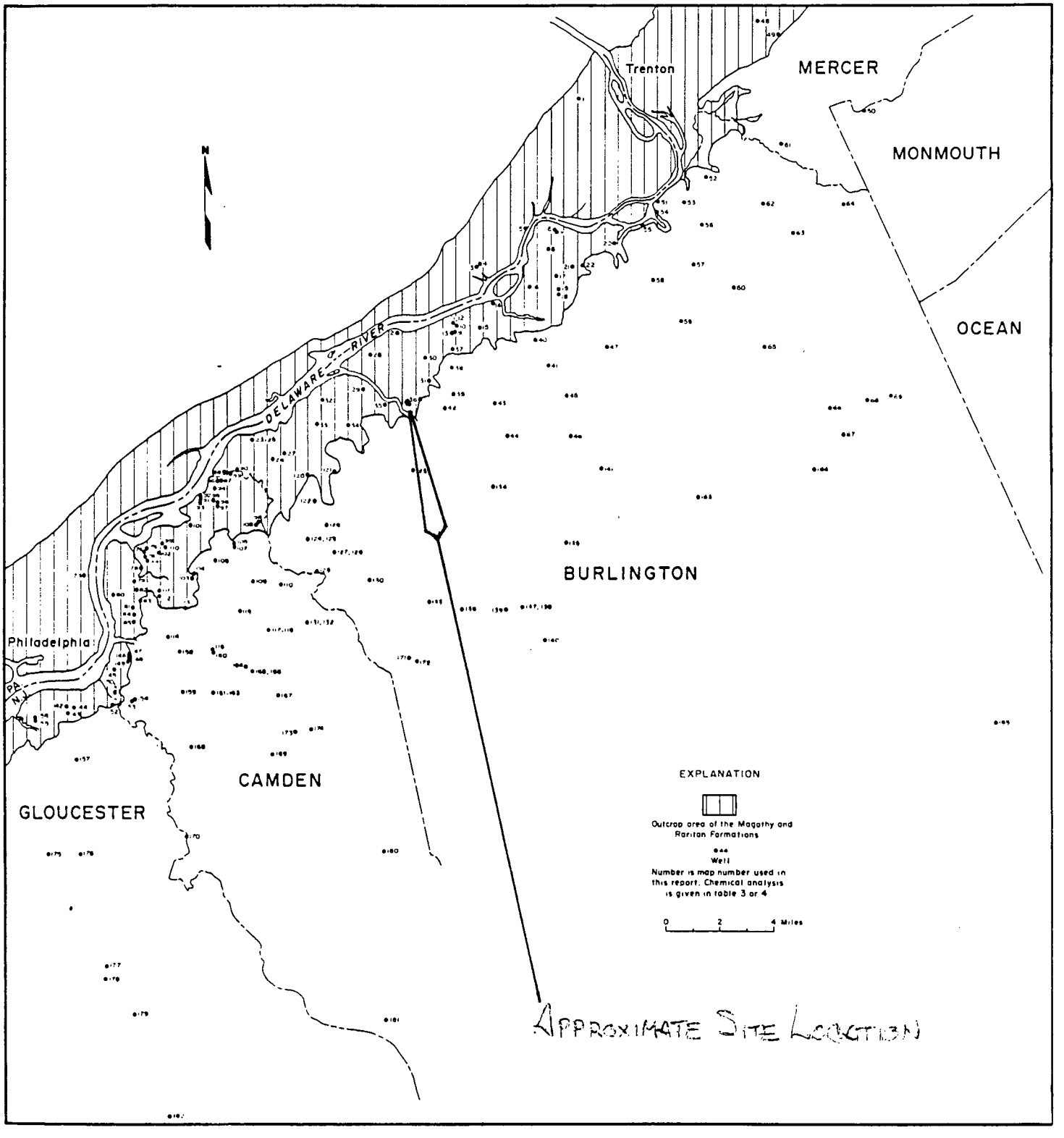

Figure 4.—Map showing location of wells for which chemical analyses are presented in this report.

SUMMARY AND CONCLUSIONS

Most of the ground water used by public and private interests in Coastal Plain New Jersey is pumped from the Magothy and Raritan aquifer system. In northern Camden and Burlington Counties, ground water in the aquifer system is primarily of the calcium bicarbonate type. In this area dissolved solids are generally less than 200 mg/l, except adjacent to the Delaware River in northernmost Camden County where they may be as high as 400 mg/l as a result of pollution. In southern parts of the two-county region, calcium in the ground water has been replaced by sodium through ion-exchange reactions with clay minerals in the sediments, and the ground water is consequently of the sodium-bicarbonate type. Dissolved solids increases towards the south in this area from 200 mg/l to values in excess of 500 mg/l.

The New Jersey State Department of Health (1964) recommends a maximum concentration of 0.3 mg/l of total iron for potable-water supplies. Most wells tapping the Magothy and Raritan Formations in Camden and Burlington Counties, New Jersey, yield ground waters containing iron concentrations in excess of this amount, and therefore treatment for iron removal is necessary. The normal pH range of these ground waters is from 5.0 to 8.0. In this range the iron is present as dissolved ferrous iron and colloidal ferric hydroxide. A total iron analysis thus represents the sum of these two forms. Under reducing conditions in the pH range from 5.0 to 7.0, iron is brought into the ground water in the ferrous state. The colloidal ferric hydroxide is formed by partial oxidation of the ferrous iron already in solution.

Four ground water-quality zones have been defined within the study area based on dissolved-solids content, pH, prevalent chemical character, and ferrous and total iron content. Zone 1 includes ground waters in outcrop areas with dissolved solids less than 100 mg/l, pH values from 5.0 to 6.0, and both ferrous and total iron concentrations less than 0.5 mg/l. Ferrous-iron concentrations in zone 1 are low due to the absence of appreciable contamination, and as a consequence of mixing of the ground water with oxygen-rich surface recharge. The concentration of colloidal ferric hydroxide in this zone is also low consistent with the absence of ferrous iron in the ground water.

Ground waters are polluted or vulnerable to pollution in zone 2. This zone is almost entirely within the outcrop area, and includes parts of Camden and northwest Burlington Counties adjacent to the Delaware River opposite Philadelphia. Dissolved solids in zone 2 range from 100 mg/l to generally less than 400 mg/l, and pH values from 6.0 to 7.0. Total iron and ferrous iron concentrations usually exceed 0.5 mg/l, and are occasionally as high as 5 mg/l and 20 mg/l respectively. The presence of organic-waste materials and associated decay processes in zone 2, and the existence of locally confining conditions facilitates the buildup of dissolved ferrous iron by acid leaching and reduction of ferric iron minerals in the sediments. Zone 2 ground waters are susceptible to mixing with oxygenated surface waters derived from precipitation, or from streams such as the Delaware River flowing across the outcrop area. Much of this oxygen-rich recharge is induced by pumping wells. Ferrous iron concentrations are greatest where such recharge does not reach or mix effectively with the ground water. Substantial concentrations of colloidal ferric hydroxide are built up in zone 2 by repeated leaching and reduction of ferric iron minerals in the sediments, followed by partial oxidation of the ferrous iron.

Zone 3 corresponds largely to confined parts of the aquifer system downdip from zones 1 and 2, where the ground water contains less than 200 mg/l dissolved solids. The range of pH values in zone 3 is from 6.0 to 8.0. Total iron and ferrous-iron concentrations are as high as 16 mg/l and 6.6 mg/l, respectively in shallow ground waters in the northwestern part of Burlington County, a few miles southeast of the

outcrop area. Ferrous iron minerals such as siderite, pyrite, and marcasite in the sediments react with shallow ground waters depleting their oxygen content and causing the buildup in ferrous iron. Colloidal ferric-hydroxide concentrations increase in the same area by partial oxidation of the ferrous iron. The oxidation is accomplished by surface recharge, much of which is probably induced by pumping wells. Locally, the recharge flows downdip from the outcrop area and zone 1, and in some instances through the overlying Woodbury Clay and Merchantville Formations. Both ferrous iron and total iron concentrations decrease progressively in the downdip direction as the pH continues to rise above 6.5. Thus at a pH of 8.0, concentrations of both forms of iron are negligible (less than 0.05 mg/1). The decrease may be due to ion exchange removal of the ferrous iron coupled with reduction of the colloidal ferric hydroxide to ferrous iron, or sorption of the ferrous iron by the colloidal ferric hydroxide followed by coagulation and coprecipitation.

Zone 4, downdip and south of zone 3, is characterized by ground waters with dissolved solids in excess of 200 mg/1, pH values of 8.0 or above, and both total iron and ferrous iron concentrations less than 0.3 mg/1 throughout. The low iron values may be due to the same reaction or reactions responsible for the decrease in ferrous iron and colloidal ferric hydroxide in zone 3.

An appraisal of the water-quality and geohydrologic data suggests that heavy, long-term pumpage in the vicinity of Philadelphia and adjacent parts of New Jersey, has caused substantial migration of ground water within the aquifer system. Pumpage in this area since 1900 has induced the flow of zone 3 ground waters up to seven miles in a northerly direction in northeast Gloucester County and adjacent Camden County. A reduction in pumpage in the Philadelphia area, coupled with increased pumpage in adjacent New Jersey, has brought about an enlargement of zone 2 up to one mile towards the southeast in Camden County during the period from 1958 to 1966.

In Camden County, just downdip from the outcrop area in zone 3, heavy summer pumpage apparently causes induced ground-water recharge by oxygen-rich surface waters. This recharge moves downdip from zone 1 and the outcrop area. Similarly, pumpage by a number of wells further downdip in zone 3 in the vicinity of Haddon, probably induces significant amounts of vertical leakage of surface waters through the overlying Woodbury Clay and Merchantville Formations. Such induced ground-water movement can cause partial oxidation of dissolved ferrous iron and in some instances a significant change in the dissolved-solids and bicarbonate content of the ground water. Adjustment of the ground water within the aquifer system to marked seasonal changes in pumpage may cause local ground water movement of up to one mile with corresponding changes in iron content.

TABLE 2.—Selected wells tapping the Magothy and Raritan Formations for which chemical analyses of ground water are presented in this report.

Map No.	*Owner or name and number*	*Altitude of land surface (feet)*	*Screen setting (feet)*
1	Falls Twp., No. 3	—	—
2	Delaware Valley Water Co., No. 26	12	47-57
3	Bristol Water Dept., Bath Rd., No. 1	16	42-64
4	Bristol Water Dept., Bath Rd., No. 11	10	48-69
5	Bristol Water Dept., Edgely Rd., No. 1	1	13-21
6	Florence Twp. Water Dept., No. 3	25	123-138
7	Florence Twp. Water Dept., No. 1	25	110-125
8	National Gypsum Co., No. 2	22	113-123
9	Tenneco Plastics, Division of Tenneco Manufacturing Co., No. 5	10	102-132
10	Tenneco Plastics, Division of Tenneco Manufacturing Co., No. 7	10	88-118
11	Tenneco Plastics, Division of Tenneco Manufacturing Co., No. 9	8	121-131
12	Tenneco Plastics, Division of Tenneco Manufacturing Co., No. 11	7	111-121
13	Beverly Rd. School	20	—
14	Burlington City Water Dept., No. 3	9	64-85
15	Industrial Valley Industries	15	—
16	Hercules Powder Co., No. 1	22	105-135
17	Columbus Metal Products, Inc.	40	—
18	William A. Donald	42	72-106
19	James Workman	41	170-194
20	Stephen Bogdany	50	55-60
21	Edgar Harris Nursery	35	—
22	Hunt Brothers Circus	40	—
23	Delaware Valley Water Co., No. 1	15	57
24	Delaware Valley Water Co., No. 9	10	49-70
25	Delaware Valley Water Co., No. 11	15	72-98
26	Delaware Valley Water Co., No. 13	65	167-198
27	Riverton Country Club	30	—
28	Ed Price	20	—
29	Delaware Valley Water Co., No. 17	21	98-118
30	Delaware Valley Water Co., No. 22	40	103-123
31	Willingboro Municipal Utility Authority, No. 1	12	147-199
32	Amico Sand & Gravel Co.	15	27-37
33	Hoeganaes Sponge Iron Co.	35	119-134
34	Delaware Valley Water Co., No. 23	36	120-130 148-156 164-170
35	Atlantic Refining Co.	10	146-156
36	Willingboro Municipal Utility Authority, No. 4	28	196-279

TABLE 2.—Selected wells tapping the Magothy and Raritan Formations for which chemical analyses of ground water are presented in this report. (Continued)

Map No.	*Owner or name and number*	*Altitude of land surface (feet)*	*Screen setting (feet)*
37	Howard Johnsons Restaurant	35	—
38	Willingboro Municipal Utility Authority, No. 5	39	230-256
39	Willingboro Municipal Utility Authority, No. 7	19	179-255
40	Masonic Home	79	174-194
41	Russell H. Deacon	62	203-208
42	Willingboro Municipal Utility Authority, No. 3	28	203-238 283-303
43	Eugene D. Buzzeli	45	204-210
44	Inductotherm Corp.	65	411-443
45	Burlington County Country Club	102	269-309
46	Mt. Holly Water Co., No. 5	55	—
47	Interstate Storage and Pipeline Corp.	90	—
48	Hamilton Square Water Co., No. 4	100	187-202
49	Hamilton Square Water Co., No. 10	100	194-243
50	Allentown Water Co., No. 1	80	263-273
51	Stephens Chemical Co., No. 1	9	—
52	Bordentown Water Dept., No. 1	89	355-385
53	National Guard Ordinance & Maintenance Shops	83	—
54	North American Marine Salvage	5	—
55	River Front Rest Motel	60	98-100
56	Sandman Motor Lodge	85	170-180
57	Turnpike Junction Industrial Park, No. 1	60	293-329
58	Ed Kelley	60	—
59	Columbus Water Co., No. 2	73	240-260
60	North Burlington Co. Regional Jr.-Sr. High School	83	290-310
61	Crosswicks Water Co., No. 1	30	269-299
62	Ernest A. Liptack	114	208-214
63	Chesterfield School	92	247-253
64	Francis D. Gray	92	319-326
65	Irving W. Tallman	105	—
66	Fort Dix, No. 2	131	1030-1051
67	Fort Dix, No. 1	138	916-960
68	McGuire Air Force Base, D	112	1012-1075
69	McGuire Air Force Base, C	102	1036-1089
70	Paulsboro Water Dept., No. 4	16	286-313
71	Swedesboro Water Dept., No. 2	30	216-240
72	East Greenwich Twp. Water Dept., No. 1	65	185-205
73	Abbotts Dairies	30	—
74	Camden City Water Dept., No. 14	8	105-145
75	Camden City Water Dept., No. 15	8	116-136

REFERENCE 42

The Complete Handbook of Hazardous Waste Regulation

A Comprehensive, Step-by-Step Guide to the Regulation of Hazardous Wastes Under RCRA, TSCA, and Superfund

Travis Wagner

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model which is a ground-water transport model. The VHS model assumes reasonable worst-case conditions to model the transport of toxicants from disposal sites to nearby receptors. More specifically, the model estimates the ability of an aquifer to dilute the toxicants from a specific volume of waste and predicts toxicant levels at a receptor well. The predicted levels of toxicants are then compared to health-based standards for those compounds in an effort to evaluate the hazard potential. The VHS model is discussed in detail in 50 *FR* 48886 and 51 *FR* 41084.

Characteristics of Hazardous Waste

Section 3001 of RCRA requires EPA to develop and promulgate criteria for identifying characteristics of hazardous waste that are separate from the listed wastes. The primary responsibility for determining whether a waste exhibits a characteristic rests with the generator. Characteristics were selected that were measurable by standard available testing protocols. Thus, EPA established that ignitability, corrosiveness, reactivity, and extraction procedure toxicity (collectively known as ICRE) are the characteristics of a hazardous waste.

Ignitability (D001)

A waste is an ignitable waste if it meets any of the following conditions:

1. A liquid that has a flash point of less than 140°F as determined by either a Pensky-Martens or a Setaflash closed-cup test.

   Liquids are determined by using the paint filter test (PFT), EPA test method No. 9095. A sample of the waste is placed onto a paint filter (400 micron or No. 60 mesh). If any liquid seeps through the filter within 5 minutes, it is considered a liquid.
   There is an exclusion from the ignitable characteristic for aqueous solutions that fail the flash point test and contain less than 24 percent alcohol. Originally, this exclusion was intended for alcoholic beverages such as wine (45 FR 33108). However, the regulatory language is ambiguous regarding the extent of this exclusion. OSWER Directive No. 9443.02 states, "while the Agency's intent was that this exemption apply to potable beverages only, because the term alcohol was used instead of ethanol, all aqueous wastes which are ignitable only because they contain alcohols (here using the term alcohol to mean any chemical containing the hydroxl [-OH] functional group) are excluded from regulation." The directive also defines the term "aqueous solution" by stating, "With respect to what constitutes an aqueous solution, such a solution is one in which water is the primary component. This means that water constitutes at least 50 percent by weight of the sample."

2. Solids that can spontaneously combust through friction, absorption, or loss of moisture. At this time, there is no standardized test to determine this; however, EPA is developing such a test.
3. It is an ignitable compressed gas as defined by the Department of Transportation (DOT) in 49 CFR 173.300.

   An ignitable compressed gas must first meet the definition of a compressed gas, which is "any material or mixture having in the container an absolute pressure exceeding 40 p.s.i. at 70°F or, regardless of the pressure at 70°F, having an absolute pressure exceeding 104 p.s.i. at 130°F; or any liquid flammable mixture having a vapor pressure exceeding 40 p.s.i. absolute at 100°F." A material meeting the definition of a compressed gas is ignitable if it is either a mixture of 13 percent or less (by volume) with air, forms a flammable mixture, or the flammable range with air is wider than 12 percent regardless of the lower limit; the flame projects more than 18 inches beyond the ignition source with valve opened fully, or, the flame flashes back and burns at the valve with any degree of valve opening; or there is any significant propagation of flame away from the ignition source.
4. It is an oxidizer as defined by DOT in 49 CFR 173.151.

   An oxidizer is a substance that yields oxygen readily when involved in a fire, thereby accelerating and intensifying the combustion of organic material. There is no prescribed test for determining this classification. DOT does give examples of oxidizers such as chlorate, permanganate, inorganic peroxide, or a nitrate.

Corrosivity (D002)

A waste is a corrosive waste if it meets any of the following criteria:

1. It is aqueous and has a pH of 2 or less or 12.5 or more
2. It is a liquid and corrodes steel at a rate of 6.35 mm or more per year as determined by the National Association of Corrosion Engineers (NACE).
   Wastes in a solid phase, as determined by the paint filter test, are not considered corrosive wastes (45 FR 33108).

Reactivity (D003)

The reactivity characteristic requires a determination based more on judgement than a standardized quantitative determination except for explosives (class A or B) and toxic (sulfide and cyanide) gas generation.

If a material can cause the generation of harmful vapors or fumes that can present a danger to human health or the environment, reacts violently with water, or has the ability to explode without detonation, it is considered a reactive hazardous waste.

For sulfide and cyanide gas generation, using the prescribed test method, if free (not total) cyanide is generated at 250 mg/kg of waste or more, or free sulfide is generated at 500 mg/kg of waste, it is considered a reactive hazardous waste.

Toxicity (D004–17)

EPA has determined that one of the most significant dangers posed by hazardous waste stems from the leaching of toxic constituents of land-disposed wastes into ground water. Consequently, the toxicity characteristic is designed to identify wastes that are likely to leach hazardous constituents into ground water under improper management conditions. EPA established a testing procedure that extracts constituents from a solid waste in a manner which simulates the leaching action that can occur in a landfill. EPA has made the assumption that industrial waste would be co-disposed of with nonindustrial waste in an actively decomposing municipal landfill situated over an aquifer. It is important to note that for the purposes of determining whether a waste is hazardous using the toxicity test, it is irrelevant that a person does not, in fact, co-dispose of their hazardous waste in a municipal landfill or in any type of landfill.

The toxicity test, also known as the extraction procedure toxicity test (EP Tox), requires a representative sample of the waste to be subjected to an acidic solution (e.g., acetic acid at a pH of 5.0). After 24 hours, the resulting extract is then tested to determine if it contains any of the contaminants identified in the National Primary Drinking Water Standards promulgated under the Safe Drinking Water Act as depicted in table 1. If the waste is a liquid, it does not need to be subjected to the acidic solution. The liquid will be considered the extract and analyzed for the contaminants accordingly.

Extraction Procedure for Oily Wastes (EPOW) If a waste being analyzed with the EP toxicity test contains one percent or more of grease or oil, the waste is subject to the EPOW, EPA test method No. 1330. The EPOW method requires the sample to be separated into liquid and solid components by filtration. The solid phase is treated with specified solvents. The

TABLE 1 EP toxicity levels.

Hazardous Waste No.	Contaminant	Maximum concentration (mg/l)
D004	Arsenic	5.00
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium*	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin	0.02
D013	Lindane	0.4
D014	Methoxychlor	10.0
D015	Toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5-TP Silvex	1.0

In the EP toxicity test, the term chromium means total chromium.

resultant residue from this treatment and the original liquid component are analyzed for the contaminants in table 1. If any of the contaminants exceed the listed maximum concentration levels, the waste is considered EP toxic for the exceeded component.

