NUS CORPORATION
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FINAL DRAFT
PRELIMINARY ASSESSMENT
BECTON, DICKINSON AND COMPANY
EAST RUTHERFORD, NEW JERSEY

FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

02-8910-28-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
BECTON, DICKINSON AND COMPANY
EAST RUTHERFORD, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8910-28
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

DECEMBER 29, 1989

NUS CORPORATION
SUPERFUND DIVISION

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POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. Site Name/Alias Becton, Dickinson and Company

   Street Stanley Street

   City East Rutherford State New Jersey Zip 07073

2. County Bergen County Code 003 Cong. Dist. 9

3 EPA ID No. NJD000304782

4. Latitude 40° 49′ 48″ N Longitude 74° 05′ 38″ W

   USGS Quad. Weehawken, NJ-NY

5. Owner Becton, Dickinson and Company Tel. No. (201) 848-6800

   Street One Becton Drive

   City Franklin Lakes State New Jersey Zip 07417

6. Operator Becton, Dickinson and Company Tel. No. (201) 460-2000

   Street Stanley Street

   City East Rutherford State New Jersey Zip 07073

7. Type of Ownership

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

8. Owner/Operator Notification on File

   ☒ RCRA 3001 Date 10-9-80 ☐ CERCLA 103c Date
   ☐ None ☐ Unknown

9. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
NJPDES	NJ0001074	Unknown	Unknown	
NJDEP Air Permits	Unknown	Unknown	Unknown	

10. Site Status

    ☒ Active ☐ Inactive ☐ Unknown

11. Years of Operation 1907 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	Faciiity Name for Unit
1	Drums	Drum Storage Area
2	Tanks	Underground Storage Tanks

(b) Other Areas of Concern

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

Two underground oil tanks were removed from the facility. Upon removal, there was evidence of leakage. Soils were subsequently sampled and contaminated soils were excavated and disposed at an authorized facility. A wastewater treatment tank, that had been used to neutralize acidic wastewaters from the electroplating operation prior to discharge to the sanitary sewer system, should have been classified as an industrial waste management facility (IWMF) and not a RCRA unit. The treatment tank was expected to cease operation by May 31, 1989. Final decommissioning of the tank will be completed as part of the ECRA decontamination plan. As a result of protective filing, an ethylene oxide (ETO) vacuum pump was incorrectly classified in Becton, Dickinson and Company's (B-D) original Part A application as a RCRA unit (T04). The use of the vacuum pump was discontinued in 1986.

13. Information available from

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

Preparer Peter Babich Agency NUS Corp. Region 2 FIT Date 12-29-89

PART II: WASTE SOURCE INFORMATION

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

Waste Unit 1 - Containers, Drum Storage Area

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

   Becton-Dickinson (B-D) filed a Notification of Hazardous Waste Activity on August 18, 1980 and declared it was a generator, transporter, and treatment, storage, or disposal (TSD) facility of hazardous waste. On May 17, 1982, a Part A Hazardous Permit Application was submitted to the United States Environmental Protection Agency (U.S. EPA). As part of its Environmental Conservation Recovery Act (ECRA) program, B-D has completed a series of comprehensive environmental investigations at the site. Over 90 ground water monitoring wells have been installed and sampled and over 400 soil samples have been collected. This investigation covered four Resource Conservation and Recovery Act (RCRA) interim status facilities (i.e., three former underground tank locations and a container storage area). A report of these investigations was submitted to New Jersey Department of Environmental Protection's (NJDEP) Industrial Site Evaluation Unit in February 1988. The age of the drum storage area is not known

   8-D has also submitted an ECRA clean-up plan for a portion of the site to the NJDEP. The cleanup plan has been developed to obtain ECRA clearance for the B-D/Federal Reserve Bank (FRB) property transfer. In addition to ECRA clearance, B-D is proceeding to officially close and delist the RCRA interim status facilities prior to the property transfer.

   RCRA wastes are currently being accumulated in containers in Building T. Building T has been used only for generator accumulation of hazardous waste and is, therefore, not included as an interim status unit requiring RCRA closure.

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

   The former container storage area was located to the east of Building L and north of Building W. These buildings are no longer present. Presently, generated wastes are stored in Building T.