Toxicity Characteristic Leaching Procedure (TCLP)—The TCLP will ultimately take the place of the EP toxicity test. The proposed TCLP will add 38 organic constituents to the current list for a total of 52. The proposed test procedure, EPA test method No. 1310, has revised the extraction procedure for easier and more consistent results. The TCLP was finalized on November 7, 1986 (51 *FR* 40572), solely for the purpose of the land disposal ban (see chapter 6). The test is expected to become final in the winter of 1988 for the purpose of hazardous waste determination.

Special Categories of Waste

The following sections outline the requirements for special categories of hazardous waste. These categories are found in different sections of the regulations but have been grouped here for easier reference.

Mixture Rule

A mixture of any amount of hazardous waste and a solid (nonhazardous) waste is considered a hazardous waste [Section 261.3(a)(2)(iii)]. (There is

Appendix II

EPA-Listed Hazardous Wastes

EPA waste number	Hazardous waste	Hazard code[1]
Hazardous Waste From Nonspecific Sources		
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, all spent solvent mixture/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, o-dichlorobenzene, and trichlorofluoromethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003	The following spent nonhalogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, methanol; all spent solvent mixtures/blends containing, before use, one or more of the above nonhalogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)
F004	The following spent nonhalogenated solvents: cresols and cresylic acid, nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by	(T)

[1]Hazard codes are C = corrosive, H = acutely hazardous, I = ignitable, R = reactive, and T = toxic.

EPA waste number	Hazardous waste	Hazard code[1]
	volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F005; and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.	
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above nonhalogenated solvents or those listed in F001, F002, and F004; and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3)zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum	(T)
F007	Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions)	(R,T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations for which cyanides are used in the process (except for precious metals electroplating plating bath sludges)	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations for which cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions)	(R,T)
F010	Quenching bath sludges from oil baths from metal heat treating operations for which cyanides are used in the process (except for precious metals heat-treating quenching bath sludges)	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning)	(R,T)
F012	Quenching wastewater treatment sludges from metal heat treating operations for which cyanides are used in the process	(T)

EPA waste number	Hazardous waste	Hazard code[1]
	(except for precious metals heat treating quenching wastewater treatment sludges)	
F024	Wastes including but not limited to distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes (Does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 261.32)	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives (Does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols (Does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions	(H)
F027	Discarded unused formulations containing tri-, tetra-, or	(H)

EPA waste number	Hazardous waste	Hazard code[1]
	pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols (Does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component	
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA hazardous wastes numbered F020, F021, F022, F023, F026, and F027	(T)

Hazardous Wastes From Specific Sources

Wood Preservatives

K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)

Inorganic Pigments

K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)

EPA waste number	Hazardous waste	Hazard code[1]

Organic Chemicals

K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R,T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R,T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K093	Distillation light ends from the production of phthalic anhydride from o-xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from o-xylene	(T)

EPA waste number	Hazardous waste	Hazard code[1]
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tails from the production of methyl ethyl pyridines	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production	(R,T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K083	Distillation bottoms from aniline production	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)

EPA waste number	Hazardous waste	Hazard code[1]
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide via bromination of ethene	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
	Inorganic Chemicals	
K071	Brine purification muds from the mercury cell process in chlorine production for which separately prepurified brine is not used	(T)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)
	Pesticides	
K031	By-product salts generated in the production of MSMA and cacodylic acid	(T)
K032	Wastewater treatment sludge from the production of chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)

EPA waste number	Hazardous waste	Hazard code[1]
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)
K039	Filter cake from the distillation of diethylphosphorodithioic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)
	Explosives	
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds	(R)
K047	Pink/red water from TNT operations	(R)
	Petroleum Refining	
K048	Dissolved air floatation (DAF) float from the petroleum refining industry	(T)
K049	Slop oil emulsion solids from the petroleum refining industry	(T)

EPA waste number	Hazardous waste	Hazard code[1]
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)
	Iron and Steel	
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within iron and steel industry SIC codes 331 and 332.	(C,T)
	Secondary Lead	
K069	Emission control dust/sludge from secondary lead smelting	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)
	Veterinary Pharmaceuticals	
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
	Ink Formulation	
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment	(T)

EPA waste number	Hazardous waste	Hazard code[1]
	used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead	
	Coking	
K060	Ammonia still lime sludge from coking operations	(T)
K087	Decanter tank tar sludge from coking operations	(T)

Commercial Chemical Products

The following P code wastes are considered acutely hazardous.

P023 Acetaldehyde, chloro-
P002 Acetamide, N-(aminothioxomethyl)-
P057 Acetamide, 2-fluoro-
P058 Acetic acid, fluoro-, sodium salt
P066 Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001 3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentrations greater than 0.3%
P002 1-Acetyl-2-thiourea
P003 Acrolein
P070 Aldicarb
P004 Aldrin
P005 Allyl alcohol
P006 Aluminum phosphide
P007 5-(Aminomethyl)-3-isoxazolol
P008 4-aAminopyridine
P009 Ammonium picrate (R)
P119 Ammonium vanadate
P010 Arsenic acid
P012 Arsenic(III) oxide
P011 Arsenic (V) oxide
P011 Arsenic pentoxide
P012 Arsenic trioxide
P038 Arsine, diethyl
P054 Aziridine

P013 Barium cyanide
P024 Benzenamine, 4-chloro-
P077 Benzenamine, 4-nitro-
P028 Benzene, (chloromethyl)-
P042 1,2-Benzenediol, 4-[(1-hydroxy-2-(methyl-amino)ethyl)]-
P014 Benzenethiol
P028 Benzyl chloride
P015 Beryllium dust
P016 Bis(chloromethyl) ether
P017 Bromoacetone
P018 Brucine

P021 Calcium cyanide
P123 Camphene, octachloro-
P103 Carbamimidoselenoic acid
P022 Carbon bisulfide
P022 Carbon disulfide

P095 Carbonyl chloride
P033 Chlorine cyanide
P023 Chloroacetaldehyde
P024 p-Chloroaniline
P026 1-(o-Chlorophenyl)thiourea
P027 3-Chloropropionitrile
P029 Copper cyanides
P030 Cyanides (soluble cyanide salts), not elsewhere specified
P031 Cyanogen
P033 Cyanogen chloride

P036 Dichlorophenylarsine
P037 Dieldrin
P038 Diethylarsine
P039 O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate
P041 Diethyl-p-nitrophenyl phosphate
P040 O,O-Diethyl O-pyrazinyl phosphorothioate
P043 Diisopropyl fluorophosphate
P044 Dimethoate
P045 3,3-Dimethyl-1-(methylthio)-2-butanone,O-[(methylamino)carbonyl] oxime
P071 O,O-Dimethyl O-p-nitrophenyl phosphorothioate
P082 Dimethylnitrosamine
P046 alpha,alpha-Dimethylphenethylamine
P047 4,6-Dinitro-o-cresol and salts
P034 4,6-Dinitro-o-cyclohexylphenol
P048 2,4-Dinitrophenol
P020 Dinoseb
P085 Diphosphoramide, octamethyl
P039 Disulfoton
P049 2,4-Dithiobiuret
P109 Dithiopyrophosphoric acid, tetraethyl ester

P050 Endosulfan
P088 Endothall
P051 Endrin
P042 Epinephrine
P046 Ethanamine, 1,1-dimethyl-2-phenyl-
P084 Ethenamine, N-methyl-N-nitroso-
P101 Ethyl cyanide
P054 Ethylenimine

P097 Famphur
P056 Fluorine
P057 Fluoroacetamide
P058 Fluoroacetic acid, sodium salt
P065 Fulminic acid, mercury(II) salt

P059 Heptachlor
P051 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene
P037 1,2,3,4,10,10,-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, exo-1,4:5,8-dimethanonaphthalene
P060 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene
P004 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo-, dimethanonaphthalene
P060 Hexachlorohexahydro-exo, exo-dimethanonaphthalene P062 Hexaethyl tetraphosphate
P116 Hydrazinecarbothioamide
P068 Hydrazine, methyl-
P063 Hydrocyanic acid
P063 Hydrogen cyanide
P096 Hydrogen phosphide

P064 Isocyanic acid, methyl ester
P007 3(2H)-isoxazolone, 5-(aminomethyl)-

P092 Mercury, (acetato-O)phenyl-
P065 Mercury fulminate (R,T)
P016 Methane, oxybis(chloro)-
P112 Methane, tetranitro- (R)
P118 Methanethiol, trichloro-
P059 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066 Methomyl
P067 2-Methylaziridine
P068 Methyl hydrazine
P064 Methyl isocyanate
P069 2-Methyllactonitrile
P071 Methyl parathion

P072 alpha-Naphthylthiourea
P073 Nickel carbonyl
P074 Nickle cyanide
P074 Nickle(II) cyanide
P073 Nickle tetracarbonyl
P075 Nicotine and salts
P076 Nitric oxide
P077 p-Nitroaniline
P078 Nitrogen dioxide
P076 Nitrogen(II) oxide
P078 Nitrogen(IV) oxide
P081 Nitroglycerine (R)
P082 N-Nitrosodimethylamine

P084 N-Nitrosomethylvinylamine
P050 5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro, cyclic sulfite

P085 Octamethylpyrophosphoramide
P087 Osmium oxide
P087 Osmium tetroxide
P088 7-Oxabicyclo-[2.2.1] heptane-2,3-dicarboxylic acid

P089 Parathion
P034 Phenol, 2-cyclohexyl-4,6-dinitro-
P048 Phenol, 2,4-dinitro-
P047 Phenol, 2,4-dinitro-6-methyl-
P020 Phenol, 2,4-dinitro-6-(1-methylpropyl)-
P009 Phenol, 2,4,6-trinitro-, ammonium salt (R)
P036 Phenyl dichloroarsine
P092 Phenylmercuric acetate
P093 N-Phenylthiourea
P094 Phorate
P095 Phosgene
P096 Phosphine
P041 Phosphoric acid, diethyl p-nitrophenyl ester
P044 Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxyethyl] ester
P043 Phosphorofluoric acid, bis(1-methylethyl)ester
P094 Phosphorothioic acid, O,O-diethyl S-(ethylthio) methyl ester
P089 Phosphorothioic acid, O,O-diethyl O(p-nitrophenyl) ester
P040 Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097 Phosphorothioic acid, O,O-dimethyl O-[p(dimethylamino)-sulfonyl) phenyl] ester
P110 Plumbane, tetraethyl-
P098 Potassium cyanide
P099 Potassium silver cyanide
P070 Propanal, 2-methyl-2-(methylthio)-O-[(methylamino) carbonyl]oxime
P101 Propanenitrile
P027 Propanenitrile, 3-chloro
P069 Propanenitrile, 2-hydroxy-2-methyl-
P081 1,2,3-Propanetriol, trinitrate- (R)
P017 2-Propanone, 1-bromo-
P102 Propargyl alcohol
P003 2-propenal
P005 2-propen-1-ol
P067 1,2-Propylenimine
P102 2-Propyn-1-ol
P008 4-Pyridinamine
P075 Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts
P111 Pyrophosphoric acid, tetraethyl ester

P103 Selenourea
P104 Silver cyanide
P105 Sodium azide
P106 Sodium cyanide
P107 Strontium sulfide
P108 Strychnidin-10-one, and salts
P018 Strychnidin-10-one, 2,3-dimethoxy-
P108 Strychnine and salts
P115 Sulfuric acid, thallium(I) salts

P109 Tetraethyldithiopyrophosphate
P110 Tetraethyl lead
P111 Tetraethylpyrophosphate
P112 Tetranitromethane (R)
P062 Tetraphosphoric acid, hexaethyl ester
P113 Thallic oxide
P113 Thallium(III) oxide
P114 Thallium (I) selenite
P115 Thallium (I) sulfate
P045 Thiofanax
P049 Thiomidodicarbonic diamide
P014 Thiophenol
P116 Thiosemicarbazide
P026 Thiourea, (2-chlorophenyl)-
P072 Thiourea, 1-naphthalenyl-
P093 Thiourea, phenyl
P123 Toxaphene
P118 Trichloromethanethiol

P119 Vanadic acid, ammonium salt
P120 Vanadium pentoxide
P120 Vanadium(V) oxide

P001 Warfarin, when present at concentrations greater than 0.3%

P121 Zinc cyanide
P122 Zinc phosphide, when present at concentrations greater than 10%

The following U code wastes are nonacutely hazardous.

U001 Acetaldehyde (I)
U034 Acetaldehyde, trichloro-
U187 Acetamide, N-(4-ethoxyphenyl)-
U005 Acetamide, N-9H-fluoren-2-yl-
U112 Acetic acid, ethyl ester (I)
U144 Acetic acid, lead salt
U214 Acetic acid, thallium(I) salt

U002 Acetone (I)
U003 Acetonitrile (I,T)
U248 3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentations of 0.3% or less
U004 Acetophenone
U005 2-Acetylaminofluorene
U006 Acetyl chloride (C,R,T,)
U007 Acrylamide
U008 Acrylic acid (I)
U009 Acrylonitrile
U150 Alanine, 3-[p-bis(2-chloroethyl)amino] phenyl-, L-
U328 2-Amino-1-methylbenzene
U353 4-Amino-1-methylbenzene
U011 Amitrole
U012 Aniline (I,T)
U014 Auramine
U015 Azaserine
U010 Azirino (2',3',3',4)pyrrolo (1,2-a)indole-4,7-dione, 6-amino-8-[((amino-carbonyl)oxy)methyl)-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-

U157 Benz(j)aceanthrylene, 1,2-dihydro-3-methyl-
U016 Benz(c)acridine
U016 3,4-Benzacridine
U017 Benzal chloride
U018 Benz(a)anthracene
U018 1,2-Benzanthracene
U094 1,2-Benzanthracene, 7,12-dimethyl-
U012 Benzenamine (I,T)
U014 Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl)-
U049 Benzenamine, 4-chloro-2-methyl-
U093 Benzenamine, N,N'-dimethyl-4-phenylazo-
U158 Benzenamine, 4,4'-methylenebis(2-chloro)-
U222 Benzenamine, 2-methyl-,hydrochloride
U181 Benzenamine, 2-methyl-,5-nitro
U019 Benzene (I,T)
U038 Benzeneacetic acid, 4-chloro-alpha-(4-chloro-phenyl)-alpha-hydroxy, ethyl ester
U030 Benzene, 1-bromo-4-phenoxy-
U037 Benzene, chloro
U190 1,2-Benzenedicarboxylic acid anhydride
U028 1,2-Benzenedicarboxylic acid [bis(2-ethyl-hexyl)] ester
U069 1,2-Benzenedicarboxylic acid, dibutyl ester
U088 1,2-Benzenedicarboxylic acid, diethyl ester
U102 1,2-Benzenedicarboxylic acid, dimethyl ester
U107 1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070 Benzene, 1,2-dichloro-

U071 Benzene, 1,3-dichloro-
U072 Benzene, 1,4-dichloro-
U017 Benzene, (dichloromethyl)-
U223 Benzene, 1,3-diisocyanatomethyl- (R,T)
U239 Benzene, dimethyl- (I,T)
U201 1,3-Benzenediol
U127 Benzene, hexachloro-
U056 Benzene, hexahydro- (I)
U188 Benzene, hydroxy-
U220 Benzene, methyl-
U105 Benzene, 1-methyl-1,2,4-dinitro-
U106 Benzene, 1-methyl-2,6-dinitro-
U203 Benzene, 1,2-methylenedioxy-4-allyl-
U141 Benzene, 1,2-methylenedioxy-4-propenyl-
U090 Benzene, 1,2-methylenedioxy-4-propyl-
U055 Benzene, (1-methylethyl) (I)
U169 Benzene, nitro- (I,T)
U183 Benzene, pentachloro-
U185 Benzene, pentachloro-nitro-
U020 Benzenesulfonic acid chloride (C,R)
U020 Benzenesulfonyl chloride (C,R)
U207 Benzene, 1,2,4,5-tetrachloro-
U023 Benzene, (trichloromethyl)- (C,R,T)
U234 Benzene, 1,3,5-trinitro (R,T)
U021 Benzidine
U202 1,2-Benzisothiazolin-3-one,1,1-dioxide
U120 Benzo(j,k)fluorene
U022 Benzo(a)pyrene
U022 3,4-Benzopyrene
U197 p-Benzoquinone
U023 Benzotrichloride (C,R,T)
U050 1,2-Benzphenanthrene
U085 2,2'-Bioxirane (I,T)
U021 (1,1'-Biphenyl)-4,4'-diamine
U073 (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091 (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095 (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl- U024 Bis(2-chloroethoxy) methane
U027 Bis(2-chloroisopropyl) ether
U244 Bis(dimethylthiocarbamoyl) disulfide
U028 Bis(2-ethyhexyl)phthalate (DEHP)
U246 Bromine cyanide
U225 Bromoform
U030 4-Bromophenyl phenyl ether
U128 1,3-Butadiene, 1,1,2,3,4,4-hexachloro
U172 1-Butanamine, N-butyl-N-nitroso-
U035 Butanoic acid, 4-[Bis(2-chloroethyl)amino]benzene-

U031 1-Butanol (I)
U159 2-Butanone (I,T)
U160 2-Butanone peroxide (R,T)
U053 2-Butenal
U074 2-Butene, 1,4-dichloro- (I,T)
U031 n-Butyl alcohol (I)

U136 Cacodylic acid
U032 Calcium chromate
U238 Carbamic acid, ethyl ester
U178 Carbamic acid, methylnitroso-, ethyl ester
U176 Carbamide, N-ethyl-N-nitroso-
U177 Carbamide, N-methyl-N-nitroso-
U219 Carbamide, thio-
U097 Carbamoyl chloride, dimethyl-
U215 Carbonic acid, dithallium (I)salt
U156 Carbonochloridic acid, methyl ester (I,T)
U033 Carbon oxyfluoride (R,T)
U211 Carbon tetrachloride
U033 Carbonyl fluoride (R,T)
U034 Chloral
U035 Chlorambucil
U036 Chlordane, technical
U026 Chlornaphazine
U037 Chlorobenzene
U039 4-Chloro-m-cresol
U041 1-Chloro-2,3-epoxypropane
U042 2-Chloroethyl vinyl ether
U044 Chloroform
U046 Chloromethyl methyl ether
U047 beta-Chloronaphthalene
U048 o-Chlorophenol
U049 4-Chloro-o-toluidine, hydrochloride
U032 Chromic acid, calcium salt
U050 Chrysene
U051 Creosote
U052 Cresols
U052 Cresylic acid
U053 Crotonaldehyde
U055 Cumene (I)
U246 Cyanogen bromide
U197 1,4-Cyclohexadienedione
U056 Cyclohexane (I)
U057 Cyclohexanone (I)
U130 1,3-Cyclopentadiene, 1,2,3,4,5,5-hexa-chloro- U058 Cyclophosphamide

U240 2,4-D, salts and esters

U059 Daunomycin
U060 DDD
U061 DDT
U142 Decachloro octahydro-1,3,4-metheno-2H-cyclobuta(c,d) pentalen-2-one
U062 Diallate
U133 Diamine (R,T)
U221 Diaminotoluene
U063 Dibenz(a,h)anthracene
U063 1,2:5,6-Dibenzanthracene
U064 1,2:7,8-Dibenzopyrene
U064 Dibenz(a,i)pyrene
U066 1,2-Dibromo-3-chloropropane
U069 Dibutyl phthalate
U062 S-(2,3-Dichloroallyl)diisopropylthiocarbamate
U070 o-Dichlorobenzene
U071 m-Dichlorobenzene
U072 p-Dichlorobenzene
U073 3,3'-Dichlorobenzidine
U074 1,4-Dichloro-2-butene (I,T)
U075 Dichlorodifluoromethane
U192 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide
U060 Dichloro diphenyl dichloroethane
U061 Dichloro diphenyl trichloroethane
U078 1,1-Dichloroethylene
U079 1,2-Dichloroethylene
U025 Dichloroethyl ether
U081 2,4-Dichlorophenol
U082 2,6-Dichlorophenol
U240 2,4-Dichlorophenoxyacetic acid, salts and esters
U083 1,2-Dichloropropane
U084 1,3-Dichloropropene
U085 1,2:3,4-Diepoxybutane (I,T)
U108 1,4-Diethylene dioxide
U086 N,N-Diethylhydrazine
U087 O,O-Diethyl-S-methyl-dithiophosphate
U088 Diethyl phthalate
U089 Diethylstilbestrol
U148 1,2-Dihydro-3,6-pyradizinedione
U090 Dihydrosafrole
U091 3,3'-Dimethoxybenzidine
U092 Dimethylamine (I)
U093 Dimethylaminoazobenzene
U094 7,12-Dimethylbenz(a)anthracene
U095 3,3'-Dimethylbenzidine
U096 alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097 Dimethylcarbamoyl chloride
U098 1,1-Dimethylhydrazine

U099 1,2-Dimethylhydrazine
U101 2,4-Dimethylphenol
U102 Dimethyl phthalate
U103 Dimethyl sulfate
U105 2,4-Dinitrotoluene
U106 2,6-Dinitrotoluene
U107 Di-n-octyl phthalate
U108 1,4-Dioxane
U109 1,2-Dipheylhydrazine
U110 Dipropylamine (I)
U111 Di-N-propylnitrosamine

U001 Ethanal (I)
U174 Ethanamine, N-ethyl-N-nitroso-
U067 Ethane, 1,2-dibromo-
U076 Ethane, 1,1-dichloro-
U077 Ethane, 1,2-dichloro-
U114 1,2-Ethanediylbiscarbamodithioic acid
U131 Ethane, 1,1,1,2,2,2-hexachloro-
U024 Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro)-
U003 Ethanenitrile (I,T)
U117 Ethane, 1,1'-oxybis- (I)
U025 Ethane, 1,1'-oxybis(2-chloro)-
U184 Ethane pentachloro-
U208 Ethane, 1,1,1,2-tetrachloro-
U209 Ethane, 1,1,2,2-tetrachloro-
U218 Ethanethioamide
U247 Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)
U227 Ethane, 1,2,1-trichloro-
U043 Ethene, chloro-
U042 Ethene, 2-chloroethoxy-
U078 Ethene, 1,1-dichloro-
U079 Ethene, trans-1,2-dicloro-
U210 Ethene, 1,1,2,2-tetrachloro-
U173 Ethanol, 2,2'-(nitrosoimino)bis-
U004 Ethanone, 1-phenyl-
U006 Ethanoyl chloride (C,R,T)
U112 Ethyl acetate (I)
U113 Ethyl acrylate (I)
U238 Ethyl carbamate (urethan)
U038 Ethyl 4,4'-dichlorobenzilate
U359 Ethylene glycol monoethyl ether
U114 Ethylenebis(dithiocarbamic acid)
U067 Ethylene dibromide
U077 Ethylene dichloride
U115 Ethylene oxide (I,T)
U116 Ethylene thiourea

U117 Ethyl ether
U076 Ethylidene dichloride
U118 Ethylmethacrylate
U119 Ethyl methanesulfonate

U139 Ferric dextran
U120 Fluoranthene
U122 Formaldehyde
U123 Formic acid (C,T)
U124 Furan (I)
U125 2-Furancarboxaldehyde (I)
U147 2,5-Furandione
U213 Furan, tetrahydro- (I)
U125 Furfural (I)
U124 Furfuran (I)

U206 D-Glucopyranose,2-deoxy-2(3-methyl-3-nitro-soureido)-
U126 Glycidylaldehyde
U163 Guanidine, N-nitroso-N-methyl-N'nitro-

U127 Hexachlorobenzene
U128 Hexachlorobutadiene
U129 Hexachlorocyclohexane(gamma isomer)
U130 Hexachlorocyclopentadiene
U131 Hexachloroethane
U132 Hexachlorophene
U243 Hexachloropropene
U133 Hydrazine (R,T)
U086 Hydrazine, 1,2-diethyl-
U098 Hydrazine, 1,1-dimethyl-
U099 Hydrazine, 1,2-dimethyl-
U109 Hydrazine, 1,2-diphenyl-
U134 Hydrofluoric acid (C,T)
U134 Hydrogen fluoride (C,T)
U135 Hydrogen sulfide
U096 Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U136 Hydroxydimethylarsine oxide

U116 2-Imidazolidinethione
U137 Indeno(1,2,3-cd)pyrene
U139 Iron dextran
U140 Isobutyl alcohol (I,T)
U141 Isosafrole

U142 Kepone

U143 Lasiocarpine
U144 Lead acetate
U145 Lead phosphate
U146 Lead subacetate
U129 Lindane

U147 Maleic anhydride
U148 Maleic hydrazide
U149 Malononitrile
U150 Melphalan
U151 Mercury
U152 Methacrylonitrile (I,T)
U092 Methanamine, N-methyl- (I)
U029 Methane, bromo-
U045 Methane, chloro- I,T)
U046 Methane, chloromethoxy-
U068 Methane, dibromo-
U080 Methane, dichloro-
U075 Methane, dichlorodifluoro-
U138 Methane, iodo-
U119 Methanesulfonic acid, ethyl ester
U211 Methane, tetrachloro-
U121 Methane, trichlorofluoro-
U153 Methanethiol (I,T)
U225 Methane, tribromo-
U044 Methane, trichloro-
U121 Methane, trichlorofluoro-
U123 Methanoic acid (C,T)
U036 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a- tetrahydro-
U154 Methanol (I)
U155 Methapyrilene
U247 Methoxychlor
U154 Methyl alcohol (I)
U029 Methyl bromide
U186 1-Methylbutadiene (I)
U045 Methyl chloride (I,T)
U156 Methyl chlorocarbonate (I,T)
U226 Methyl chloroform
U157 3-Methylcholanthrene
U158 4,4'-Methylenebis(2-chloroaniline)
U132 2,2'-Methylenebis(3,4,6-trichlorophenol)
U068 Methylene bromide
U080 Methylene chloride
U122 Methylene oxide
U159 Methyl ethyl ketone (I,T)
U160 Methyl ethyl ketone peroxide (R,T)
U138 Methyl iodide

U161 Methyl isobutyl ketone (I)
U162 Methyl methacrylate (I,T)
U163 N-Methyl-N'-nitro-N-nitrosoguanidine
U161 4-Methyl-2-pentanone (I)
U164 Methylthiouracil
U010 Mitomycin C

U059 5,12-Naphthacenedione,(8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy-, alpha-L-lyxo-hexopyranosyl)oxyl)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methyoxy-
U165 Naphthalene
U047 Naphthalene,2-chloro-
U166 1,4-Naphthalenedione
U236 2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl-(1,1'bi-phenyl)-4,4'diyl)]-bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt
U166 1,4,Naphthaquinone
U167 1-Naphthylamine
U168 2-Naphthylamine
U167 alpha-Naphthylamine
U168 beta-Naphthylamine
U026 2-Naphthylamine, N,N'-bis(2-chloromethyl)-
U169 Nitrobenzene (I,T)
U170 p-Nitrophenol
U171 2-Nitropropane (I)
U172 N-Nitrosodi-n-butylamine
U173 N-Nitrosodiethanolamine
U174 N-Nitrosodiethylamine
U111 N-Nitroso-N-propylamine
U176 N-Nitroso-N-ethylurea
U177 N-Nitroso-N-methylurea
U178 N-Nitroso-N-methylurethane
U179 N-Nitrosopiperidine
U180 N-Nitrosopyrrolidine
U181 5-Nitro-o-toluidine
U193 1,2-Oxathiolane,2,2-dioxide
U058 2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino] tetrahydro-, oxide 2-

U115 Oxirane (I,T)
U041 Oxirane, 2-(chloromethyl)-

U182 Paraldehyde
U183 Pentachlorobenzene
U184 Pentachloroethane
U185 Pentachloronitrobenzene
U186 1,3-Pentadiene (I)
U187 Phenacetin

U188 Phenol
U048 Phenol, 2-chloro-
U039 Phenol, 4-chloro-3-methyl-
U081 Phenol, 2,4-dichloro-
U082 Phenol, 2,6-dichloro-
U101 Phenol, 2,4-dimethyl-
U170 Phenol, 4-nitro-
U137 1,10-(1,2-phenylene)pyrene
U145 Phosphoric acid, Lead salt
U087 Phosphorodithioic acid O,O-diethyl-,S-methylester
U189 Phosphorous sulfide (R)
U190 Phthalic anhydride
U191 2-Picoline
U192 Pronamide
U194 1-Propanamine (I,T)
U110 1-Propanamine, N-propyl- (I)
U066 Propane, 1,2-dibromo-3-chloro-
U149 Propanedinitrile
U171 Propane, 2-nitro- (I)
U027 Propane, 2,2'-oxybis(2-chloro)-
U193 1,3-Propane sultone
U235 1-Propanol, 2,3-dibromo-,phosphate(3:1)
U126 1-Propanol, 2,3-epoxy-
U140 1-Propanol, 2-methyl- (I,T)
U002 2-Propanone (I)
U007 2-Propenamide
U084 Propene, 1,3-dichloro-
U243 1-Propene, 1,1,2,3,3,3-hexachloro-
U009 2-Propenenitrile
U152 2-Propenenitrile, 2-methyl- (I,T)
U008 2-Propenoic acid (I)
U113 2-Propenoic acid, ethyl ester (I)
U118 2-Propenoic acid, 2-methyl-, ethyl ester
U162 2-Propenoic acid, 2-methyl, methyl ester (I,T)
U194 n-Propylamine (I,T)
U083 Propylene dichloride
U196 Pyridine
U155 Pyridine, 2-[(2-(dimethylamino)-2-thenylamino)]
U179 Pyridine, hexahydro-N-nitroso-
U191 Pyridine, 2-methyl-
U164 4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180 Pyrrole, tetrahydro-N-nitroso-

U200 Reserpine
U201 Resorcinol

U202 Saccharin and salts

U203 Safrole
U204 Selenious acid
U204 Selenium dioxide
U205 Selenium disulfide (R,T)
U015 L-Serine, diazoacetate (ester)
U089 4,4'-Stilbenediol,alpha,alpha'-diethyl-
U206 Streptozotocin
U135 Sulfur hydride
U103 Sulfuric acid, dimethyl ester
U189 Sulfur phosphide (R)
U205 Sulfur selenide (R,T)

U207 1,2,4,5-Tetrachlorobenzene
U208 1,1,1,2-Tetrachloroethane
U209 1,1,2,2-Tetrachloroethane
U210 Tetrachloroethylene
U213 Tetrahydrofuran (I)
U214 Thallium(I) acetate
U215 Thallium(I) carbonate
U216 Thallium(I) chloride
U217 Thallium(I) nitrate
U218 Thioacetamide
U153 Thiomethanol (I,T)
U219 Thiourea
U244 Thiram
U220 Toluene
U221 Toluenediamine
U223 Toluenediisocyanate (R,T)
U328 o-Toluidine
U222 o-Toluidine hydrochloride
U353 *p*-Toluidine
U011 1H-1,2,4-Triazol-3-amine
U226 1,1,1-Trichloroethane
U227 1,1,2-Trichloroethane
U228 Trichloroethene
U228 Trichloroethylene
U121 Trichloromonofluoromethane
U234 sym-Trinitrobenzene (R,T)
U182 1,3,5-Trioxane, 2,4,5-trimethyl-
U235 Tris(2,3-dibromopropyl)phosphate
U236 Trypan blue

U237 Uracil, 5[bis(2-chloromethyl)amino]-
U237 Uracil mustard

U043 Vinyl chloride

U248 Warfarin, when present at concentrationsof 0.3% or less

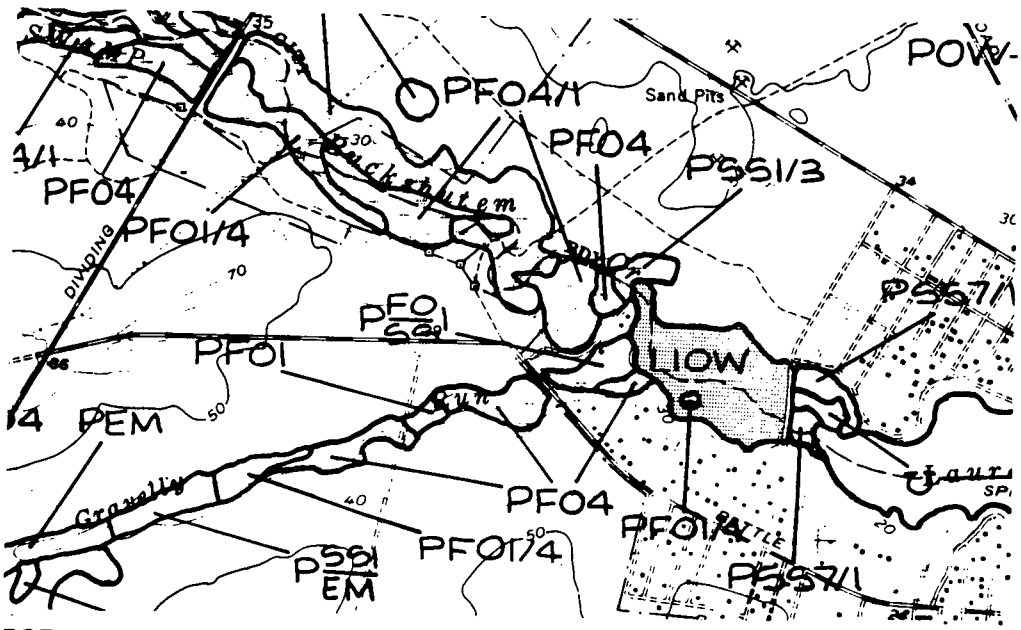
U239 Xylene (I)

U200 Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5 trimethoxy-benzoyl)oxy]-methyl ester

U249 Zinc phosphide, when present at concentrations of 10% or less

REFERENCE 43

ATLAS
OF
NATIONAL WETLANDS INVENTORY MAPS
FOR
NEW JERSEY



PORTION OF DIVIDING CREEK MAP

SCALE: 1:24,000

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Region Five
Habitat Resources
One Gateway Center, Suite 700
Newton Corner, Massachusetts

1984

HOW TO USE THIS ATLAS

The Atlas contains reductions of all 1:24,000 National Wetlands Inventory maps. Maps appear in alphabetical order. Map names can be located on the index map (Figure 2). Each map shows the configuration, location and type of wetlands and deepwater habitats found within a given area.

WETLAND LEGEND

Wetland data are displayed on maps by a series of letters and numbers (alpha-numerics). Mixing of classes and subclasses are represented by a diagonal line. The more common symbols are shown below; less common symbols have been omitted for simplicity. For identifying these latter symbols, the reader should refer to an actual NWI map legend.

Examples of Alpha-numerics:

E2EMN6	=	Estuarine (E), Intertidal(2), Emergent Wetland(EM), Regularly Flooded(N), Oligohaline(6)
E2FL	=	Estuarine(E), Intertidal(2), Flat(FL)
PF01	=	Palustrine(P), Forested Wetland(FO), Broad-leaved Deciduous(1)
PEM/OW	=	Palustrine(P), Emergent Wetland/Open Water(EM/OW)
PFO/SS1	=	Palustrine(P), Forested Wetland/Scrub-Shrub Wetland(FO/SS), Broad-leaved Deceduous(1)

SYMBOLOGY

Systems and Subsystems:

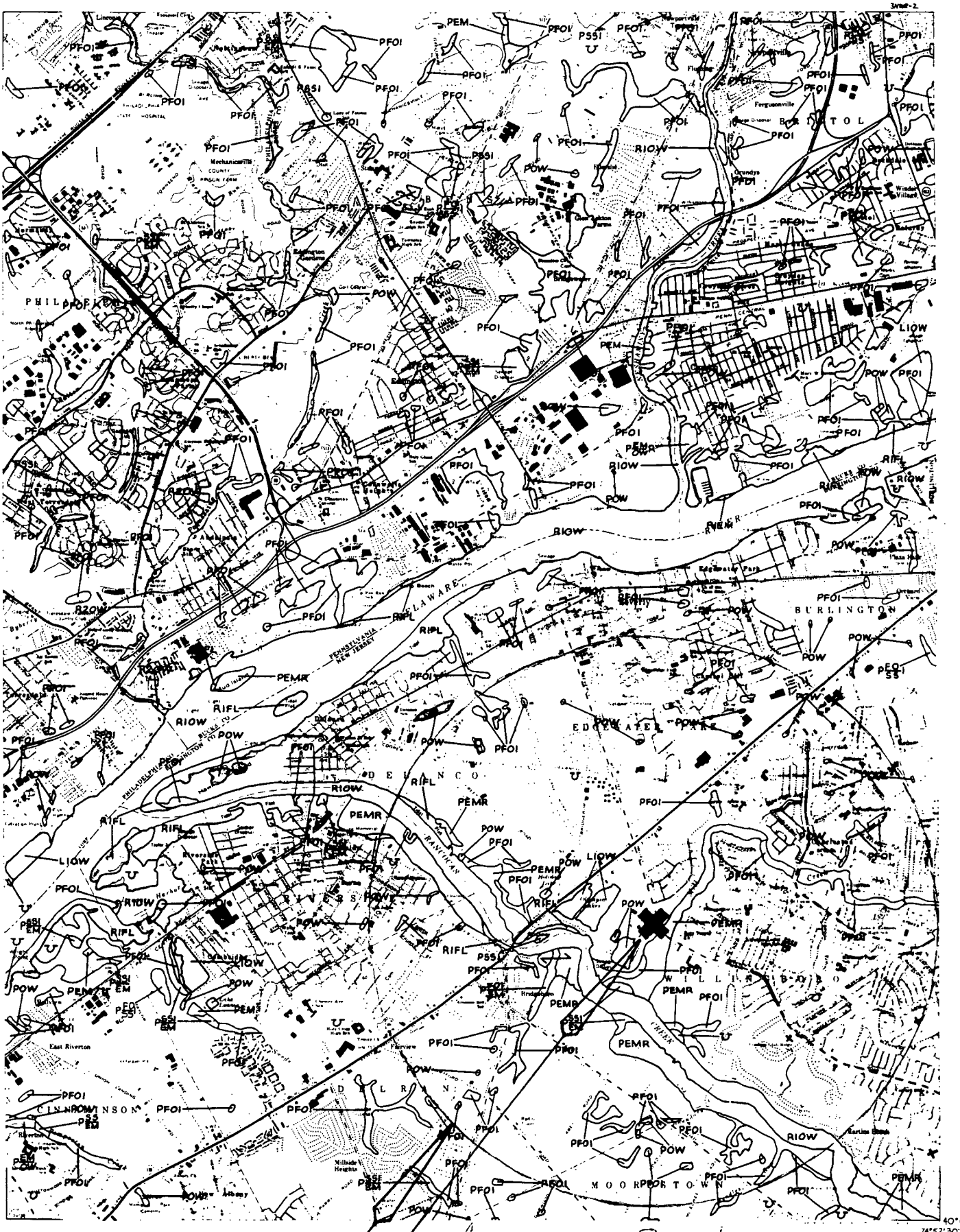
M 1	=	Marine Subtidal	R 3	=	Riverine Upper Perennial
M 2	=	Marine Intertidal	R 4	=	Riverine Intermittent
E 1	=	Estuarine Subtidal	L 1	=	Lacustrine Limnetic
E 2	=	Estuarine Intertidal	L 2	=	Lacustrine Littoral
R 1	=	Riverine Tidal	P	=	Palustrine
R 2	=	Riverine Lower Perennial	U	=	Upland

Classes (subclasses and modifers designated where appropriate):

AB	=	Aquatic Bed
BB	=	Beach/Bar
EM	=	Emergent Wetland
EMN6	=	Emergent Wetland, Regularly Flooded, Oligohaline
EMP6	=	Emergent Wetland, Irregularly Flooded, Oligohaline
EMR	=	Emergent Wetland, Seasonally Flooded-Tidal
FL	=	Flat
FO1	=	Forested Wetland, Broad-leaved Deciduous
FO2	=	Forested Wetland, Needle-leaved Deciduous
FO4	=	Forested Wetland, Needle-leaved Evergreen
OW	=	Open Water/Unknown Bottom
SS1	=	Scrub=Shrub Wetland, Broad-leaved Deciduous
SS3	=	Scrub-Shrub Wetland, Broad-leaved Evergreen
SS4	=	Scrub-Shrub Wetland, Needle-leaved Evergreen
SS5	=	Scrub-Shrub Wetland, Dead
SS7	=	Scrub-Shrub Wetland, Evergreen

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NEWARK SE
TRENTON

40°00'
74°52'30"

BEVERLY PA-NJ

APPROXIMATE SITE LOCATION

APPROXIMATE 2-MILE RADIUS

REFERENCE 44

DELAWARE RIVER
WATER QUALITY ASSESSMENT

1986-87 305(b) Report

Delaware River Basin Commission
West Trenton, New Jersey

March 1988

the most important spawning grounds of the American Shad, an anadromous fish. Shad populations were drastically reduced in the past due to pollution in the Delaware Estuary that prevented passage of migrating shad in the spring and fall months. A resurgence of shad has been noted as the Delaware Estuary became cleaner and in recent years spawning has been documented throughout the non-tidal section of river. Other fish migrating to the non-tidal river for spawning are herring, the American eel and others. Small commercial fisheries are centered around the shad and eel migrations and sport fishing is of economic significance. A recent study of shad fishing, for example, placed a $3.2 million annual value on this fishery alone.

For water quality management purposes, the non-tidal river has been designated Zone 1. This zone is divided into 5 sub-zones which reflect minor changes in the water quality standards adopted by the Delaware River Basin Commission and the States of New Jersey, New York and Pennsylvania.

DELAWARE ESTUARY (ZONES 2, 3, 4 AND 5) - NEW JERSEY, PENNSYLVANIA AND DELAWARE

The Delaware River becomes tidal at Trenton, New Jersey, the head of tide. The upper 85 miles of tidally-influenced river is called the Delaware Estuary although it is a freshwater river in its upper half and, thus not entirely a true estuary in an oceanographic sense. The Delaware Estuary flows by Trenton, New Jersey; Philadelphia, Pennsylvania; Camden, New Jersey; and Wilmington, Delaware. This area is one of the world's greatest concentrations of heavy industry and the nation's second largest complex of oil refining and petrochemical plants.