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 size of the former waste unit is approximately 10 ft. by 10 ft. The unit had a design capacity of 1385 gallons. The size of the present waste unit is not known. However, during a RCRA inpsection, 19 drums were observed.

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 physical state of the wastes is liquid.

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

   The identified wastes are plating wastes, acid and alkaline wastes, chlorinated solvent waste, waste alcohol acetone and water mixture, and waste oils. The plating wastes may contain inorganics such as cyanide, chromium, and nickel.

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

The wastes generated by 8-D were collected in 55-gallon drums and stored in the container storage area. The drums were formerly stored on an asphaltic concrete floor with no known containment. Waste drums are now stored in an inside storage shed on a concrete floor with a sump.

Ref. Nos. 1, 2, 3

PART II: WASTE SOURCE INFORMATION

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

Waste Unit 2 - Tanks, Underground storage tanks

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

   B-D filed a Notification of Hazardous Waste Activity on August 18, 1980 and declared it was a generator and a TSD facility. On May 17, 1982, a Part A Hazardous Permit Application was submitted to the U.S. EPA. As part of its ECRA program, B-D has completed a series of comprehensive environmental investigations at the site. Over 90 ground water monitoring wells have been installed and sampled and over 400 soil samples have been collected. This investigation covered four RCRA interim status facilities (i.e., three former underground tank locations and a container storage area). A report of these investigations was submitted to NJDEP's Industrial Site Evaluation Unit in February 1988. The age of the underground storage tanks is not known.

   B-D has also submitted an ECRA clean-up plan for a portion of the site to the NJDEP. The cleanup plan has been developed to obtain ECRA clearance for the B-D/FRB property transfer. In addition to ECRA clearance, B-D is proceeding to officially close and delist the RCRA interim status facilities prior to the property transfer.

   The underground storage tanks were used to store hazardous waste prior to disposal in authorized off-site facilities. B-D discontinued the operation of the tanks in 1985. In 1986, the tanks were removed, rendered unusable and transported to an authorized hazardous waste disposal facility.

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

   Two underground storage tanks were located south of Stanley Street, north of Orchard Street and west of Route 17. A third underground storage tank was located on the west side of Building D.

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.

   There were three underground storage tanks. Two tanks had a capacity of 1,000 gallons each and one tank had a capacity of 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 physical state of the wastes was liquid.

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

   The identified wastes were acetone, methanol, and halogenated solvents used in degreasing such as tetrachioroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane and carbon tetrachloride. Inorganics such as cyanide, chromium, and nickel may also have been present from electroplating processes.

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

During the excavation of the three tanks, there was evidence of soil contamination. Volatile organic compounds were found in all excavation silts. Two of the excavation pits contained groundwater due to the highwater table. There were no known containment or diversion features associated with the underground storage tanks.

Ref. Nos. 1, 2, 3, 17

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.

   On May 14, 1986, a soil sampling program was conducted to characterize the surrounding soils after excavation of underground storage tanks. Spent degreasing solvents and used oil were stored in the tanks. Inorganics such as cyanide, chromium, and nickel used in the electroplating operations may also be present. There was evidence of soil contamination when the tanks were removed. After the removal of storage tank C, groundwater was discovered approximately 2 feet below ground level. Fifty-five gallon steel drums containing RCRA wastes were formerly stored ih an area measuring approximately 10 feet by 10 feet located on top of asphaltic pavement. It is not certain if the drums were protected from the elements or if a containment structure was in place. A rectangular concrete tank had been used to neutralize acidic wastewaters generated from the electroplating process prior to discharge to the sanitary sewer system. Treated effluent from the tank is discharged through the sanitary sewer system to the Bergen County Utilities Authority. The integrity of the concrete tank is unknown.

   Ref. Nos. 3

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.