Manufacturing, although declining in importance, is still a major factor affecting water quality in the estuary. Major industries include paper-making, chemicals, oil-refining, shipbuilding, food processing, and others. The estuary's ports form the largest freshwater port in the world, the largest U.S. port in terms of international tonnage and the second largest U.S. port in total tonnage. A navigation channel running from the Atlantic Ocean to Trenton is maintained by dredging. The depth of the channel varies from 40 feet in most reaches to 25 feet deep near Trenton, with a channel width of 300 to 400 feet.

The estuary region has a population exceeding 5.7 million people - a population greater than in 40 states. Zones 3 and 4 flow through the fifth largest U.S. urban area, the Philadelphia-Camden metropolitan area. The majority of residents in the estuary region use the Delaware as their source of water - either directly through intakes on the river or indirectly via the recharge of ground water aquifers. For water quality management purposes, the estuary has been divided into four zones:

Zone 2, the uppermost of these zones, begins at the head of tide at Trenton, N.J. (R.M. 133) and extends down river twenty-five miles to a point midway between the mouth of Pennypack Creek, a small tributary that runs through the northeast portion of the City of Philadelphia near the Tacony-Palmyra Bridge. Although tidal, Zone 2 contains freshwater. In the Torresdale section of Philadelphia, the city withdraws over 200 million gallons of water per day for domestic and industrial use. Smaller water supply intakes and many industrial intakes are also located in this zone.

Zone 2 is characterized by diversity. In the upstream portion of the zone are Trenton, New Jersey (pop. 92,000) and Morrisville, Pennsylvania (pop. 10,000). Major land uses include various industries and urban/suburban development. The largest tributary is the Delaware River itself at the head of tide, having an average annual flow of 11,671 cfs and a 6780 square mile drainage area. Freshwater flow into the tidal Delaware River, however, varies seasonally and annually causing (along with other factors) changes in water quality.

Below Trenton, Zone 2 is characterized by small towns such as Bordentown (pop. 4,500), Fieldsboro (pop. 600), Florence (pop. 9,000), and Burlington (pop. 10,000) in New Jersey and Bristol, (pop. 11,000) in Pennsylvania. Also present are freshwater wetlands, and industrial plants, highway complexes and increasing suburbanization of the remaining open space. On the Pennsylvania side of Zone 2 is the U.S. Steel Fairless Works, a large integrated steel-making facility. In the lower reach of Zone 2 urbanization increases dramatically, with the last three miles of Zone 2 within the city limits of Philadelphia. Large suburban developments include Levittown in Bucks County, Pennsylvania and Willingboro in Burlington County, New Jersey.

Major tributaries include Crosswicks Creek, Assiscunk Creek and Rancocas Creek in New Jersey and Neshaminy Creek, Poquessing Creek and Pennypack Creek in Pennsylvania. Water quality in each is highly influenced by wastewater discharges and urban-suburban development. Tributaries are tidal in their lowest reaches and, thus, affected by inflow of Delaware River water.

Zone 2 is used extensively for recreation. Power boating, sailing and fishing are the predominant recreational uses. River sight-seeing boats operate out of Philadelphia; at least two dozen marinas, boat yards and public boat ramps are operated; and parks have been developed adjacent to the river. Swimming occurs in undesignated areas.

Fishing in Zone 2 is for a variety of fish species, both migratory and resident. Studies in 1984 identified 43 species of fish in the zone. Fish species using Zone 2 waters for spawning, nursery or passage include largemouth bass, walleye, alewife, herring, shad, yellow and white perch, striped bass, catfish, smallmouth bass and others. The short-nosed sturgeon, a federally-designated endangered species, is found in Zone 2 in relatively large numbers. In 1987 shad spawning was documented in Zone 2, a recent response to the cleanup of the estuary.

Zones 3 and 4 begin in Northeast Philadelphia and extend downstream to the Delaware-Pennsylvania-New Jersey state line at Marcus Hook. The thirty mile reach has historically been one of the most polluted rivers in the United States (see Chapter 2). In years past, massive amounts of untreated wastes entered the river in Zones 3 and 4 causing widespread septic conditions and noxious gases emissions. Due to the cleanup of these wastes, major improvements in water quality and fisheries have been documented in recent years, making the Delaware Estuary one of the premier water pollution control success stories in the U.S.

Zones 3 and 4 flow through the Philadelphia-Camden metropolitan area and adjacent urban and suburban areas. In Philadelphia, Camden, Gloucester City

REFERENCE 45

02-8906-08-F4
REV. No. 0

LAND USE OVERLAY
SHEET 27

LEGEND

URBAN AND BUILT-UP LAND

11 RESIDENTIAL
12 COMMERCIAL & SERVICES
13 INDUSTRIAL
14 TRANSPORTATION, COMMUNICATION & UTILITIES
15 INDUSTRIAL & COMMERCIAL COMPLEXES
16 MIXED URBAN & BUILT-UP LAND
17 OTHER URBAN OR BUILT-UP LAND

AGRICULTURAL LAND

21 CROPLAND & PASTURE
22 ORCHARDS & HORTICULTURAL AREAS

FOREST LAND

41 DECIDUOUS
42 EVERGREEN
43 MIXED

WATER

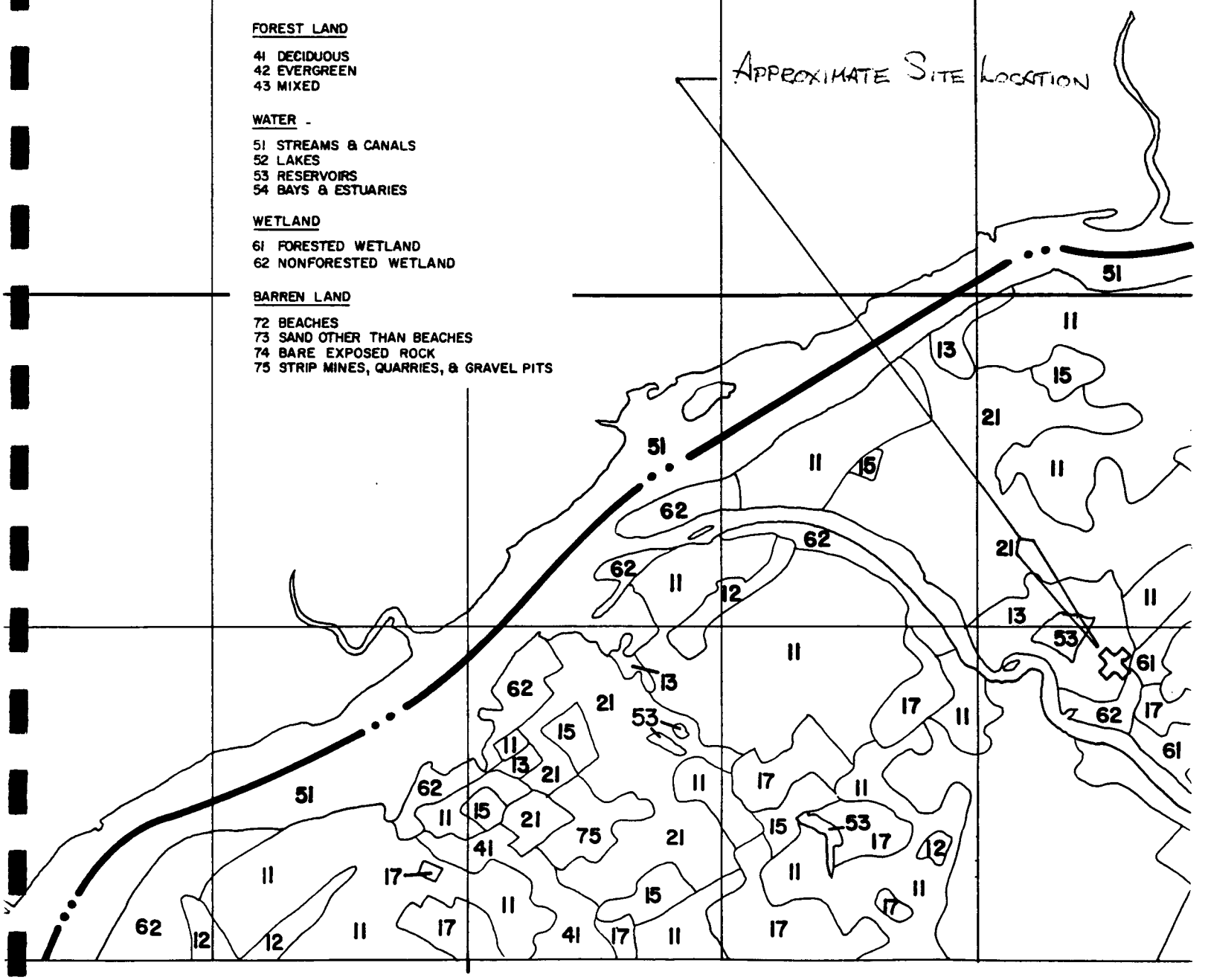
51 STREAMS & CANALS
52 LAKES
53 RESERVOIRS
54 BAYS & ESTUARIES

WETLAND

61 FORESTED WETLAND
62 NONFORESTED WETLAND

BARREN LAND

72 BEACHES
73 SAND OTHER THAN BEACHES
74 BARE EXPOSED ROCK
75 STRIP MINES, QUARRIES, & GRAVEL PITS



Scale: 1:63,360

1 ½ 0 1 2 3 Kilometers

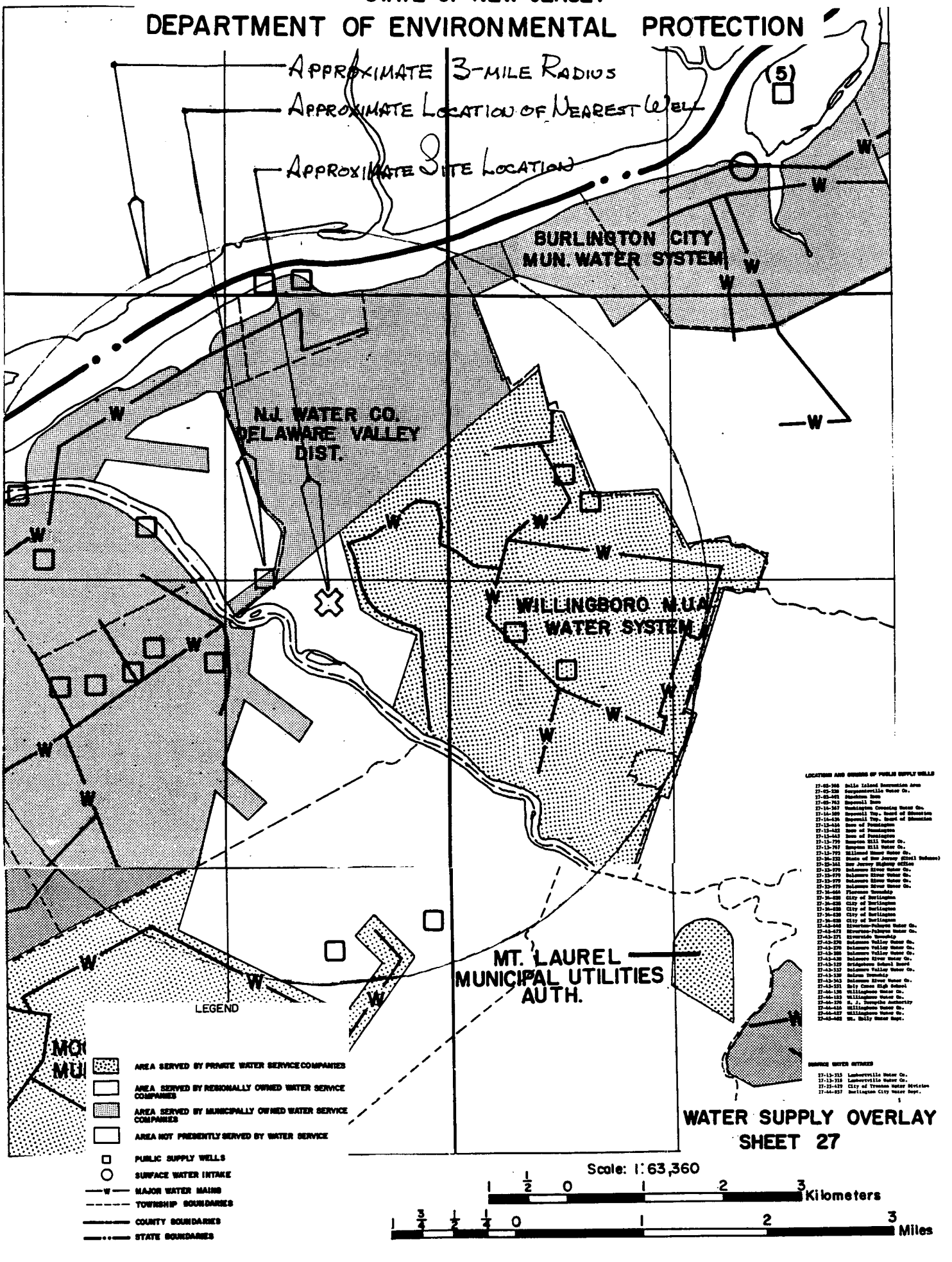
1 ¾ ½ ¼ 0 1 2 3 Miles

SUPERVISED BY GEORGE J. HALASI-KUN, TOPOGRAPHIC ENGINEER

REFERENCE 46

02-8906-08-PA
REV. No. 0

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION



WATER SUPPLY OVERLAY
SHEET 27

REFERENCE 47

N.J. COASTAL PLAIN SOLE SOURCE

ERP No. D-MMS-A02224-00, Rating EO2, 1989 Central and Western Planning Areas Gulf of Mexico Outer Continental Shelf (OCS) Oil and Gas Sales No. 118 and 122, Lease Offerings offshore the coast of Alabama, Mississippi, Louisiana and Texas.

Summary

EPA expressed objections to the proposed action of unrestricted leasing in the Central and Western Gulf. EPA also expressed concern over the lack of any proposed mitigation for possible impacts to deep-water benthic communities. EPA also expressed concern that ozone modeling of the effect of offshore emission on onshore air quality be conducted.

ERP No. D-NPS-K61095-NV, Rating LO, Death Valley National Monument, General Management Plan, Implementation, Inyo and San Bernardino Counties, CA and Nye and Esmeralda Counties, NV.

Summary

EPA expressed a lack of objections to the proposed management plan but noted that future multiple use activities (mining, campgrounds) will require an assessment of air quality, surface water and ground water impacts.

Final EISs

ERP No. F-COE-H30000-IA, Des Moines Recreational River and Greenbelt Area, Development, Operation and Maintenance, Des Moines River, Webster, Hamilton, Boone, Dallas, Polk, and Warren Counties, IA.

Summary

EPA has no objections to this project with the understanding that each unit of the project will be evaluated separately for NEPA compliance at a later date.

ERP No. F-FHW-F40290-WI, WI-TH-83 Improvement, I-94 to Cardinal Lane/WI-TH-16, Funding and 404 Permit, Waukesha County, WI.

Summary

EPA has no objection to this project, long as a minimum of 0.8 acre of additional wetlands are created.

(Note: The above summary should have appeared in the 6-10-88 Federal Register Notice.)

ERP No. F-USN-C85041-NJ, Colts Neck, Naval Weapons Station Earle Family Housing Development, Construction, Mammouth County, NJ.

Summary

EPA's concern regarding the location of the mitigation site has been addressed in this document. In addition, information within the document clarified our questions with respect to the delineation of wetlands, and the point of discharge of the wastewater treatment plant. Accordingly, EPA has no unresolved concerns regarding the implementation of the project as proposed.

ERP No. F-USN-D84005-VA, Empress II Operation, Electromagnetic Pulse, Radiation Environment Simulator for Ships, Chesapeake Bay (West of Bloodsworth Island) and Atlantic Ocean (Virginia Capes Operating Area), off the Coast of VA.

Summary

EPA expressed a preference for the proposed site and requested a thorough monitoring program for the project.

(Note: The above summary should have appeared in the 6-17-88 Federal Register Notice.)

Dated: June 21, 1988.

William D. Dickerson,

Deputy Director, Office of Federal Activities.

[FR Doc. 88-14353 Filed 6-23-88; 8:45 am]

BILLING CODE 6560-50-M

[ER-FRL-3404-3]

Environmental Impact Statements; Availability; Weekly Receipts

Responsible Agency: Office of Federal Activities, General Information (202) 382-5073 or (202) 382-5075. Availability of Environmental Impact Statements, Filed June 13, 1988 Through June 17, 1988. Pursuant to 40 CFR 1506.9.

EIS No. 880189, Draft, BLM, AZ, San Pedro River Riparian Resource Management Plan, Implementation, San Simon Resource Area, Safford District, Cochise County, AZ, Due: September 21, 1988, Contact: Jerrold Coolidge (602) 428-4040.

EIS No. 880190, Draft, DOE, ND, Charlie Creek-Belfield 345 kV Transmission Line Project, Construction, Operation and Maintenance, Implementation, Billings, Stark, McKenzie and Dunn Counties, ND, Due: August 8, 1988, Contact: James D. Davis (406) 657-5525.

EIS No. 880191, Draft, SCS, MD, East Yellow Creek Watershed, Soil Erosion and Flood Damage Reduction Plan, Funding and Implementation, Sullivan, Linn and Chariton Counties, MO, Due: August 8, 1988, Contact: Russell C. Mills (314) 875-5214.

EIS No. 880192, Draft, NPS, AK, Denali National Park and Preserve, Wilderness Recommendations, Designation or Nondesignation, AK, Due: August 29, 1988, Contact: Linda Nebel (907) 257-2854.

EIS No. 880193, Draft, AFS, WY, Little Bighorn River, Wild and Scenic River Study, National Wild and Scenic Rivers System, Designation, Bighorn National Forest, Sheridan County, WY, Due: September 22, 1988, Contact: Arthur Bauer (307) 672-6751.

EIS No. 880194, Draft, USN, PA, U.S. Navy Girard Point Site, Sale to the Philadelphia Muncipal Authority for the Establishment of a Steam Generation Facility that Produces Steam for Purchase by the U.S. Navy, City of Philadelphia, PA, Due: August 12, 1988, Contact: Kenneth Petrone (215) 897-6431.

EIS No. 880195, Final, FHW, PA, PA-23/New Holland Avenue/LR-1124, Section 801 Relocation, US 30 to Walnut and Chestnut Streets, Funding and 404 Permit, Manheim, East Lampeter and Lancaster Townships and the City of Lancaster, Lancaster County, PA, Due: July 25, 1988, Contact: Philibert A. Quellet (717) 782-4422.

EIS No. 880196, Draft, FRC, REG, Regulations Governing Independent Power Producers (RM88-4-000) and Regulations Governing Bidding Programs (RM88-5-000), Implementation, Due: August 15, 1988, Contact: Gilda Rodriquez (202) 357-9155.

EIS No. 880197, Draft, SCS, MS, Whites Creek, Watershed Protection and Flood Prevention Plan, Funding, Possible 404 Permit and Implementation, Webster County, MS, Due: August 8, 1988, Contact: L. Peter Heard (601) 965-5205.

EIS No. 880198, Draft, EPA, FL, CF Mining Complex II, Open Pit Phosphate Mine and Beneficiation Plan, Construction and Operation, NPDES and 404 Permits, Hardee County, FL, Due: August 8, 1988, Contact: Maryann Gerber (404) 347-3776.

Dated: June 21, 1988.

William D. Dickerson,

Deputy Director, Office of Federal Activities.

[FR Doc. 88-14352 Filed 6-23-88; 8:45 am]

BILLING CODE 6560-50-M

[FRL-3340-F]

[redacted]

AGENCY: U.S. Environmental Protection Agency.

ACTION: Notice.

SUMMARY: Notice is hereby given that, pursuant to section 1424(e) of the Safe Drinking Water Act, the Administrator of the U.S. Environmental Protection Agency (EPA) has determined that the

New Jersey Coastal Plain Aquifer System, underlying the New Jersey Coastal Plan Area, is the sole or principal source of drinking water for the Counties of Monmouth, Burlington, Ocean, Camden, Gloucester, Atlantic, Salem, Cumberland, Cape May and portions of Mercer and Middlesex Counties, New Jersey, and that the acquifer, if contaminated, would create a significant hazard to public health. As a result of this action EPA will review Federally-assisted projects (projects which receive Federal financial assistance through a grant, contract, loan guarantee, or otherwise) proposed for construction in a project review area which includes the New Jersey Coastal Plain Area and a portion of the aquifer streamflow source zone. The streamflow source zone includes upstream portions of the Delaware River Basin in the States of Delaware, New Jersey, New York and Pennsylvania. Federally-assisted projects will be reviewed to ensure that they are designed and constructed so that they do not create a significant hazard to public health. Projects outside of the project review area but within the streamflow source zone will be reviewed if they require an Environmental Impact Statement (EIS).

DATES: This determination shall be promulgated for purposes of judicial review at 1:00 P.M. Eastern Time on July 7, 1988. This determination shall become effective on August 8, 1988.