   Triassic sediments, composed of sands, fine sands, silts, clay, and gravel, are almost entirely underlain by sedimentary Passaic Formation (formerly known as the Brunswick Formation) shale. Although the primary permeability of sedimentary shale is low, appreciable amounts of water are found in joints and fractures. Unless a significant number of these joints and fractures are penetrated by a well, yields may be relatively small. The region is heavily dependent upon unconsolidated glacial deposits for water supply, and where these occur in buried, eroded rock channels and are thick and permeable, the glacial sediments represent the most important source of groundwater. In locations where the surficial deposits are thick and permeable, direct hydraulic connection with the underlying bedrock, adjacent streams, rivers, and lakes exists. The glacial till consists of silt, loess silty clays, silty loams and moderately permeable till. The permeability value is estimated to be between 10^{-5} to 10^{-7} cm/sec. The aquifer of concern is the Passaic Formation. The estimated permeability of the stratified drift and bedrock aquifers is between 10^{-3} to 10^{-5} cm/sec. Reported static water levels from local wells are 11 and 14 feet. The direction of the water movement in response to pumping parallels the strike of the beds, which is southwest to northeast.

   Ref. Nos. 4, 5, 21

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

   A sole source aquifer has not been designated within 3 miles of the site.

   Ref. No. 6

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?

   During the excavation of the underground tanks, it was observed that one excavation pit contained water due to the high water table in the area. The depth of the pit which contained storage tank C was 5 feet deep and it contained 3 feet of water. Therefore, the contaminants are in contact with groundwater.

   Ref. No. 7

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 for overburden sediments consisting of silt, loess, silty clays, silty loams and moderately permeable till is estimated to be between 10^{-5} to 10^{-7} cm/sec.

Ref. No. 5

6. What is the net precipitation for the area?

The estimated net precipitation for the area is 12 inches.

Ref. No. 5

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

There are at least 5 domestic and 24 municipal supply wells that supply drinking water drawn from the aquiter of concern within 3 miles of the site. Wells used in Garfield, Wallington, and Lodi supply drinking water for approximately 62,000 people.

Ref. Nos. 8, 19, 20

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

Distance approximately 2.0 miles Depth Unknown

Ref. No. 9

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

Approximately 62,000 people are served by the Garfield (27,000), Wallington (11,000), and Lodi (24,000) Water Departments.

Ref. Nos. 8, 19, 20

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 likelihood of a release is low as the present site-generated wastes are stored in drums in a shed. The concrete floor of the shed is equipped with a sump. A RCRA inspection did not report any leaking or corroded drums. Three former underground tanks were removed and showed signs of soil contamination. There were no known containment features for the underground storage tanks. The tanks contained volatile organic compounds. Heavy metals such as cyanide, chromium, and nickel, used in the electroplating operations, may also be present. It is not known if all contaminated soils were removed. It is possible that contaminated soils could be washed to the storm drains and eventually enter Berrys Creek and ultimately the Hackensack River. B-D is permitted (NJ0001074) to discharge noncontact cooling water to Berrys Creek. Fifty-five gallon steel drums containing RCRA wastes were formerly stored in an area measuring approximately 10 feet by 10 feet located on top of asphaltic pavement. It is not certain if the drums were protected from the elements or if a containment structure was in place. A rectangular concrete tank had been used to neutralize acidic wastewaters generated from the electroplating process prior to discharge to the sanitary sewer

system. Treated effluent from the tank is discharged through the sanitary sewer system to the Bergen County Utilities Authority. It is not known if the treatment tank had any type of containment features.

Ref. Nos. 3, 10

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

The nearest downslope surface water is Berrys Creek, which is approximately 0.5 mile from the site. Contaminants could be discharged into Berrys Creek through the storm drains. The exact point of discharge of the storm drains is not known. Berrys Creek ultimately flows to the Hackensack River.

Ref. Nos. 10, 11

12. What is the facility slope in percent? (Faciiity 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 slope of the facility is less than 3 percent.

Ref. Nos. 10, 11

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 0 to 3 percent.

Ref. Nos. 10, 11

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

The 1-year 24-hour rainfall for the area is approximately 2.75 inches.

Ref. No. 5

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 distance from the waste unit to the nearest downslope surface water is approximately 0.5 mile through the storm sewer. The exact discharge point to surface water is not known.

Ref. No. 11

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

Berrys Creek, which is located about 0.5 mile southeast of the site, is classified as FW2-NT/SE2. Designated uses are primary and secondary contact recreation. Other uses include industrial and agricultural water supply and potable water after treatment as required by law or regulation. Berrys Creek discharges to the Hackensack River, which is classified as SE2. In all SE2 waters the designated uses are maintenance, migration and propagation of natural and established biota, migration of diadromous fish, maintenance of wildlife, secondary contact recreation, and any other reasonable uses.

Ref. Nos. 12, 14, 15

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.

Walden Swamp, a tidally affected coastal wetland which is greater than 5 acres in area, is located approximatley 0.25 mile east of the site.

Ref. No. 11

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

There is no critical habitat of a federally listed endangered species identified within 2 miles of the site.

Ref. No. 13

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

A coastal wetland exists approximately 0.25 mile from the site. Drainage from the site is via the storm drains. The exact location of discharge is not known.

Ref. Nos. 10, 11

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 surface water intakes along Berrys Creek or the Hackensack River within 3 miles downstream of the site.

Ref. No. 8

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

Berrys Creek, which is located about 0.5 mile southeast of the site, is classified as FW2-NT/SE2. Designated uses are primary and secondary contact recreation. Other uses include industrial and agricultural water supply and potable water after treatment as required by law or regulation. Berrys Creek discharges to the Hackensack River which is classified as SE2. In all SE2 waters the designated uses are maintenance, migration and propagation of natural and established biota, migration of diadromous fish, maintenance of wildlife, secondary contact recreation, and any other reasonable uses.

Ref. Nos. 12, 14, 15

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

There is no known apparent biota contamination attributable to the site.

Ref. No. 10

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.

In 1987, it was reported that the facility released the following three solvents into the air: 5,854 pounds of acetone, 6,381 pounds of methanol, and 8,552 pounds of methyl chloroform. Also, heavy metals used in the electroplating process could be present in unremediated soils. During dry and dusty conditions, particulates could be released into the air.

Ref. Nos. 3, 18

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

The population within a 4-mile radius of the site is approximately 293,000.

Ref. No. 16

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.

All wastes are contained in 55-gallon drums. According to a RCRA inspection the wastes were stored and handled properly, thus reducing the potential for fire and explosion.

Ref. No. 3

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 of the site is approximately 64,000.

Ref. No. 16

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 is low for unauthorized direct contact with wastes stored at the facility. The active facility is fenced and has a guard house. The soils from around 3 excavated tanks were contaminated with volatile organic compounds. It is not known if the contaminated soils were removed. Heavy metals that may have been stored in the tanks may be present in the soils and workers at the construction site could potentially come in contact with them. Fifty-five gallon steel drums containing RCRA wastes were formerly stored in an area measuring approximately 100 ft^2, located on top of asphaltic pavement with no known containment or diversion system. Also, in this area was a wastewater treatment tank that had been used to neutralize acidic wastewaters from the electroplating operation prior to discharge to the sanitary sewer system. The treatment tank had no known containment system. The area where two of the tanks were removed, and the original drum storage area and the treatment tank were located, is now a construction site.

Ref. Nos. 2, 3, 10

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

There are approximately four houses and a restaurant whose properties are adjacent to the site.

Ref. Nos. 10, 11

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

The population within a 1-mile radius of the site is approximately 19,000.

Ref. No. 16

PART IV: SITE SUMMARY AND RECOMMENDATIONS

Becton, Dickinson (B-D) is located in a iight industrial area of East Rutherford, Bergen County, New Jersey. B-D has a research and development lab, production facilities, and administrative offices. The majority of these activities have been transferred to off-site facilities. B-D currently operates as a RCRA generator and has interim status for storage and treatment units which are no longer operated. B-D's interim status covers a container storage area, three underground storage tanks, a treatment tank, and a vacuum pump. The use of these waste management facilities as RCRA treatment and storage units was discontinued in 1985 and 1986. B-D is permitted to discharge noncontact cooling water to Berrys Creek.

B-D is expected to cease manufacturing operations at the East Rutherford plant in 1990. As a result of this planned change, B-D submitted initial ECRA notices to NJDEP in June, 1987. Since then, B-D reached a financial agreement with the Federal Reserve Bank of New York (FRB) for the transfer of the southern portion of the site in October 1989.