ADDRESSES: The data on which these findings are based, detailed maps of the New Jersey Coastal Plain Area and the project review area, a compilation of public comments and the Agency's response to those comments, are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Water Management Division, 26 Federal Plaza, New York, New York 10278. In addition, copies of a map showing the designated area and a responsiveness summary to public comment are available upon request.

FOR FURTHER INFORMATION CONTACT: John Malleck, Chief, Office of Ground Water Management, Water Management Division, 26 Federal Plaza, New York, New York 10278 (212) 264-5635.

SUPPLEMENTARY INFORMATION: Notice is hereby given that pursuant to section 1424(e) of the Safe Drinking Water Act (42 U.S.C., 300f, 300h-3(e), Pub. L. 93-523), the Administrator of the U.S. Environmental Protection Agency (EPA) has determined that the New Jersey Coastal Plain Aquifer System, underlying the New Jersey Coastal Plain Area, is the sole or principal source of drinking water for the Counties of Monmouth, Burlington, Ocean, Camden, Gloucester, Atlantic, Salem, Cumberland, Cape May and portions of Mercer and Middlesex Counties, New Jersey. Pursuant to section 1424(e), Federally-assisted projects proposed for construction in the New Jersey Coastal Plain Area and the project review area within portions of its streamflow source zone will be subject to EPA review. The streamflow source zone for the New Jersey Coastal Plain Aquifer System includes upstream portions of the Delaware River Basin in the States of Delaware (New Castle County), New Jersey (Mercer-part, Hunterdon-part, Sussex-part, and Warren Counties), New York (Delaware, Orange, Sullivan and Ulster Counties), and Pennsylvania (Berks-part, Bucks, Carbon-part, Chester-part, Delaware, Lackawanna-part, Lancaster, Lehigh, Luzerne-part, Monroe Montgomery, Northampton, Philadelphia, Pike, Schuykill and Wayne Counties). The project review area includes that portion of the streamflow source zone which lies within two miles of the Delaware River in the States of New Jersey (in Mercer, Hunterdon, Sussex and Warren Counties), Delaware (in New Castle County), Pennsylvania (in Delaware, Philadelphia, Bucks, Monroe, Northampton, Pike and Wayne Counties) and New York (in Delaware, Orange and Sullivan Counties).

I. Background

Section 1424(e) of the Safe Drinking Water Act states: (e) If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to a plan or design the project to assure that it will not so contaminate the aquifer.

On December 4, 1978 the Environmental Defense Fund, Inc. and the Sierra Club New Jersey Chapter petitioned the EPA Administrator to determine that the Counties of Monmouth, Burlington, Ocean, Camden, Gloucester, Atlantic, Salem, Cumberland, Cape May and portions of Mercer and Middlesex Counties, New Jersey, constitute an area whose aquifer system is "the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health." On March 21, 1979, EPA published the petition in the Federal Register. Public hearings on the petition request were held May 1, 15 and 17, 1979 in Lindenwold, Trenton, Freehold and Pomona, New Jersey. A May 19, 1983 Federal Register notice announced the availability of additional technical information and the extension of public comment period to July 15, 1983.

II. Basis for Determination

Among the factors to be considered by the Administrator in connection with the designation of an area under section 1424(e) are:

(1) Whether the aquifer is the area's sole or principal source of drinking water and (2) whether contamination of the aquifer would create a significant hazard to public health.

On the basis of information available to this Agency, the Administrator has made the following findings, which are the basis for the determination noted above:

(1) The New Jersey Coastal Plain Area depends upon the underlying Coastal Plain Aquifer System for seventy-five (75) per cent or more of its drinking water to serve 3 million people.

(2) Data show that the formations of the New Jersey Coastal Plain Area are hydrologically interconnected such that they respond collectively as an interrelated aquifer system.

(3) If the aquifer system were to become contaminated, exposure of the persons served by the system would constitute a significant hazard to public health.

(4) Alternative supplies capable of providing fifty (50) per cent or more of the drinking water to the designated area are not available at similar economic costs.

The New Jersey Coastal Plain Aquifer System is highly susceptible to contamination through its recharge zone from a number of sources, including but not limited to, chemical spills, leachate from landfills, stormwater runoff, highway de-icing, faulty septic systems, wastewater treatment systems and waste disposal lagoons. The aquifer is also susceptible to contamination to a lesser degree from the same sources, through its streamflow source zone. Since ground-water contamination can be difficult or impossible to reverse

completely and since the acquifer in this area is solely or principally relied upon for drinking water purposes by the population of the New Jersey Coastal Plain Area, contamination of the aquifer could pose a significant hazard to public health.

III. Description of the New Jersey Coastal Plain Area Aquifer System, Its Recharge Zone and Its Streamflow Source Zone

The New Jersey Coastal Plain Aquifer System consists of a wedge-shaped mass of unconsolidated sediments composed of clay, silt, sand and gravel. The wedge thins to a feathered edge along the Fall Line and attains a thickness of over 6,000 feet at the tip of Cape May County, New Jersey.

These sediments range in age from Cretaceous to Holocene and can be classified as continental, coastal or marine deposits. There are five major aquifers within the Coastal Plain Aquifer System. They are the Potomac-Raritan-Magothy Aquifer System, Englishtown Aquifer, Wenonah-Mount Laurel Aquifer, Kirkwood Aquifer and the Cohansey Aquifer. Natural recharge to the New Jersey Coastal Plain Aquifer System occurs primarily through direct precipitation on the outcrop area of the geologic formations. A smaller component of natural recharge to the deeper layers of the system occurs by vertical leakage from the upper layers. This accounts for a small percentage of the total amount of recharge; however, over a large area and a long period of time the amount of water transmitted can be significant.

The New Jersey Coastal Plain Aquifer discharges to the surface through streams, springs and evapotranspiration. Many streams ultimately flow into bays or directly into the ocean. Development of the ground-water reservoir as a water supply source constitutes another discharge component which today accounts for a significant portion of discharge from the overall system. In certain areas (e.g. along the Delaware River) heavy pumping has caused a reversal in the normal discharge from the aquifer (Raritan-Magothy) such that the surface stream (Delaware River) now recharges the aquifer. This phenomenon implies that, in addition to the New Jersey Coastal Plain Area, the Delaware River Basin within Delaware, New Jersey, Pennsylvania and New York must be regarded as a streamflow source zone (an upstream headwaters area which drains into a recharge zone), which flows into the Coastal Plain Area.

IV. Information Utilized in Determination

The information utilized in this determination includes the petition, written and verbal comments submitted by the public, and various technical publications. The above data are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Region II, Water Management Division, 26 Federal Plaza, New York, New York 10278.

V. Project Review

When the EPA Administrator publishes his determination for a sole or principal drinking water source, no commitment for Federal financial assistance may be may if the Administrator finds that the Federally-assisted project may contaminate the aquifer through a recharge zone so as to create a significant hazard to public health . . . Safe Drinking Water Act section 1424(e), 42 U.S.C. 300h-3(e). In many cases, these Federally-assisted projects would also be analyzed in an "Environmental Impact Statement" (EIS) under the National Environmental Policy Act (NEPA), 42 U.S.C. 4332(2)(C). All EISs, as well as any other proposed Federal actions affecting an EPA program or responsibility, are required by Federal law (under the so-called "NEPA/309" process) [1] to be reviewed and commented upon by the EPA Administrator. Therefore, in order to streamline EPA's review of the possible environmental impacts on designated aquifers, when an action is analyzed in an EIS, the two reviews will be consolidated, and both authorities will be cited. The EPA review (under the Safe Drinking Water Act) of Federally-assisted projects potentially affecting sole or principal source aquifers, will be included in the EPA review (under the "NEPA/309" process) of any EIS accompanying the same Federally-assisted project. The letter transmitting EPA's comments on the final EIS to the lead agency will be the vehicle for informing the lead agency of EPA's actions under section 1424(e).

All Federally-assisted proposed projects will be reviewed, within the New Jersey Coastal Plain Area (Counties of Monmouth, Burlington, Ocean, Camden, Gloucester, Atlantic, Salem, Cumberland and Cape May, and portions of Mercer and Middlesex Counties, New Jersey (as delineated on maps included in the petition), and that portion of the streamflow source zone which lies within two miles of the Delaware River in the States of New Jersey (in Mercer, Hunterdon, Sussex and Warren Counties), Delaware (in New Castle County), Pennsylvania (in Delaware, Philadelphia, Bucks, Monroe, Northampton, Pike and Wayne Counties) and New York (in Delaware, Orange and Sullivan Counties) (as delineated on maps included in the public record). Outside the New Jersey Coastal Plain Area and further than two miles from the Delaware River in the streamflow source zone, only those Federally-assisted proposed projects requiring the preparation of an EIS will be reviewed. The Agency has chosen a two-mile limit for the project review area along the Delaware River based on the climate and hydrologic setting of the area. The two-mile distance is consistent with the two-mile review radius included in the EPA guidelines for Ground-Water Classification and is protective of human health.

VI. Summary and Discussion of Public Comments

There has been much controversy over the possible designation of this aquifer system. The majority of the comments from the original 1979 public hearings were in direct opposition to such a designation. More than half of all responses received were against designation. Several commenters felt constrained by the original comment period and thereby requested an extension. EPA complied with this request on two occasions, once by announcing at the four public hearings it held throughout the area under consideration that the agency had extended the formal comment period from May 14, 1979, to December 31, 1979, and again in a May 19, 1983 Federal Register Notice that announced the availability of additional information and extension of the public comment period to July 15, 1983. Although a number of ground-water protection measures are available at the Federal, State and local level, none of these, either individually or collectively, permit EPA to act as directly as would a sole source aquifer designation in the review and approval of Federally-assisted projects. In addition, EPA feels that the sole source project review process will foster integration rather than duplication of environmental review efforts. Memoranda of Understanding have been negotiated with various Federal agencies with the purpose of streamlining the review process and minimizing project delays. Most of the commenters expressed concern that a

[1] 42 U.S.C. § 7609 requires EPA to conduct this review. The "309" in a "NEPA/309" derives from the original source of this general requirement: Section 309 of the Clean Air Act.

designation would be a duplication of efforts already existing on the state and local levels. Some commenters felt that a sole source aquifer designation would give EPA the power to reject any applications for Federally-funded projects indiscriminately and to delay any project underway. Another main concern of many commenters was that a designation would cause a strong negative economic impact on the area in question and curtail needed development, thus eliminating jobs. EPA is sympathetic to the concerns of the commenters; however, the Agency feels that a sole source aquifer designation would not interfere with economic development. Federal financial assistance will be withheld only in those instances where it is determined that a proposed project may contaminate the aquifer so as to create a significant hazard to public health and no acceptable remedial measures are available to prevent the potential hazard.

Dated: June 16, 1988.

Lee M. Thomas,

Administrator.

[FR Doc. 88-14293 Filed 6-23-88; 8:45 am]

BILLING CODE 6560-50-M

[OPTS-59645; FRL-3404-6]

Toxic and Hazardous Substances; Certain Chemicals Premanufacture Notices

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: Section 5(a)(1) of the Toxic Substances Control Act (TSCA) requires any person who intends to manufacture or import a new chemical substance to submit a premanufacture notice (PMN) to EPA at least 90 days before manufacture or import commences. Statutory requirements for section 5(a)(1) premanufacture notices are discussed in the final rule published in the Federal Register of May 13, 1983 (48 FR 21722). In the Federal Register of November 12, 1984 (49 FR 46066) (40 CFR 723.250), EPA published a rule which granted a limited exemption from certain PMN requirements for certain types of polymers. Notices for such polymers are reviewed by EPA within 21 days of receipt. This notice announces receipt of nine such PMNs and provides a summary of each.

DATES: Close of Review Periods:

Y 88-192, 88-193—June 5, 1988.
Y 88-194—June 7, 1988.
Y 88-195—May 17, 1988.
Y 88-196—June 6, 1988.
Y 88-197—June 14, 1988.
Y 88-198—June 16, 1988.
Y 88-199—June 10, 1988.
Y 88-200—June 23, 1988.

FOR FURTHER INFORMATION CONTACT: Stephanie Roan, Premanufacture Notice Management Branch, Chemical Control Division (TS-794), Office of Toxic Substances, Environmental Protection Agency, Rm. E-611, 401 M Street SW., Washington, DC 20460 (202) 382-3725.

SUPPLEMENTARY INFORMATION: The following notice contains information extracted from the non-confidential version of the submission provided by the manufacturer on the PMNs received by EPA. The complete non-confidential document is available in the Public Reading Room NE-G004 at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, excluding legal holidays.

Y 88-192

Manufacturer. Confidential.
Chemical. (G) Hydroxy function acrylic resin.
Use/Production. (S) Coatings. Prod. range: Confidential.

Y 88-193

Manufacturer. Confidential.
Chemical. (G) Polyurethane resin.
Use/Production. (S) Coating. Prod. range: Confidential.

Y 88-194

Manufacturer. Sybron Chemicals Inc.
Chemical. (G) Copolymer of aliphatic esters of 2-propenoic acid with homocyclic and heterocyclic aromatic vinyl compounds, reaction production wiyh aliphatic polyam ne.
Use/Production. (G) Waste and process water purification. Prod. range: Confidential.

Y 88-195

Manufacturer. Confidential.
Chemical. (G) Dibasic acid polyol polyester.
Use/Production. (G) Used in coatings. Prod. range: Confidential.

Y 88-196

Manufacturer. Confidential.
Chemical. (S) Rosin, dicyclopentadiene, dimer fatty acid polymer.
Use/Production. (S) Printing ink vehicles. Prod. range: 3,000,000-3,700,000 kg/yr.

Y 88-197

Manufacturer. Reichhold Chemicals Inc.
Chemical. (G) Sunflower oil alkyd.
Use/Production. (S) Architectural trade sales coating. Prod. range: Confidential.

Y 88-198

Manufacturer. Confidential.
Chemical. (G) Aliphatic polyester urethane.
Use/Production. (G) Coatings. Prod. range: Confidential.

Y 88-199

Manufacturer. C.J. Osborn.
Chemical. (G) Polyester.
Use/Production. (S) Pigmented and clear finish. Prod. range: Confidential.

Y 88-200

Manufacturer. Confidential.
Chemical. (G) Styrene/acrylic copolymer.
Use/Production. Coatings and inks. Prod. range: Confidential.

Date: June 13, 1988.

Steve Newburg-Rinn,

Acting Chief, Public Data Branch, Information Management Division, Office of Toxic Substances.

[FR Doc. 88-14292 Filed 6-23-88; 8:45 am]

BILLING CODE 6560-50-M

FEDERAL COMMUNICATIONS COMMISSION

Public Information Collection Requirement Submitted to Office of Management and Budget for Review

June 16, 1988.

The Federal Communications Commission has submitted the following information collection requirement to OMB for review and clearance under the Paperwork Reduction Act of 1980 (44 U.S.C. 3507).

Copies of this submission may be purchased from the Commission's copy contractor, International Transcription Service, (202) 857-3800, 2100 M Street NW., Suite 140, Washington, DC 20037. For further information on this submission contact Judy Boley, Federal Communications Commission, (202) 632-7513. Persons wishing to comment on this information collection should contact Yvette Flynn, Office of Management and Budget, Room 3235 NEOB, Washington, DC 20503, (202) 395-3785.

OMB Number: 3060-0025.
Title: Application for Restricted Radiotelephone Operator Permit—Limited Use.
Form Number: FCC 753.
Action: Revision.
Respondents: Individuals or households.

REFERENCE 48

SEE FOLDER
IN BACK OF REPORT

REFERENCE 49

02-8906-08-PA
REV. No. 0

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWNSHIP OF
DELANCO, NEW JERSEY
BURLINGTON COUNTY

PANEL 1 OF 2
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
340093 0001 B

EFFECTIVE DATE:
SEPTEMBER 28, 1979

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

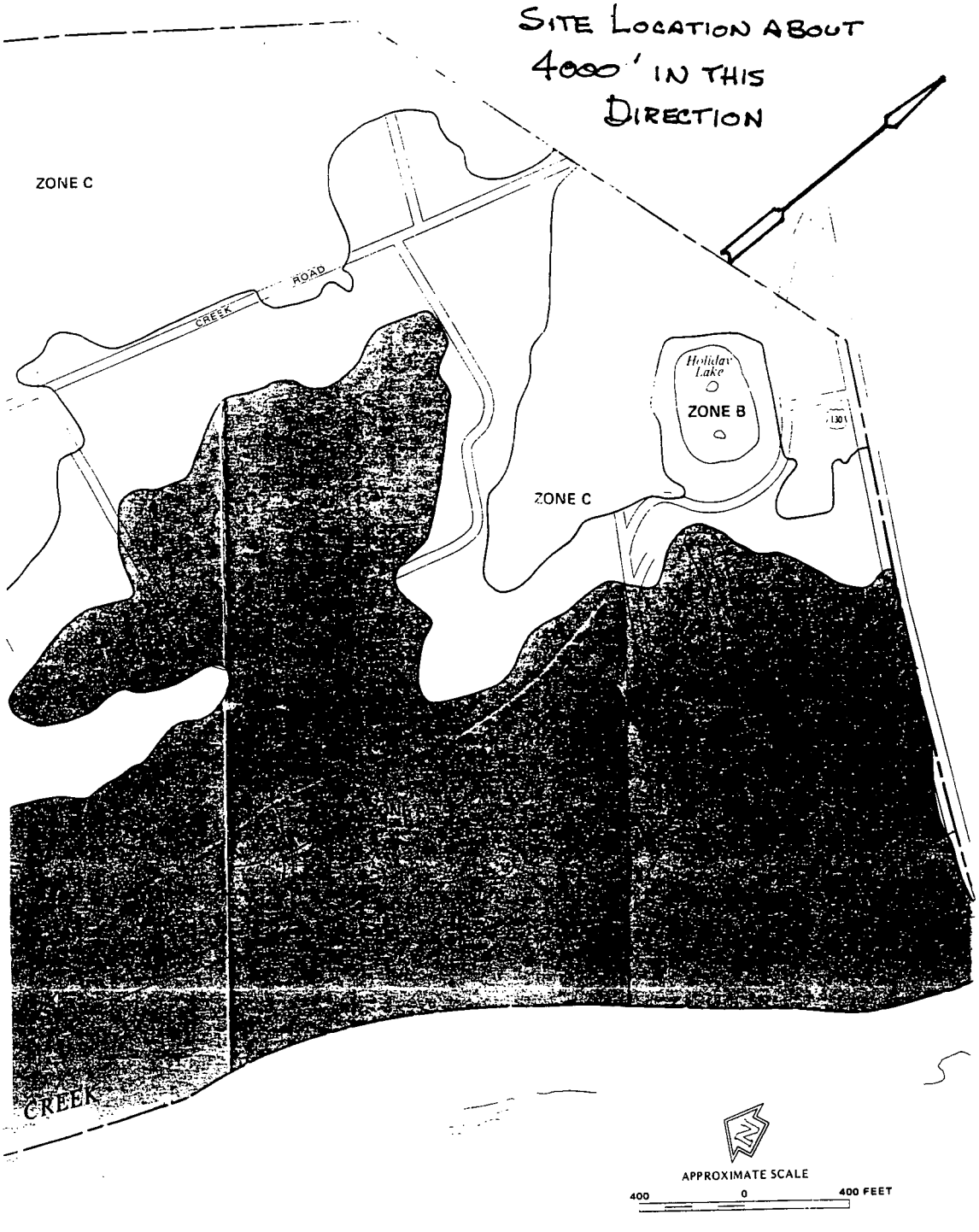
KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	ZONE B
Zone Designations* With Date of Identification e.g., 12/2/74	
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7 ×
River Mile	• M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.



DELANCO

REFERENCE 50

SOIL SURVEY

Burlington County New Jersey

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
NEW JERSEY AGRICULTURAL EXPERIMENT STATION
Issued October [illegible]

GUIDE TO MAPPING UNITS.--Continued

Map symbol	Mapping unit	Described on page	Capability unit	Woodland suitability group
FhB	Freehold loamy sand, 0 to 5 percent slopes	23	IIs-6	2o1
FhC	Freehold loamy sand, 5 to 10 percent slopes	23	IIIe-6	2o1
FoC3	Freehold sandy loam, 5 to 10 percent slopes, severely eroded	23	IVe-5	1o1
FoD3	Freehold sandy loam, 10 to 15 percent slopes, severely eroded	23	VIe-5	1o1
GaA	Galestown sand, 0 to 5 percent slopes	24	IVs-7	3s1
GcB	Galestown sand, clayey substratum, 0 to 5 percent slopes	24	IVs-7	3s1
HdA	Holmdel fine sandy loam, 0 to 2 percent slopes	25	IIw-14	2w1
HdB	Holmdel fine sandy loam, 2 to 5 percent slopes	25	IIw-14	2w1
HlB	Holmdel loamy sand, 0 to 5 percent slopes	25	IIIw-15	2w1
HmA	Holmdel fine sandy loam, clayey substratum, 0 to 2 percent slopes	26	IIw-14	2w1
HmB	Holmdel fine sandy loam, clayey substratum, 2 to 5 percent slopes	26	IIw-14	2w1
Hn	Holmdel-Urban land complex	26	-----	---
Ka	Keansburg fine sandy loam	27	IIIw-25	3w2
KeB	Keyport loamy sand, 0 to 5 percent slopes	28	IIe-3	2w1
KfB	Keyport fine sandy loam, 2 to 5 percent slopes	28	IIe-2	2w1
KlA	Keyport loam, 0 to 2 percent slopes	28	IIw-1	2w1
KlB	Keyport loam, 2 to 5 percent slopes	28	IIe-1	2w1
KlC	Keyport loam, 5 to 10 percent slopes	28	IIIe-1	2w1
KlD	Keyport loam, 10 to 15 percent slopes	28	VIe-1	2w1
KlE	Keyport loam, 15 to 25 percent slopes	28	VIIe-1	2r1
KmA	Klej sand, 0 to 4 percent slopes	29	IIIw-16	3s1
KnA	Klej sand, loamy substratum, 0 to 2 percent slopes	29	IIIw-16	3s1
KoA	Klej fine sand, 0 to 2 percent slopes	30	IIIw-16	3s1
KwA	Kresson loamy sand, 0 to 3 percent slopes	31	IIIw-12	2w1
KxA	Kresson fine sandy loam, 0 to 3 percent slopes	31	IIIw-12	2w1
KyA	Kresson loam, 0 to 3 percent slopes	31	IIIw-11	2w1
LaA	Lakehurst sand, 0 to 3 percent slopes	32	IVw-17	4s1
LlA	Lakehurst sand, thick surface, 0 to 3 percent slopes	32	IVw-17	4s1
LmA	Lakehurst sand, loamy substratum, 0 to 3 percent slopes	32	IVw-17	4s1
LnA	Lakehurst fine sand, 0 to 3 percent slopes	32	IVw-17	4s1
LoA	Lakehurst fine sand, loamy substratum, 0 to 3 percent slopes	33	IVw-17	4s1
LrA	Lakehurst-Lakewood sands, 0 to 5 percent slopes	33	IVw-17	4s1
LsA	Lakehurst-Lakewood sands, loamy substratum, 0 to 5 percent slopes	33	IVw-17	4s1
LtB	Lakewood sand, 0 to 5 percent slopes	34	VIIs-8	5s1
LtC	Lakewood sand, 5 to 10 percent slopes	34	VIIs-8	5s1
LtD	Lakewood sand, 10 to 15 percent slopes	34	VIIs-8	5s1
LuB	Lakewood sand, thick surface, 0 to 5 percent slopes	34	VIIs-8	5s1
LvB	Lakewood sand, loamy substratum, 0 to 5 percent slopes	34	VIIs-8	5s1
LwB	Lakewood fine sand, 0 to 5 percent slopes	34	VIIs-8	5s1
LyA	Lakewood fine sand, loamy substratum, 0 to 5 percent slopes	34	VIIs-8	5s1
Ma	Made land, dredged coarse material	34	-----	---
Mf	Made land, dredged fine material	35	-----	---
Mg	Made land, sanitary fill	35	-----	---
MhA	Marlton fine sandy loam, 0 to 2 percent slopes	36	IIs-2	2o1
MhB	Marlton fine sandy loam, 2 to 5 percent slopes	36	IIe-2	2o1
MrC	Marlton soils, 5 to 10 percent slopes	36	IIIe-2	2o1
Ms	Marsh, fresh water	37	VIIIw-29	---
Mt	Marsh, tidal	37	VIIIw-29	---
Mu	Muck, shallow	37	VIIw-30	3w3
NbA	Nixonton fine sandy loam, 0 to 2 percent slopes	39	IIw-14	2w1
NbB	Nixonton fine sandy loam, 2 to 5 percent slopes	39	IIw-14	2w1

Freehold fine sandy loam, 5 to 10 percent slopes (FfC).—This soil has a profile similar to that described as typical for the series. Because runoff is moderate, erosion is a hazard. Erosion can be controlled by the use of contour farming, stripcropping, terraces, and cover crops. A permanent cover is needed in apple orchards. Most of this soil is farmed, but some of it is woodland. (Capability unit IIIe–5; woodland suitability group 1o1)

Freehold fine sandy loam, 10 to 15 percent slopes (FfD).—In farmed areas of this soil, runoff is rapid and the erosion hazard is severe. Erosion is controlled by seeding small grains or pasture plants or by using a cropping system that includes long periods in sod. Apple orchards can be kept in permanent sod. This soil is suited to trees and can be used as a habitat for wildlife. (Capability unit IVe–5; woodland suitability group 1o1)

Freehold fine sandy loam, 15 to 25 percent slopes (FfE).—This soil has short slopes in most places. The lower parts of the slopes contain seepy spots where ground water moving laterally has surfaced. Except that the subsoil is more variable in texture and thickness, the profile of this soil is similar to that described as typical for the series. Included with this soil in mapping are clayey and sandy areas.

Most of this soil is in trees, which grow well. A permanent cover of trees, shrubs, or grasses controls erosion and prevents severe siltation of streams. (Capability unit VIe–5; woodland suitability group 1r1)

Freehold fine sandy loam, clayey substratum, 2 to 5 percent slopes (FgB).—This soil has an underlying clayey layer at a depth of 40 to 60 inches. In most places this layer is a thick, very dark gray deposit that is a part of the Merchantville or Woodbury clay Formations. This clayey layer is so slowly permeable that water perches on it after heavy rains and also moves laterally over it.

In most places the clay is so deep that it does not greatly affect farming. In other places, however, the perched water is so close to the surface that underdrains must be constructed above the clay layer. (Capability unit IIe–5; woodland suitability group 1o1)

Freehold loamy sand, 0 to 5 percent slopes (FhB).—Except for the loamy sand surface layer, this soil has a profile similar to that described as typical for the series. This sandy surface layer is 18 inches thick. Because of it, this soil has a lower available water capacity than Freehold fine sandy loam, 0 to 2 percent slopes, and needs more frequent irrigation. Also, this soil is lower in fertility and in organic-matter content. It warms earlier in spring but is subject to soil blowing. Crops are subject to sand blasting. Included with this soil in mapping are small areas of Holmdel soil that may need drainage.

This soil is better suited to fruit and irrigated vegetables than to corn, soybeans, hay, and pasture. Crops are protected from soil blowing by windbreaks, cover crops, and wind strips. (Capability unit IIs–6; woodland suitability group 2o1)

Freehold loamy sand, 5 to 10 percent slopes (FhC).—This soil has a surface layer of loamy sand 14 inches thick. Except for this surface layer, the profile of this soil is similar to that described as typical for the series. Runoff is moderate, and water erosion is more of a hazard than soil blowing.

Most slopes are not long, but erosion control practices are needed if these soils are to be farmed every year. On the long slopes, erosion can be controlled by contour farming, cover crops, stripcropping, or terracing. Apple orchards can be kept in permanent sod. (Capability unit IIIe–6; woodland suitability group 2o1)

Freehold sandy loam, 5 to 10 percent slopes, severely eroded (FoC3).—This soil is so severely eroded that plowing mixes the more sticky subsoil with the little original surface layer that remains. Organic-matter content is very low, and runoff is rapid. The surface soil crusts as it dries, and this crusting prevents uniform seed germination. Plant growth is irregular and poorer than on uneroded soils. Included with this soil in mapping are small areas of Collington and Westphalia soils.

This soil can be kept in good tilth by frequently adding organic matter or manure and fertilizers and by using cover crops. Cropping systems should provide small grain or sod for long periods. Gullies need to be filled. (Capability unit IVe–5; woodland suitability group 1o1)

Freehold sandy loam, 10 to 15 percent slopes, severely eroded (FoD3).—This soil is so severely eroded that plowing mixes the sticky subsoil with the remaining original surface layer. Runoff is rapid. Some slopes contain seepy spots where ground water moving laterally has surfaced.

Pasture, trees, plantings for wildlife, or other permanent cover is needed to control erosion. Black locust can be planted for posts, or pines for Christmas trees. Large amounts of organic matter are needed to improve the tilth. Gullies need to be filled. (Capability unit VIe–5; woodland suitability group 1o1)

Galestown Series

The Galestown series consists of excessively drained, nearly level or gently sloping sandy soils that have a little more clay in the subsoil than in the surface layer. Galestown soils occur along the Delaware River on a terrace that ranges from 10 to 50 feet in elevation.

In a typical profile the surface layer is very dark grayish-brown sand about 10 inches thick. The subsurface layer, about 13 inches thick, is yellowish-brown sand. The subsoil is strong-brown loamy sand about 15 inches thick. Alternating layers of dark yellowish-brown sand and strong-brown loamy sand make up the underlying material.

Permeability is rapid in forested Galestown soils and moderately rapid in plowed soils. Although the available water capacity generally is low, it is somewhat higher where these soils have a clayey substratum. Only deep-rooted plants, however, benefit from this higher capacity, and nearly all crops are irrigated. The soils warm early in spring and can be worked immediately after heavy rains. In extended

hot spells some crops are scalded by heat reflected from the sand.

Galestown soils are subject to soil blowing that sandblasts crops. These soils are low in organic-matter content and fertility. Added fertilizers leach readily. Unless lime is added at frequent intervals, these soils are very strongly acid.

The native vegetation is a forest consisting mostly of mixed oaks, hickory, and scattered Virginia pines. Virginia pines have seeded naturally in areas left idle, but now they grow in only a few places. Sassafras and wild cherry are common in idle areas.

These soils were formerly used for general crops, but when irrigation was introduced, farmers gradually switched to high-value vegetables. Nearly all areas are now irrigated, and the common crops are sweet corn, peaches, snap beans, and cantaloupes. On some fields two crops are grown in a year.

Because the population is concentrated along the Delaware River, a large acreage of these soils has been taken for residential, commercial, and industrial development.

Typical profile of Galestown sand, 0 to 5 percent slopes, in a cultivated field south of the National Cemetery at Beverly:

Ap—0 to 10 inches, very dark grayish-brown (10YR 3/2) sand; very weak, fine, granular structure; very friable; abrupt, smooth boundary; horizon 8 to 12 inches thick.

A2—10 to 23 inches, yellowish-brown (10YR 5/4) sand; single grain; loose; clear, smooth boundary; horizon 10 to 18 inches thick.

B2t—23 to 30 inches, strong-brown (7.5YR 4/6) loamy sand; very weak subangular blocky structure; very friable; sand grains weakly bridged; gradual, smooth boundary; horizon 7 to 13 inches thick.

B3—30 to 38 inches, strong-brown (7.5YR 4/6) loamy sand; very weak subangular blocky structure; very friable; gradual, smooth boundary; horizon 4 to 8 inches thick.

C—38 to 60 inches, dark yellowish-brown (10YR 4/6) sand containing thin layers of strong-brown (7.5YR 4/6) loamy sand; sand is single grain and loose; loamy sand is massive and friable.

Galestown soils contain varying amounts of rounded quartzose pebbles. Although in most places the amounts are small, some areas within a mile of the Delaware River have thick beds of pebbles and cobblestones 3 to 5 feet below the surface. Because of the community development in most of these areas, they have not been mapped separately.

These soils are mostly fine sand and medium sand throughout the solum, and the texture in the C horizon is about the same.

The A1 horizon is very dark and about 4 inches thick. Plowing mixes this horizon with part of the yellowish-brown A2 horizon, and an Ap horizon is formed. The Ap horizon is 3 or 4 in value and 2 or 3 in chroma. The surface layer is sand, consisting of mostly fine sand, but not enough to make a fine sand texture. The A2 horizon is 7.5YR or 10YR in hue. Thickness of the A horizon averages about 23 inches but ranges from 18 to 27 inches.

The B horizon generally is 7.5YR in hue, but it is 10YR in places. The B2t horizon is loamy sand or sand, though it normally contains 3 to 6 percent more clay than the A horizon.

In places the C horizon has clayey layers or gravel beds. In other areas it consists of material much like that of the A and B horizons, though it has slightly less clay and silt or has thin bands of clay and silt in the upper part.

Galestown soils are associated with Klej and Sassafras soils. They lack the mottling that is common in the Klej soils, and they have less clay and silt in the subsoil than the Sassafras soils. Galestown soils have a thicker surface layer than Downer soils, and a coarser textured subsoil.

Figure 11.—**Sandblasting of vegetable crops can be reduced by protecting them with narrow strips of close-growing crops. The soil is Galestown sand, 0 to 5 percent slopes.**

Galestown sand, 0 to 5 percent slopes (GaA).—This soil has the profile described as typical for the series. Included with this soil in mapping are small areas of Klej and Sassafras soils and also small areas of Galestown sand, clayey substratum.

This soil is well suited to irrigated sweet corn, peaches, snap beans, and cantaloupes. The effect of soil blowing can be reduced by the use of windbreaks or cover crops, or by planting narrow strips of close-growing crops (fig. 11). Soluble fertilizers applied as needed compensate for losses though leaching. (Capability unit IVs–7; woodland suitability group 3s1)

Galestown sand, clayey substratum, 0 to 5 percent slopes (GcB).—The clayey substratum of this soil generally is at a depth of 40 to 60 inches, but in places it is only 30 inches from the surface. Otherwise the profile of this soil is similar to that described as typical for the series. Drainage is needed where the clayey substratum is near the surface. Except for drainage, farm use and management are the same as on Galestown sand, 0 to 5 percent slopes. (Capability unit IVs–7; woodland suitability group 3s1)

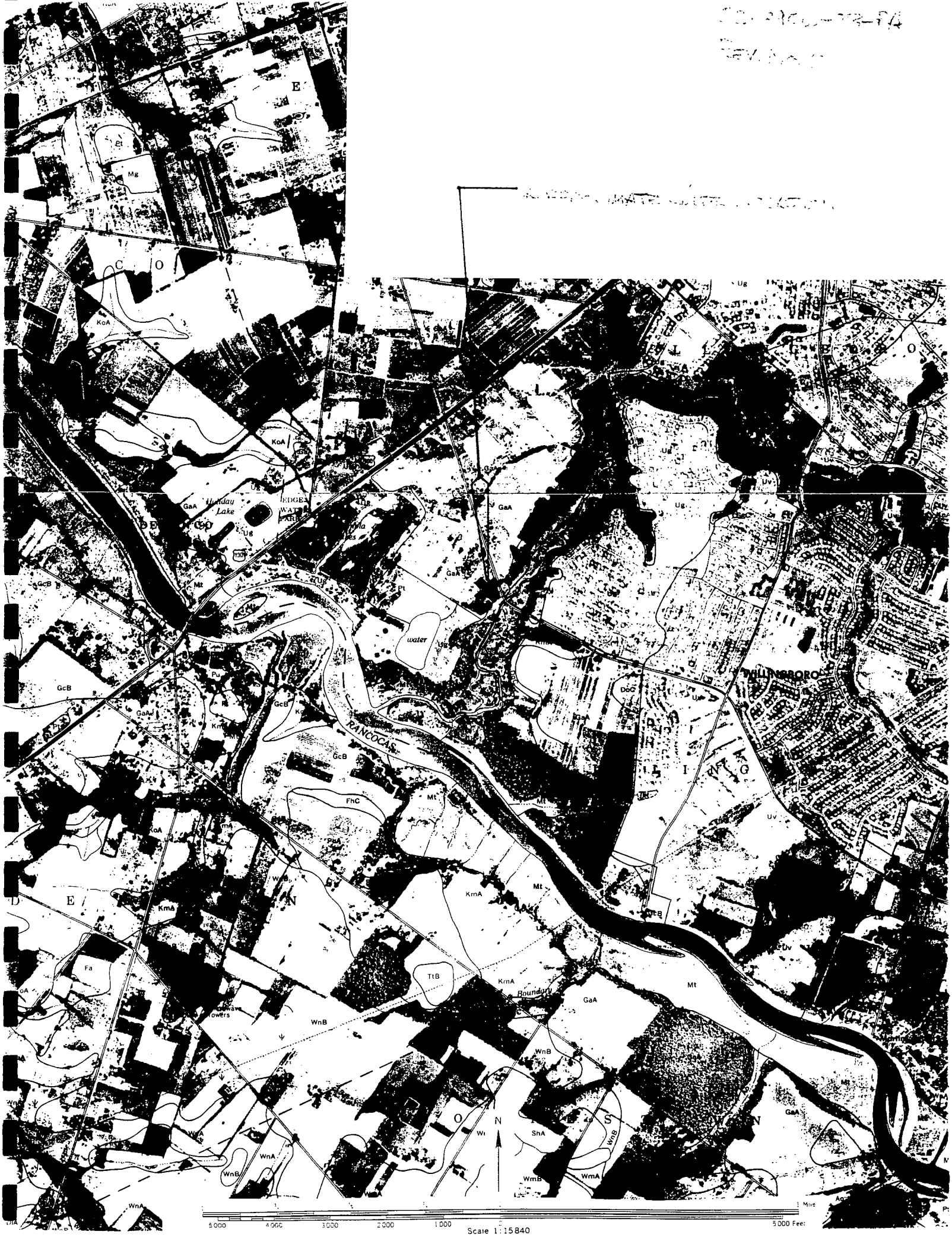
Holmdel Series

The Holmdel series consists of moderately well drained or somewhat poorly drained loamy and sandy soils. These soils contain small amounts of glauconite, for they generally formed on marine deposits that contain this mineral. They have a moderately high seasonal water table.

In a typical profile the surface layer is dark grayish-brown fine sandy loam about 10 inches thick. The subsoil, about 24 inches thick, is dark-brown mottled sandy clay loam. The underlying material is stratified

TABLE 7.—*Estimated engineering*

Soils and map symbols	Depth to seasonal high water table	Depth from surface of typical profile	Classification: Dominant USDA texture	Classification: Unified	Classification: AASHO	Percentage: No. 4 (4.7 mm.)	Percentage: No. 10 (2.0 mm.)
	Feet	*Inches*					
Freehold loamy sand: FhB, FhC.	>5	0–18	Loamy sand	SM, SP-SM	A-2, A-3	100	98–100
		18–32	Sandy loam or sandy clay loam.	SM, SC	A-2	100	98–100
		32–60	Loamy sand and sandy loam.	SP-SM, SM	A-2, A-3	95–100	90–100
Galestown sand: GaA.	>5	0–60	Sand or loamy sand	SM, SP-SM	A-2, A-3	100	98–100
Galestown sand, clayey substratum: GcB.	>5	0–40	Sand or loamy sand	SM, SP-SM	A-2, A-3	100	98–100
		40–60	Sandy clay or clay	SC, ML, CL	A-4, A-6	100	98–100
Holmdel fine sandy loam: HdA, HdB. Holmdel-Urban land complex: Hn. (Applies only to the Holmdel soil.)	1–2½	0–10	Fine sandy loam	SM, SM-SC	A-2, A-4	100	98–100
		10–34	Sandy loam or sandy clay loam.	SM, SC	A-2, A-4	100	98–100
		34–60	Alternating sandy loam and loamy sand.	SM	A-2	100	95–100
Holmdel loamy sand: HlB.	1–2½	0–18	Loamy sand	SM, SP-SM	A-2	100	98–100
		18–32	Sandy loam or sandy clay loam.	SM, SC	A-2	100	98–100
		32–60	Alternating loamy sand and sandy loam.	SM	A-2, A-3	100	98–100
Holmdel fine sandy loam, clayey substratum: HmA, HmB.	1–2½	0–10	Fine sandy loam	SM, SM-SC	A-2, A-4	100	98–100
		10–34	Sandy loam or sandy clay loam.	SM, SC	A-2, A-4	100	98–100
		34–40	Alternating sandy loam and loamy sand.	SM	A-2	100	95–100
		40–60	Sandy clay or clay	SC, ML, CL	A-4, A-6	100	95–100
Keansburg fine sandy loam: Ka.	0	0–15	Fine sandy loam	SM, SM-SC	A-2, A-4	95–100	90–100
		15–30	Fine sandy loam	SM, SC	A-2, A-4	95–100	95–100
		30–60	Alternating sand and sandy loam.	SM, SP-SM	A-2	100	95–100
Keyport loamy sand: KeB.	1½–2½	0–16	Loamy sand	SM, SC	A-2, A-4	100	95–100
		16–60	Clay loam	CL, ML, CH	A-6, A-7	100	100
Keyport fine sandy loam: KfB. Keyport loam: KlA, KlB, KlC, KlD, KlE.	1½–2½	0–16	Loam or fine sandy loam.	SM, SC, ML, CL	A-4	100	98–100
		16–60	Clay loam	ML, CL, MH	A-4, A-6	100	98–100
Klej sand: KmA. Klej fine sand: KoA.	1–2½	0–60	Sand or fine sand	SP, SM, SP-SM	A-3, A-2	100	90–100
Klej sand, loamy substratum: KnA.	1–2½	0–40	Sand	SP, SM, SP-SM	A-3, A-2	100	90–100
		40–60	Sandy clay or sandy clay loam.	SM, SC, CL, ML	A-2, A-4, A-6	100	90–100
Kresson loamy sand: KwA.	1–2	0–15	Loamy sand	SM, SP-SM	A-2	100	90–100
		15–30	Sandy clay, sandy clay loam.	CL, CH, ML, MH	A-6, A-7	100	98–100
		30–60	Alternating layers of sandy loam and sandy clay loam.	SM, SC, CL, ML	A-4, A-6, A-7	100	100
Kresson fine sandy loam: KxA. Kresson loam: KyA.	1–2	0–8	Fine sandy loam or loam.	SM, ML, CL	A-2, A-4, A-7	90–100	80–100
		8–36	Sandy clay, sandy clay loam.[3]	CL, CH, ML, MH	A-6, A-7	100	98–100
		36–60	Alternating layers of sandy loam and sandy clay loam.[3]	SC, SM, CL, ML	A-4, A-6, A-7	100	100