B-D is currently making specially ground needles of various sizes. This involves grinding, stamping, electroplating, cleaning, testing, and packaging. They also manufacture glass syringes and brass fittings that fit on the ends of the syringes. The manufacturing of the needles, syringes, and brass fittings involves the use of nitric acid to retard rusting, degreasers such as 1,1,1-trichiorethyiene, and chromic acid from plating operations. The bulk of the wastes was stored in three underground storage tanks. During the removal of the tanks in 1986, there was evidence of leakage into the soil. A tank removal soil sampling program was initiated. Soil samples were taken from ail three excavation pits. Volatile organic compounds (VOCs) were found at all three excavation pits. The VOCs included methylene chloride, acetone, chloroform, 1,1,1-trichloroethane, and trichloroethene. Inorganics such as cyanide, nickel, and chromium, used in the electroplating operations, may also be present.

As part of an ECRA program, B-D has installed and sampled over 90 monitoring wells and has collected over 400 soil sampies. B-D has also submitted an ECRA cleanup plan for a portion of the site to the NJDEP. The cleanup plan has been developed to obtain ECRA clearance for a property transfer.

A **MEDIUM PRIORITY** screening site inspection is recommended for the Becton, Dickinson and Company Site. This recommendation is based on the potential for human exposure to hazardous materials at the Becton, Dickinson and Company faciiity via groundwater, direct contact, and air pathways. This recommendation is supported by the following informatipn that was acquired during an off-site reconnaissance and subsequent report preparation:

PART IV: SITE SUMMARY AND RECOMMENDATIONS (CONT'D)

- Groundwater within 3 miles of the site is used as a potable water supply by approximately 62,000 people.

- If there was inadequate remediation of the soils that were contaminated by volatile organic compounds and inorganic compounds, contaminated particulates could become airborne during dry and dusty conditions. There are approximately 19,000 people, seven schools and four parks located within a 1-mile radius of the site.

- Since the area of the site contaminated by hazardous waste is under construction, direct contact with contaminants by workers is possible if inadequate remediation occurred.

- Surface water runoff from soils that were contaminated by hazardous wastes could potentially migrate to nearby sensitive environments.

ATTACHMENT 1

BECTON, DICKINSON AND COMPANY
EAST RUTHERFORD, NEW JERSEY

CONTENTS

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

02-8910-28-PA
Rev. No. 0

SITE LOCATION MAP
BECTON DICKINSON & COMPANY,
EAST RUTHERFORD, N.J.

SCALE : 1"=2000'

FIGURE 1

NUS CORPORATION

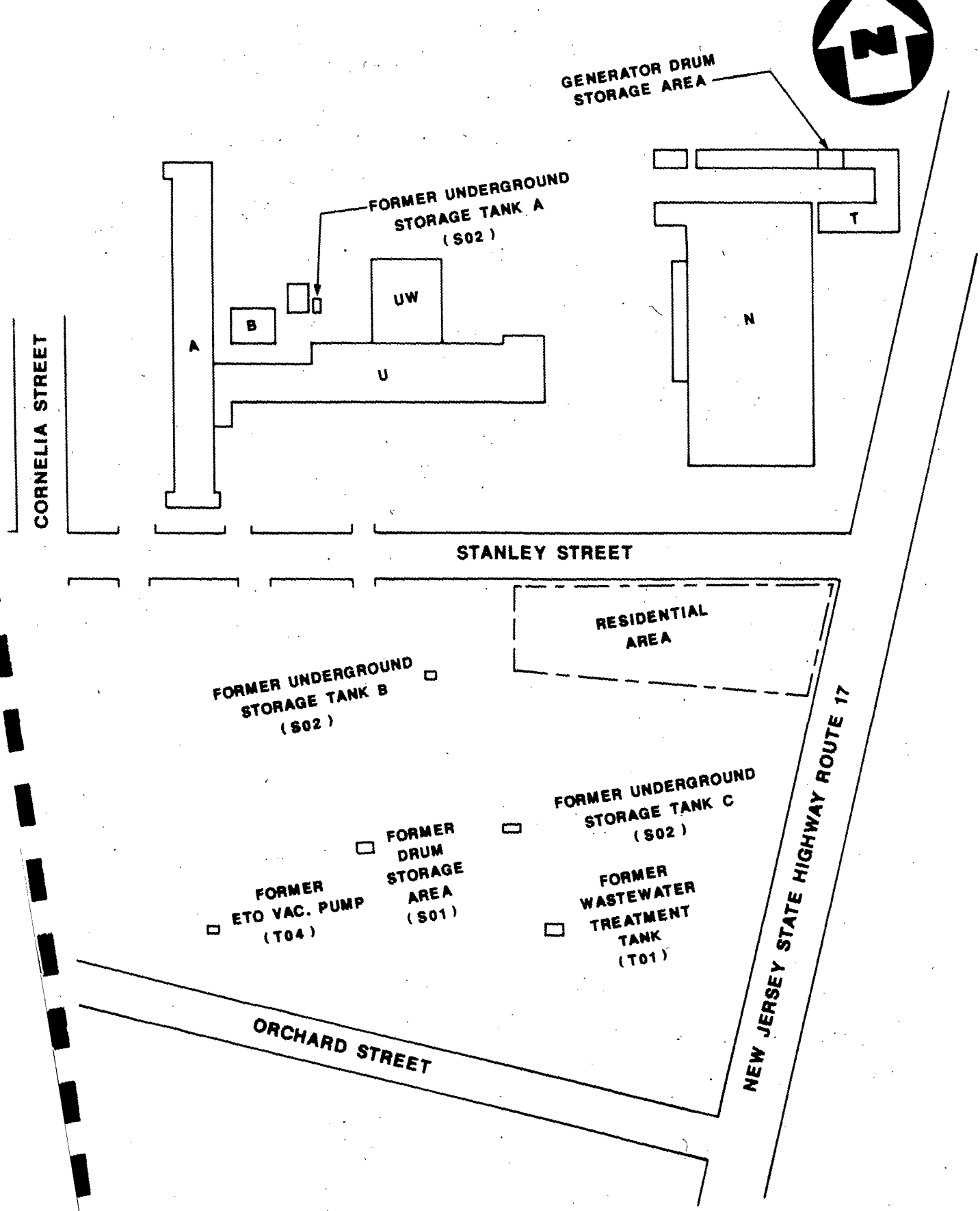


FIGURE 2

NUS CORPORATION

SITE MAP

BECTON DICKINSON & COMPANY,

EAST RUTHERFORD, N.J.

(SCALE UNKNOWN)

EXHIBIT A

PHOTOGRAPH LOG

BECTON DICKINSON and COMPANY
EAST RUTHERFORD, NEW JERSEY

OFF-SITE RECONNAISSANCE: DECEMBER 15, 1989

*Note: Pictures taken on off-site reconnaissance performed on October 26, 1989 did not come out. Pictures retaken on December 15, 1989.

BECTON, DICKINSON and COMPANY,
EAST RUTHERFORD, NEW 3ERSEY
DECEMBER 15, 1989

PHOTOGRAPH LOG

ALL PHOTOGRAPHS TAKEN BY ANTHONY CULMONE

Photo Number	Description	Time
1P-1	Monitoring well at southeast corner of the site.	0730
1P-3	Looking north from center on southside of property.	0734
1P-4	Vent pipes outside of guard shack at southwest corner of property.	0736
1P-5	View of site from high school entrance.	0739
1P-6	View of property across Stanley Street from Route 17.	0743
1P-7	View from Route 17 up Stanley Street and east border of the site.	0747
1P-8	View from Route 17 up Stanley Street and east border of the site.	0747
1P-9	View from Route 17 up Stanley Street and east border of the site.	0747

BECTON, DICKINSON and COMPANY, EAST RUTHERFORD, NEW JERSEY

1P-1 December 15, 1989 0730
Monitoring well at southeast corner of the site.