Holiday Lake
EDGE WATER PARK
water
RANCOCAS
Boundary
WILLINGBORO
Scale 1:15840
5000 4000 3000 2000 1000 0 5000 Feet

REFERENCE 51

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File

DATE: July 6, 1989

FROM: Jim Frost

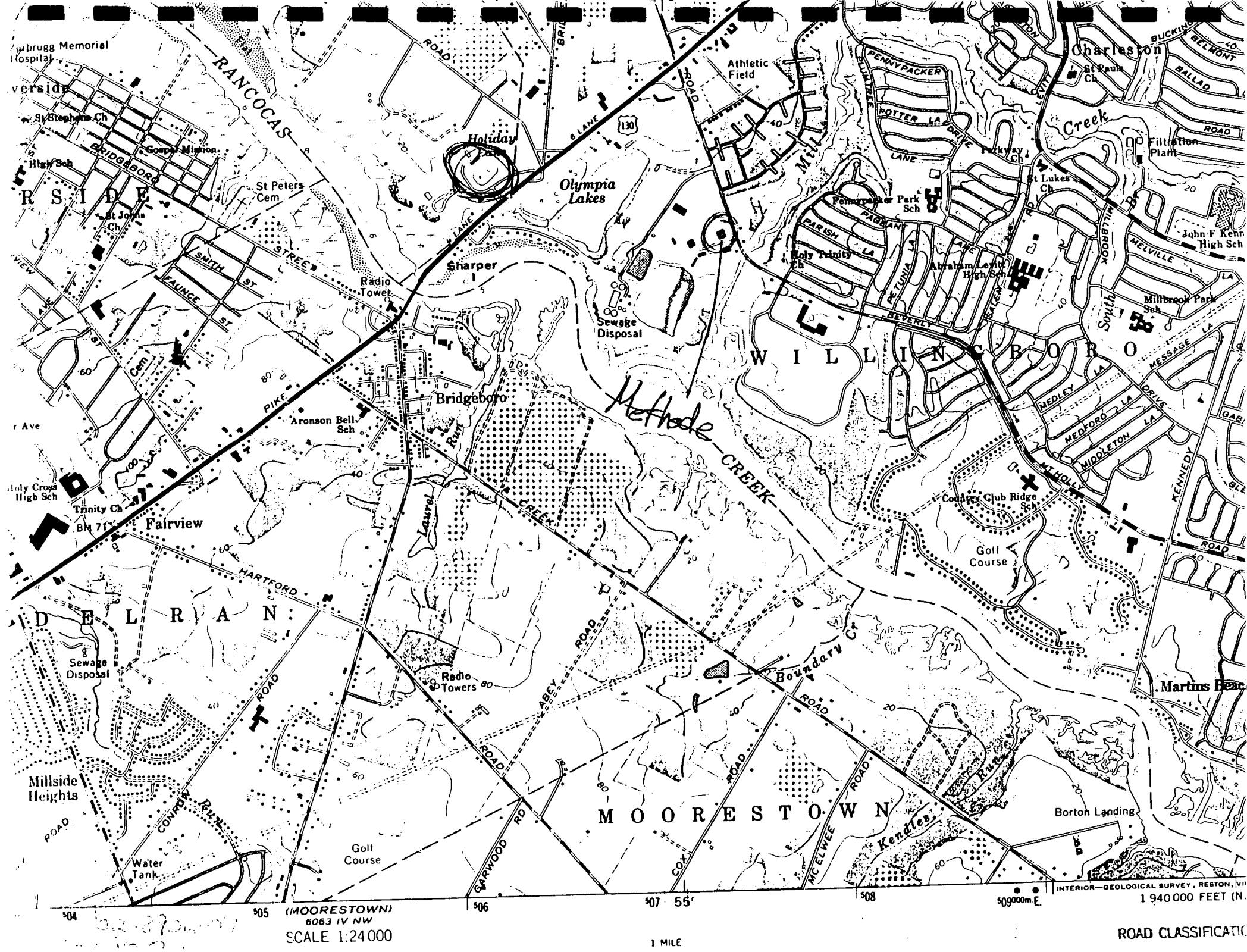
COPIES: 1

SUBJECT: Methode Electronics

REFERENCE: 02-8906-08

Today while doing an off-site reconnaissance on the subject ~~the all~~ 7/6/89 a topo map was used to identify off site landmarks and points of interest. The attached copy of this note shows the location of the Methode Electronics and Holiday Lake. The ~~map~~ 7/6/89 original of the map, which is filed in Airco Laser file (02-8906-07) also shows the roads that were driven to observe the character of the neighborhood and Rancocas Creek.

NUS 443A 58 1182



Methode CREEK
RANCOCAS
Holiday Lake
Olympia Lakes
Sharper
Bridgeboro
Fairview
Millside Heights
Sewage Disposal
Radio Tower
Radio Towers
Golf Course
Country Club Ridge Sch
Athletic Field
Charleston
Filtration Plant
Pennypacker Park Sch
Holy Trinity Ch
Abraham Levitt High Sch
Millbrook Park Sch
Aronson Bell Sch
Trinity Ch
Holy Cross High Sch
St Peters Cem
Gospel Mission
St Stephens Ch
St Johns Ch
Parkway Ch
St Lukes Ch
St Pauls Ch
John F Kenn High Sch
Boundary Cr
Kendles Run
Borton Landing
Martins Beac
Water Tank
WILLINGBORO
MOORESTOWN
DELRAN
BRIDGEBORO STREET
HARTFORD ROAD
PIKE
CREEK
ABEY ROAD
GARWOOD RD
COX ROAD
MC ELWEE ROAD
MT HOLLY ROAD
KENNEDY DRIVE
MILLBROOK
MELVILLE
BEVERLY
PENNYPACKER
POTTER LA
PARISH LA
PAGEANT LANE
PETUNIA LA
MEDLEY LA
MEDFORD LA
MIDDLETON LA
MESSAGE LA
BUCKINGHAM
BELMONT
BALLAD
ROAD
6 LANE
130
INTERIOR—GEOLOGICAL SURVEY, RESTON, VI
1 940 000 FEET (N.
(MOORESTOWN)
6063 IV NW
SCALE 1:24 000
1 MILE
ROAD CLASSIFICATIO

REFERENCE 52

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual

(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

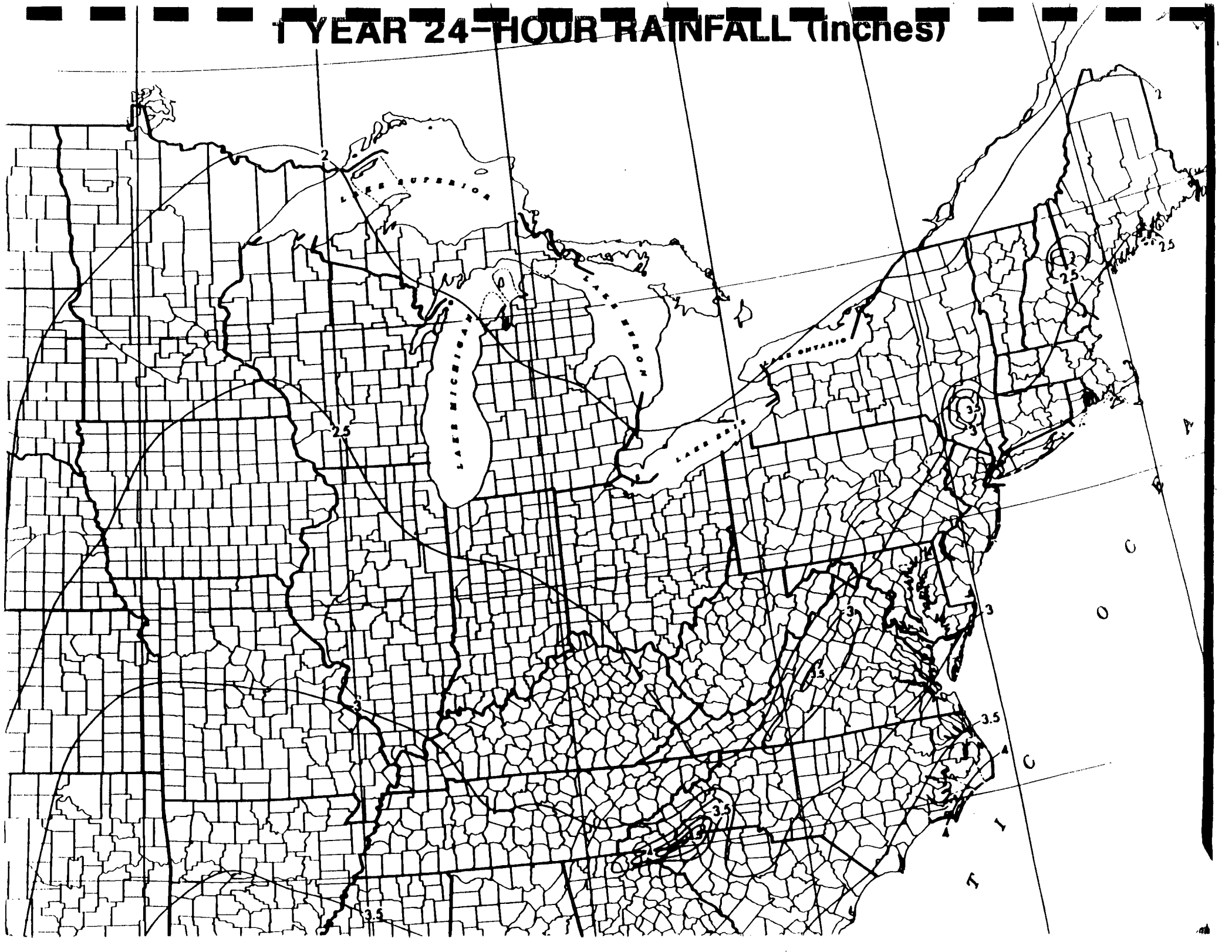
Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

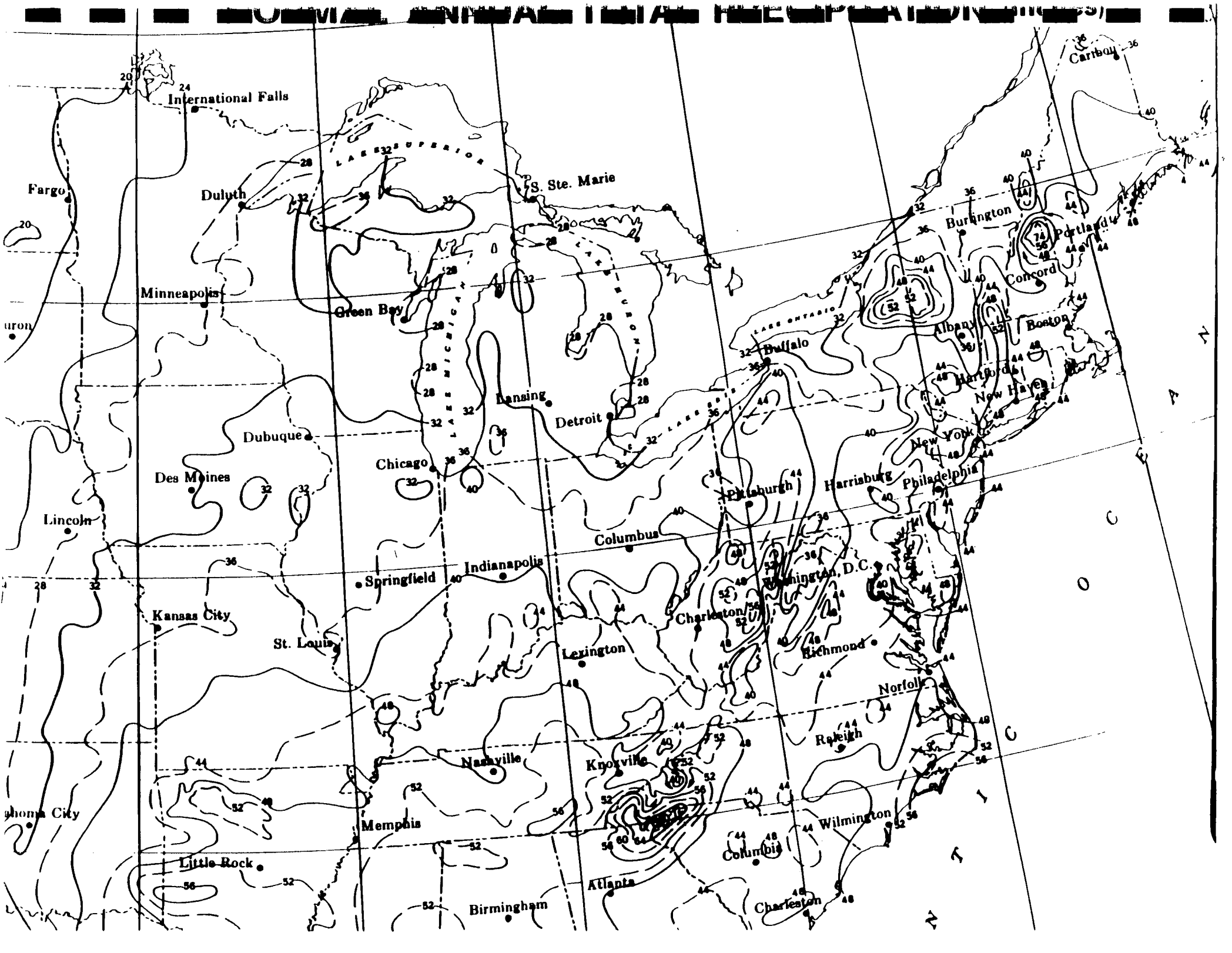
*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

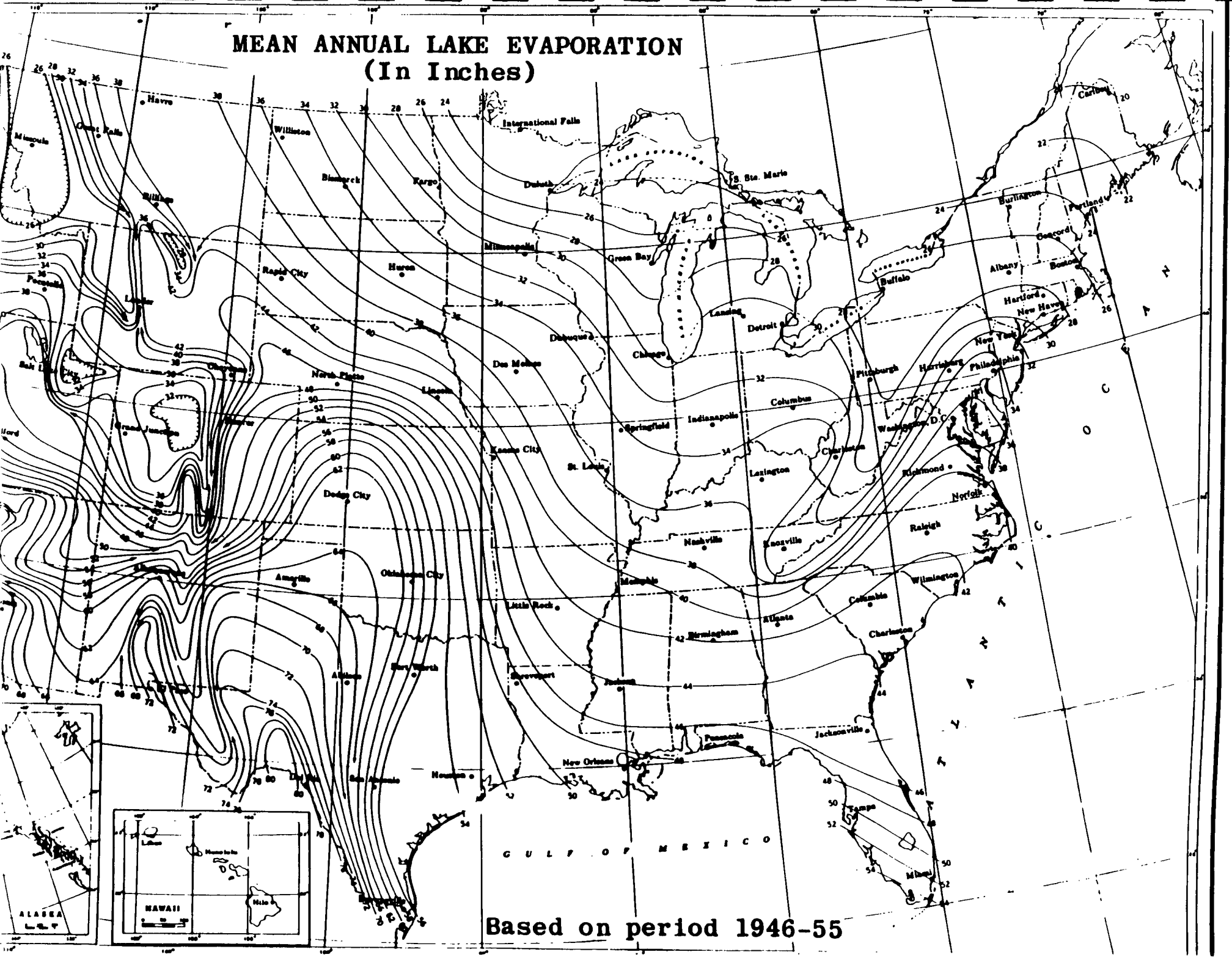
Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

1 YEAR 24-HOUR RAINFALL (inches)




International Falls
Fargo
Duluth
S. Ste. Marie
Minneapolis
Green Bay
Lansing
Detroit
Dubuque
Chicago
Des Moines
Lincoln
Kansas City
St. Louis
Springfield
Indianapolis
Columbus
Lexington
Nashville
Knoxville
Memphis
Little Rock
Birmingham
Atlanta
Columbia
Charleston
Wilmington
Raleigh
Norfolk
Richmond
Washington, D.C.
Pittsburgh
Harrisburg
Philadelphia
New York
New Haven
Hartford
Albany
Boston
Concord
Portland
Burlington
Buffalo
Caribou
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO

MEAN ANNUAL LAKE EVAPORATION
(In Inches)



Based on period 1946-55

REFERENCE 53

Official State Estimates

Population Estimates for New Jersey

JULY 1, 1982

OFFICE OF DEMOGRAPHIC AND ECONOMIC ANALYSIS
DIVISION OF PLANNING AND RESEARCH
DEPARTMENT OF LABOR
C N 388
TRENTON, NEW JERSEY 08625 - 0388

THOMAS H. KEAN
Governor

ROGER A. BODMAN
Commissioner

SEPTEMBER 1983

RESIDENT POPULATION

BURLINGTON COUNTY	CENSUS COUNTS, APRIL 1, 1980	REVISED ESTIMATES, JULY 1, 1981	PROVISIONAL ESTIMATES, JULY 1, 1982
Bass River township	1,344	1,355	1,354
Beverly city	2,919	2,928	2,918
Bordentown city	4,441	4,456	4,444
Bordentown township	7,170	7,221	7,215
Burlington city	10,246	10,655	10,641
Burlington township	11,527	11,616	11,616
Chesterfield township	3,867	4,029	4,177
Cinnaminson township	16,072	16,155	16,163
Delanco township	3,730	3,748	3,744
Delran township	14,811	14,873	14,863
Eastampton township	3,814	3,818	3,825
Edgewater Park township	9,273	9,314	9,308
Evesham township	21,508	22,298	22,797
Fieldsboro borough	597	599	599
Florence township	9,084	9,145	9,136
Hainesport township	3,236	3,303	3,335
Lumberton township	5,236	5,264	5,264
Mansfield township	2,523	2,561	2,560
Maple Shade township	20,525	20,608	20,578
Medford township	17,622	18,363	18,649
Medford Lakes borough	4,958	4,984	4,983
Moorestown township	15,596	15,723	15,786
Mount Holly township	10,818	10,860	10,763
Mount Laurel township	17,614	18,922	19,638
New Hanover township	14,258	15,320	16,377
North Hanover township	9,050	9,063	9,212
Palmyra borough	7,085	7,226	7,218
Pemberton borough	1,198	1,205	1,196
Pemberton township	29,720	30,092	30,026
Riverside township	7,941	7,995	7,994
Riverton borough	3,068	3,084	3,081
Shamong township	4,537	4,703	4,732
Southampton township	8,808	8,880	8,926
Springfield township	2,691	2,731	2,744
Tabernacle township	6,236	6,458	6,551
Washington township	808	815	819
Westampton township	3,383	3,493	3,533
Willingboro township	39,912	40,076	40,042
Woodland township	2,285	2,179	1,985
Wrightstown borough	3,031	3,200	3,203
TOTAL	362,542	369,318	371,995

REFERENCE 54

ANTHONY F. GILMORE, JR.