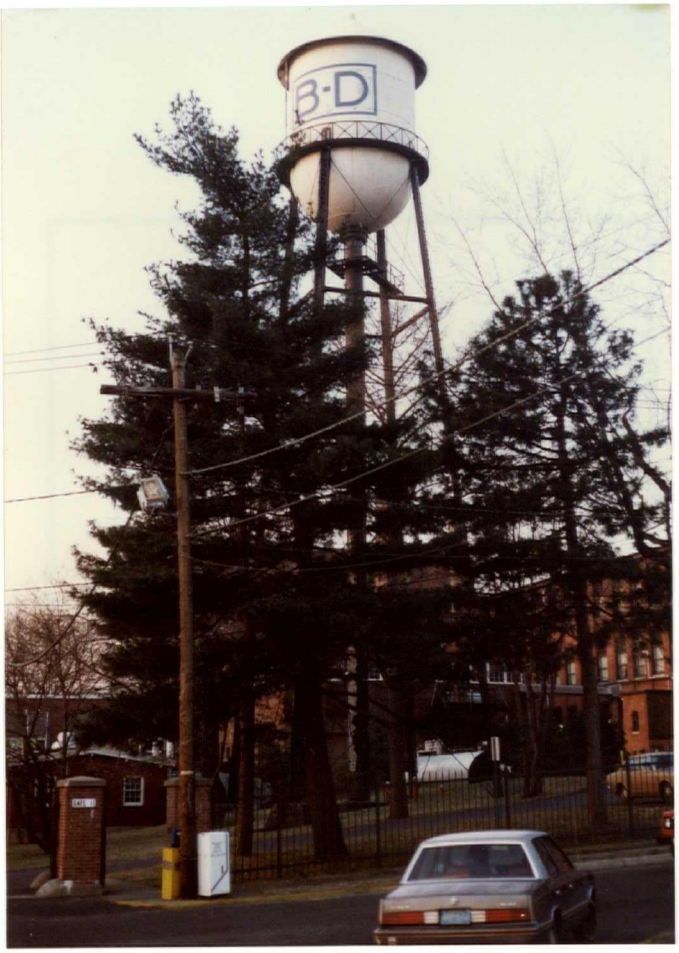
1P-3 December 15, 1989 0734
Looking north from center on southside of property.

BECTON, DICKINSON and COMPANY, EAST RUTHERFORD, NEW JERSEY

1P-4 December 15, 1989 0736

Vent pipes outside of guard shack at southwest corner of property.

BECTON, DICKINSON and COMPANY, EAST RUTHERFORD, NEW JERSEY



1P-5

December 15, 1989
View of site from high school entrance.

0739

BECTON, DICKINSON and COMPANY, EAST RUTHERFORD, NEW JERSEY

1P-6 December 15, 1989 0743
View of property across Stanley Street from Route 17.

1P-7 December 15, 1989 0747
View from Route 17 up Stanley Street and east border of the site.

BECTON, DICKINSON and COMPANY, EAST RUTHERFORD, NEW JERSEY

1P-8 December 15, 1989 0747
View from Route 17 up Stanley Street and east border of the site.

1P-9 December 15, 1989 0747
View from Route 17 up Stanley Street and east border of the site.

ATTACHMENT 2

REFERENCES

1. U.S. EPA Hazardous Waste Permit Application, EPA Form 3510-3, November 24, 1980.
2. RCRA Interim Status Unit, Closure Procedures, Becton-Dickinson and Company, East Rutherford, New Jersey, September 1988.
3. Inspection Report, New Jersey Department of Environmental Protection, (NJDEP) Division of Waste Management, Becton-Dickinson, September 25, 1987 and October 6, 1987.
4. Miller, David W., The New Jersey ground-water situation, Geraghty and Miller, Inc., Groundwater Consultants, August 1979.
5. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.
6. Federal Register, Volume 16, January 24, 1984, 2943, Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey; Final Determination .
7. Tank Removal Soil Sampling Program, Becton-Dickinson & Co., East Rutherford, N.J., Fred C. Hart Associates, Inc.
8. Project Note: From A. Culmone, to D. Cohen, (both of NUS Corp.) Subject: Clarification of telecon information for Bergen County EPI P Sites, October 31, 1989.
9. Water withdrawal points within 5.0 miles of Lat, 40° 47' 31"N and Long. 74° 06' 12"W. Division of Water Resources, Bureau of Water Allocation, N.J. Dept. of Environmental Protection, October 18, 1988.
10. Preliminary Assessment Off-Site Reconnaissance Information Reporting Forms, Becton-Dickinson and Co., TDD No. 02-8910-28, NUS Corp. Region 2 FIT, Edison, New Jersey, October 26, 1989 and December 15, 1989.
11. Three-Mile Vicinity Map based on the U.S. Dept. of the Interior, Geological Survey Topographic Maps, 7.5 minute series, "Weehawken, NJ" Quadrangle, 1967, revised 1981 , "Hackensack, NJ" Quadrangle, 1955, revised 1981; and "Orange, NJ" Quadrangle, 1966, revised 1979.
12. Proceedings of the AWRA Symposium on Coastal Water Resources, Wilmington, NC, May 1988.
13. Atlantic Coast Ecological Inventory, U.S. Fish and Wildlife Service, 1980.
14. NJDEP, Division of Water Resources, Surface Water Quality Standards, NJAC 7:9-4, Index D, July 1985.
15. State of New Jersey, New Jersey Administrative Code, Title 7, Department of Environmental Protection, Transmittal No. 1988-5, pp. 9-106 to 9-107.
16. General Sciences Corp., Graphical Exposure Modeling System (GEMS), Landover, Maryland, 1986.
17. Wagner, Travis. The complete handbook of hazardous waste regulations, Perry-Wagner Publishing Co., 1988.
18. The Record, EPA fines Becton Dickinson, December 22, 1989.
19. Census of Population, General population characteristics of New Jersey, U.S. Dept. of Commerce, Bureau of the Census, 1980.
20. Expanded Site Inspection Report, Industrial Latex Site, NUS Corp. Region 2 FIT, January 21, 1988, TDD No. 02-8903-76.
21. Olsen, Paul E., The latest Triassic and Jurassic Formations of the Newark Basin (Eastern North America, Newark Supergroup): Stratigraphy, Structure and Correlation. New Jersey Academy of Sciences Bulletin, Vol. 25, No. 2, Pages 25-51, 1980.