Fire Protection Guide on Hazardous Materials

9th Edition

National Fire Protection Association
Batterymarch Park
Quincy, MA 02269

First Edition — 1966
Second Edition — 1967
Third Edition — 1969
Fourth Edition — 1972
Fifth Edition — 1973
Sixth Edition — 1975
Seventh Edition — 1978
Eighth Edition — 1984
Ninth Edition — 1986

NFPA No. SPP-1E
Library of Congress Card No. 78-59832
ISBN 0-87765-130-2

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National Fire Protection Association
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Printed in U.S.A.

upon exposure to heat or sunlight. At elevated temperatures, such as in fire conditions, polymerization may take place in containers of inhibited polymers, with the possibility of violent rupture (see Explanatory). Soluble in water.

LIFE HAZARD: Highly irritating to skin and respiratory tract. Causes severe eye injury. Liquid or high concentrations of vapors causes blistering of the skin.

PERSONAL PROTECTION: Wear full protective clothing.

FIRE FIGHTING PHASES: In advanced or massive fires, fire fighting should be done from a protected location. Use dry chemical, "alcohol" foam, or carbon dioxide. Water spray may be ineffective as an extinguishing agent (see Explanatory), but water should be used to keep fire-exposed containers cool. Direct hose streams from a protected location. If a leak or spill has not ignited, use water spray to disperse the vapors. If it is necessary to stop a leak, use water spray to protect men attempting to do so. Water spray may be used to flush spills away from exposures and to dilute spills to nonflammable mixtures.

USUAL SHIPPING CONTAINERS: 2- to 5-gallon steel pails; 55-gallon steel drums.

STORAGE: Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room. Methyl vinyl ketone vapors are uninhibited and may form polymers in vents of flame arresters of storage tanks, resulting in stoppage of vents. Separate from oxidizing materials.

REMARKS: Electrical installations in Class I hazardous locations as defined in Article 500 of the National Electrical Code should be in accordance with Article 501 of the Code; and electrical equipment should be suitable for use in atmospheres containing methyl vinyl ketone vapors. See Flammable and Combustible Liquids Code (NFPA No. 30), National Electrical Code (NFPA No. 70), and Lightning Protection Code (NFPA No. 78).

MINERAL OIL See APPENDIX A

MMH See MONOMETHYLHYDRAZINE

MONOCHLOROBENZENE See remaining part of name

MONOCHLORO-s-TRIAZINETRIONE ACID

$C_3ClH_2N_3O_3$

DESCRIPTION: White, crystalline solid with strong chlorine odor.

FIRE AND EXPLOSION HAZARDS: Not combustible but contact with most foreign material, organic matter or easily chlorinated or oxidized materials may result in fire since chloroisocyanuric acid is a highly reactive oxidizing and chlorinating agent. Contact with ammonia, ammonium salts, urea or similar compounds which contain nitrogen may form nitrogen trichloride, a highly explosive compound.

LIFE HAZARD: The solid material is itself highly irritating to skin, eyes and respiratory tract and in a fire, as a result of decomposition or contact with water, extremely dense and noxious fumes containing chlorine and other toxic gases will be evolved. Wear full protective clothing.

FIRE FIGHTING PHASES: Use water spray to cool containers exposed to fire and massive quantities of water to dilute material involved in a fire or spilled from containers. Wear full protective clothing.

USUAL SHIPPING CONTAINERS: Moisture-excluding fiber drums with polyethylene bag liner, and lined pails. Smaller quantities are packaged in glass or polyethylene bottles and in foil or polyethylene laminated packets.

STORAGE: Protect against physical damage. Store in cool, dry, well-ventilated place away from flammable liquids, combustible materials and oxidizable materials. Drums may rupture if the contents are exposed to heat or become contaminated or wet. Drums should be palletized to prevent wetting from floor washings or drainage. Avoid prolonged storage in unventilated areas at summer temperatures.

REMARKS: See Code for the Storage of Liquid and Solid Oxidizing Materials (NFPA No. 43A).

MONO-(TRICHLORO) TETRA (MONOPOTASSIUM DICHLORO)-PENTA-s-TRIAZINE-TRIONE

$C_3Cl_3N_3O_3 \cdot 4KCl_2(NCO)_3$

DESCRIPTION: White crystalline solid with strong chlorine odor.

FIRE AND EXPLOSION HAZARDS: Oxidizing and chlorinating agent. Contact with most foreign materials, organic matter or easily chlorinated or oxidized materials may result in fire. Contact with ammonia, ammonium salts, urea or similar compounds which contain nitrogen may form nitrogen trichloride, a highly explosive compound. Mixture with hydrated salts may result in an exothermic reaction, decomposition and container rupture due to pressure. Mixture with non-ionic surface-active agents may result in highly exothermic reactions causing fire or explosion. Decomposition can be initiated with a heat source and can propagate throughout the mass with evolution of extremely dense and noxious fumes.

LIFE HAZARD: The solid material is itself highly irritating to skin, eyes and respiratory tract, and in a fire, as a result of decomposition or contact with small amounts of water, chlorine and other toxic gases will be evolved.

PERSONAL PROTECTION: Wear full protective clothing.

FIRE FIGHTING PHASES: Use water spray to cool containers exposed to fire and massive quantities of water to dilute material involved in a fire or spilled from containers.

USUAL SHIPPING CONTAINERS: Moisture-excluding fiber drums with polyethylene bag liner, and lined pails. Smaller quantities are packaged in glass or polyethylene bottles and in foil or polyethylene laminated packets.

STORAGE: Protect against physical damage. Store in cool, dry, well-ventilated place away from flammable liquids, combustible materials, and oxidizable materials. Drums may rupture if the contents are exposed to heat or become contaminated or wet. Drums should be palletized to prevent wetting from floor washings or drainage. Avoid prolonged storage in unventilated areas at summer temperatures.

REMARKS: See Code for the Storage of Liquid and Solid Oxidizing Materials (NFPA No. 43A).

MORPHOLINE $OC_2H_4NHCH_2CH_2$

DESCRIPTION: A water-clear, hygroscopic liquid with an amine odor.

FIRE AND EXPLOSION HAZARDS: Flammable liquid. Flash point, 100° F (oc). Explosive limits not recorded. Ignition temperature, 590° F. Soluble in water. Vapor heavier than air (vapor-air density at 100° F, 1.1) and may travel a considerable distance to a source of ignition and flash back.

LIFE HAZARD: Eye, skin and respiratory irritant. Direct contact may cause skin burns.

PERSONAL PROTECTION: Wear gloves and self-contained breathing apparatus; wear goggles if eye protection not provided.

TRIPROPYLALUMINUM $(C_3H_7)_3Al$ See ALKYLALUMINUMS

TURPENTINE See APPENDIX A

UDMH See UNSYMMETRICAL DIMETHYLHYDRAZINE

UNSLAKED LIME See CALCIUM OXIDE

UNSYMMETRICAL DIMETHYLHYDRAZINE (UDMH) $(CH_3)_2NNH_2$

DESCRIPTION: Colorless liquid with a sharp, ammonia-like odor.

FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapor forms flammable mixtures with air over a wide range. Flammable limits, 2% and 95%. Flash point, about 5° F. Ignition temperature, 480° F. Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back. Spontaneous ignition can occur on contact with oxidants like fuming nitric acid and hydrogen peroxide. Soluble in water.

LIFE HAZARD: The vapor is very toxic and attacks eyes and respiratory system. Liquid is corrosive to the skin.

PERSONAL PROTECTION: Wear full protective clothing.

FIRE FIGHTING PHASES: Flood with water. Small fires can be extinguished with carbon dioxide and dry chemical.

USUAL SHIPPING CONTAINERS: Glass bottles and carboys in wooden boxes, mild or stainless steel cans, drums, tanks.

STORAGE: Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Storage temperature should be less than 120°F. Separate from oxidants like nitric acid, hydrogen peroxide, and halogens, and check periodically for decomposition. Provide water for flushing spills or leaks. A nitrogen atmosphere should be maintained over anhydrous UDMH.

REMARKS: Electrical installations in Class I hazardous locations, as defined in Article 500 of the National Electrical Code, should be in accordance with Article 501 of the Code. If explosionproof electrical equipment is necessary, it shall be suitable for use in Group C. See Flammable and Combustible Liquids Code (NFPA No. 30), National Electrical Code (NFPA No. 70), Static Electricity (NFPA No. 77), and Fire-Hazard Properties of Flammable Liquids, Gases and Volatile Solids (NFPA No. 325M).

URANIUM NITRATE See URANYL NITRATE

URANYL NITRATE $UO_2(NO_3)_2.6H_2O$

Nonfire

Fire

DESCRIPTION: Yellow crystals.

FIRE AND EXPLOSION HAZARDS: Oxidizing material. In contact with easily oxidizable substances it may react rapidly enough to cause ignition, violent combustion or explosion. Increases the flammability of any combustible substance.

LIFE HAZARD: Yields toxic gaseous oxides of nitrogen when involved in fire. Uranium nitrate is mildly radioactive.

PERSONAL PROTECTION: In fire conditions wear self-contained breathing apparatus.

FIRE FIGHTING PHASES: Use flooding amounts of water in early stages of fire. When large quantities are involved in fire, nitrate may fuse, or melt, in which condition application of water may result in extensive scattering of molten material.

USUAL SHIPPING CONTAINERS: Glass bottles, boxes and drums.

STORAGE: Protect against physical damage. Store in cool, dry place. Protect personnel from radiation emanation if present. Separate from combustible, organic or other readily oxidizable materials. Avoid storage on wood floors. Immediately remove and dispose of any spilled nitrate.

REMARKS: See Code for the Storage of Liquid and Solid Oxidizing Materials (NFPA No. 43A).

VANADIUM TETRACHLORIDE VCl_4

DESCRIPTION: Dark reddish to brown liquid, fumes in moist air.

FIRE AND EXPLOSION HAZARDS: Noncombustible, corrosive liquid; will react violently with water to form vanadium trichloride, vanadium oxydichloride and hydrochloric acid. Specific gravity, 1.8.

LIFE HAZARD: Vapors are extremely toxic and corrosive. Contact with skin, eyes, nose and throat causes severe burns and irritations. Inhalation of high concentration, absorption through skin, or ingestion may be fatal.

PERSONAL PROTECTION: Wear full protective clothing.

FIRE FIGHTING PHASES: Dry chemical and carbon dioxide are the preferred extinguishing agents for fires in the vicinity of vanadium tetrachloride. The use of water must be avoided except to cool surrounding containers where there is no danger of water coming into contact with the vanadium tetrachloride. In the event of minor spills, flush with large quantities of water, then neutralize with sodium carbonate when fumes subside. For major spills, cover with foam or soda ash, then hydrolize the product in a controlled manner using a water fog.

USUAL SHIPPING CONTAINERS: Cylinders or steel portable tanks.

STORAGE: Protect against physical damage. Keep containers upright and tightly closed when not in use. All tanks, cylinders, other storage vessels and transfer piping should be charged with a blanket of nitrogen at not less than 5 psi. Separate from combustible or reactive materials. Store in a cool, dry, well-ventilated location, away from sunlight, heat, steam pipes or any area where the fire hazard may be acute. Outside or detached, well-isolated storage is preferred. Keep away from water or location where water may be needed for fire control in other storage or for fire involving the building. Chill to below 68° F (20° C) before opening.

VEGETABLE OIL (hydrogenated) See APPENDIX A

VINETHANE See DIVINYL ETHER

VINYL ACETATE $CH_2{:}CHOCO.CH_3$

DESCRIPTION: Colorless liquid.

FIRE AND EXPLOSION HAZARDS: Flammable liquid. Flash point, 18° F. Vapor forms explosive mixtures with air. Ignition temperature, 800° F. Flammable limits, 2.6% and 13.4%. Liquid is lighter than water (specific gravity, 0.9). Vapor is heavier than air (vapor-air density at 100° F., 1.5) and may travel a considerable distance to a source of ignition and flash back. Vinyl acetate in contact with peroxides may polymerize violently. Usually inhibited with hydroquinone or diphenylamine to prevent polymerization. At elevated temperatures, such as in fire conditions, polymerization may take place. If the polymerization takes place in a container, there is the possibility of violent rupture of the container. Slightly soluble in water.

LIFE HAZARD: Vinyl acetate has a low toxicity. Vapor will irritate eyes.

PERSONAL PROTECTION: Wear self-contained breathing apparatus; wear goggles if eye protection not provided.

FIRE FIGHTING PHASES: Will react vigorously with water. Use water spray if necessary to keep containers cool.

USUAL SHIPPING CONTAINERS: Glass bottles; drums.

STORAGE: Protect against physical damage. Keep containers tightly sealed. Outside or detached storage is preferable.

APPENDIX A

1. The information preceding this Appendix is restricted to chemicals that have a Health Hazard Identification number of 2 or higher, a Reactivity Hazard Identification number of 1 or higher, present unusual storage or fire fighting problems, or can become hazardous on being contaminated or mixed with other chemicals (see page 49-3). Since these limitations exclude many chemicals that are hazardous primarily because of flammability, i.e., acetone, the Sectional Committee on Properties of Hazardous Chemicals, at the request of many users of this pamphlet, has added this Appendix so that one can now find in one pamphlet guidance on handling emergencies involving the more common flammable chemicals commercially available.

2. Recommendations for handling emergencies involving a chemical that is hazardous primarily because of flammability depend on its physical state (liquid, gas), its flash point, and its water solubility. The numbers in the righthand column of Table 1 refer to numbered paragraphs at the end of the Table that contain recommendations for fighting fires or handling spills.

NFPA No. 325M, Fire-Hazard Properties of Flammable Liquids, Gases and Volatile Solids, contains these and other data on more than 1,300 chemicals.

Table 1. Properties of Common Flammable Chemicals

	Hazard Identification Health	Flammability	Reactivity	Flash Pt. °F	Water Soluble	Fire Fighting Phases
Acetophenone	1	2	0	180 (oc)	No	5
Acetone	1	3	0	0	Yes	2
Adipic Acid	1	1	0	385	No	7
Asphalt (typical)	0	1	0	400 + (oc)	No	7
1-Bromopentane	1	3	0	90	No	4
Butane	1	4	0	Gas	No	1
1-Butane	1	3	0	84	Yes	2
2-Butanol	1	3	0	75	Yes	2
Butenes	1	4	0	Gas	No	1
Butyl Acetate	1	3	0	72	Slightly	2
Butyl Acetate (iso)	1	3	0	64	No	4
Butyl Benzoate (n)	1	1	0	225 (oc)	No	7
Chlorohexane	0	3	0	95	No	4
1-Chloropentane	1	3	0	55 (oc)	No	4
Cod Liver Oil	0	1	0	412	No	7
Corn Oil	0	1	0	490	No	7
Cottonseed Oil	0	1	0	486	No	7
Cyclohexane	1	3	0	minus 4	No	4
Cyclohexanone	1	2	0	111	Slightly	3
Cyclohexyl Alcohol	1	2	0	154	Slightly	3
Cyclopentane	1	3	0	less than 20	No	4
Cyclopropane	1	4	0	Gas	No	1
Decane (n)	0	2	0	115	No	5
Decanol	0	2	0	180	No	5
Dibutyl Phthalate	0	1	0	315	No	7
Diesel Fuel Oil No. 1-D	0	2	0	100 min. or legal	No	5
Diesel Fuel Oil No. 2-D	0	2	0	125 min. or legal	No	5
Diesel Fuel Oil No. 4-D	0	2	0	130 min. or legal	No	5
Diethanolamine	1	1	0	305	Yes	6
Diethylene Glycol	1	1	0	225	Yes	6
Diethyl Phthalate (o)	0	1	0	325 (oc)	No	7
Dioctyl Phthalate	0	1	0	425 (oc)	No	7
Dipropylene Glycol	0	1	0	280	Yes	6
Ethyl Acetate	1	3	0	24	Slightly	2
Ethyl Alcohol	0	3	0	55	Yes	2
Ethyl Benzoate	1	1	0	greater than 204	No	7
2-Ethylbutanol	1	2	0	135 (oc)	No	5
Ethylbutyl Acetate	1	2	0	130 (oc)	No	5
Ethylbutyl Ketone	1	2	0	115 (oc)	No	5
Ethylene Glycol	1	1	0	232	Yes	6
Ethel Methyl Ketone	1	3	0	21	Yes	2
Fuel Oil No. 1 (Range Oil, Kerosine)	0	2	0	100 min. or legal	No	5
Fuel Oil No. 2	0	2	0	100 min. or legal	No	5
Fuel Oil No. 4	0	2	0	130 min. or legal	No	5
Fuel Oil No. 5	0	2	0	130 min. or legal	No	5
Fuel Oil No. 6	0	2	0	150 min. or legal	No	5
Gasoline	1	3	0	minus 45	No	4
Glycerine	1	1	0	320	Yes	6
Heptane (n)	1	3	0	25	No	4
Hexane (n)	1	3	0	minus 7	No	4
1-Hexanol	1	2	0	145	Slightly	3

Table 1. Properties of Common Flammable Chemicals — (cont.)

	Hazard Identification Health	Flammability	Reactivity	Flash Pt. °F	Water Soluble	Fire Fighting Phases
Hydrogen	0	4	0	Gas	Slightly	1
Isopentyl Alcohol	1	2	0	109	Slightly	3
Isopropyl Alcohol	1	3	0	53	Yes	2
Lanolin	0	1	0	460	No	7
Lard Oil (commercial or animal)	0	1	0	395	No	7
Linseed Oil (boiled)	0	1	0	403	No	7
Lubricating Oil (mineral)	0	1	0	300–450	No	7
Methanol	1	3	0	52	Yes	2
Methyl Acetate	1	3	0	14	Yes	2
2-Methyl-2-Butanol	1	2	0	103	Slightly	3
2-Methyl-2-Propanol	1	3	0	52	Yes	2
Methyl Salicylate	1	1	0	214	No	7
Mineral Oil	0	1	0	380 (oc)	No	7
Octane	0	3	0	56	No	4
Octyl Alcohol (n)	1	2	0	178	No	5
Oleic Acid	0	1	0	372	No	7
Oleo Oil	0	1	0	450	No	7
Peanut Oil	0	1	0	540	No	7
Pentane	1	4	0	Less than minus 40	No	1
1-Pentanol(n)	1	3	0	91	Slightly	2
2-Pentanol	1	3	0	94	Slightly	2
Pentanol-3	1	2	0	105	Slightly	3
Pentyl Acetate(n)	1	3	0	77	Slightly	2
Pentyl Benzene	1	2	0	150 (oc)	No	5
Pentyl Laurate	0	1	0	300 (oc)	No	7
Pentylnaphthalene	0	1	0	255 (oc)	No	7
Petroleum (crude)	1	3	0	20–90	No	4
Propane	1	4	0	Gas	No	1
Propyl Acetate	1	3	0	58	Yes	2
Propylene Glycol	0	1	0	210	Yes	6
Quenching Oil	0	1	0	365	No	1
Soy Bean Oil	0	1	0	540	No	7
Tallow Oil	0	1	0	492	No	7
Tetrahydronaphthalene	1	2	0	160	No	5
Transformer Oil	0	1	0	295 (oc)	No	7
2, 4, 5-Trichlorophenol in solvent	1	1	0	Solvent Flash Point	No	5
2, 4, 6-Trichlorophenol in solvent	1	1	0	Solvent Flash Point	No	5
Triethylene Glycol	1	1	0	350	Yes	6
Turpentine	1	3	0	95'	No	4
Vegetable Oil (hydrogenated)	0	1	0	610 (oc)	No	7

Fire Fighting Phases

The numbers at the left of the paragraphs below correspond to the numbers in the right-hand column of Table 1.

1 FIRE FIGHTING PHASES: Stop flow of gas. Use water to keep fire-exposed containers cool and to protect men effecting the shutoff. If a leak or spill has not ignited, use water spray to disperse the gas or vapor and to protect men attempting to stop a leak.

2 FIRE FIGHTING PHASES: Use dry chemical, "alcohol" foam, or carbon dioxide; water may be ineffective (see Explanatory), but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect men attempting to stop a leak. Water spray may be used to flush spills away from exposures and to dilute spills to nonflammable mixtures.

3 FIRE FIGHTING PHASES: Use water spray, dry chemical, "alcohol" foam, or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect men attempting to stop a leak. Water spray may be used to flush spills away from exposures and to dilute spills to nonflammable mixtures.

4 FIRE FIGHTING PHASES: Use dry chemical, foam, or carbon dioxide. Water may be ineffective (see Explanatory), but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect men attempting to stop a leak. Water spray may be used to flush spills away from exposures.

5 FIRE FIGHTING PHASES: Use water spray, dry chemical, foam, or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for men attempting to stop a leak. Water spray may be used to flush spills away from exposures.

6 FIRE FIGHTING PHASES: Use water spray, dry chemical, "alcohol" foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures and to dilute spills to non-combustible mixtures.

7 FIRE FIGHTING PHASES: Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

NUS CORPORATION

TITLE: THREE MILE VICINITY MAP	
SITE: METHODE ELECTRONICS, WILLINGBORO, N.J.	
DATE: 7/18/89	
TDD: 02-8906-08	
QUAD: BEVERLY, N.J.	FIGURE NUMBER: / SCALE: 1"=2000'