REFERENCE NO. 1

Please print or type in the unshaded areas only (fill-in areas are spaced for elite type, i.e. 12 ...). Form Approved OMB No. 158-S80028

FORM 3510-1 RCRA

EPA

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 0 0 3 0 4 7 8 2 3 1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
	8 0 1 2 0 3	

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 enter the appropriate date)

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

C	YR.	MO.	DAY
8	0 7	0 1	0 1

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, 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
Treatment:		
TANK	T00	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T01	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T02	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	H
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III (shown in lines numbered X-1 and X-2 below): A facility has two storage tanks, one tank can hold 300 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

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	S01	1385000	G		7				
2	S02	2500000	G		8				
3	T01	10000 ~~000~~	U		9				
4	T04	48000000	U		10				

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

T04 - Ethylene Oxide is mixed with water in vacuum pump prior to discharge to POTW.

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 wastes 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 will 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 are in other units 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 wastes. 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 remaining eight 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 at the foot.

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 estimate in column 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 columns 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 this 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: Assume for illustrative purposes X-1, X-2, X-3, and X-4 below. — A facility will treat and dispose of an estimated 900 pounds per year of chromic sludge from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 500 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	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

 CONTINUE ON PAGE 3

Continued from page 2.
NOTE: Photocopy this page before completing, you have more than 25 wastes to list.

Form Approved OMB No. 1SS-S80004

EPA I.D. NUMBER (enter from page 1)		FOR OFFICIAL USE ONLY	
W N J D 0 0 0 3 0 4 7 8 2	3 1	W DUP	3 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 (in dir. cells)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
20-22									
001	1	F001	30,000000	P	S01	S02			
002-	2	F002							Included with above.
003	3	U288							Included with above.
	4	F007	400000	P	S02	T01			
	5	F008	600000	P	S02	T01			
	6	F009	50,000000	P	S02	T01			
	7	P106	38000	P	S02	T01			
	8	U002	25,000000	P	S01	S02			
	9	U115	7,200000	P					Mix with water in vacuum pump and discharge to POTN.
	10	0151	50000	P	S01				
	11	U154	12,000000	P	S01	S02			
	12	0019	10000	P	S01				
	13	D001	20000	P	S01				
	14	D002	20000	P	S01				
	15	D003	20000	P	S01				
	16	D000	20000	P	S01				
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								
	26								

EPA Form 3810-3 (6-80)

CONTINUE ON REVERSE

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

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

F6: A/55 F6: A/56

EPA I.D. NO. (enter from page 1)														
F	N	J	D	0	0	0	3	0	4	7	8	2	3	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 49 30.0	074 05 36.0

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
Photios T. Paulson, Group President		11/24/80

X. OPERATOR CERTIFICATION

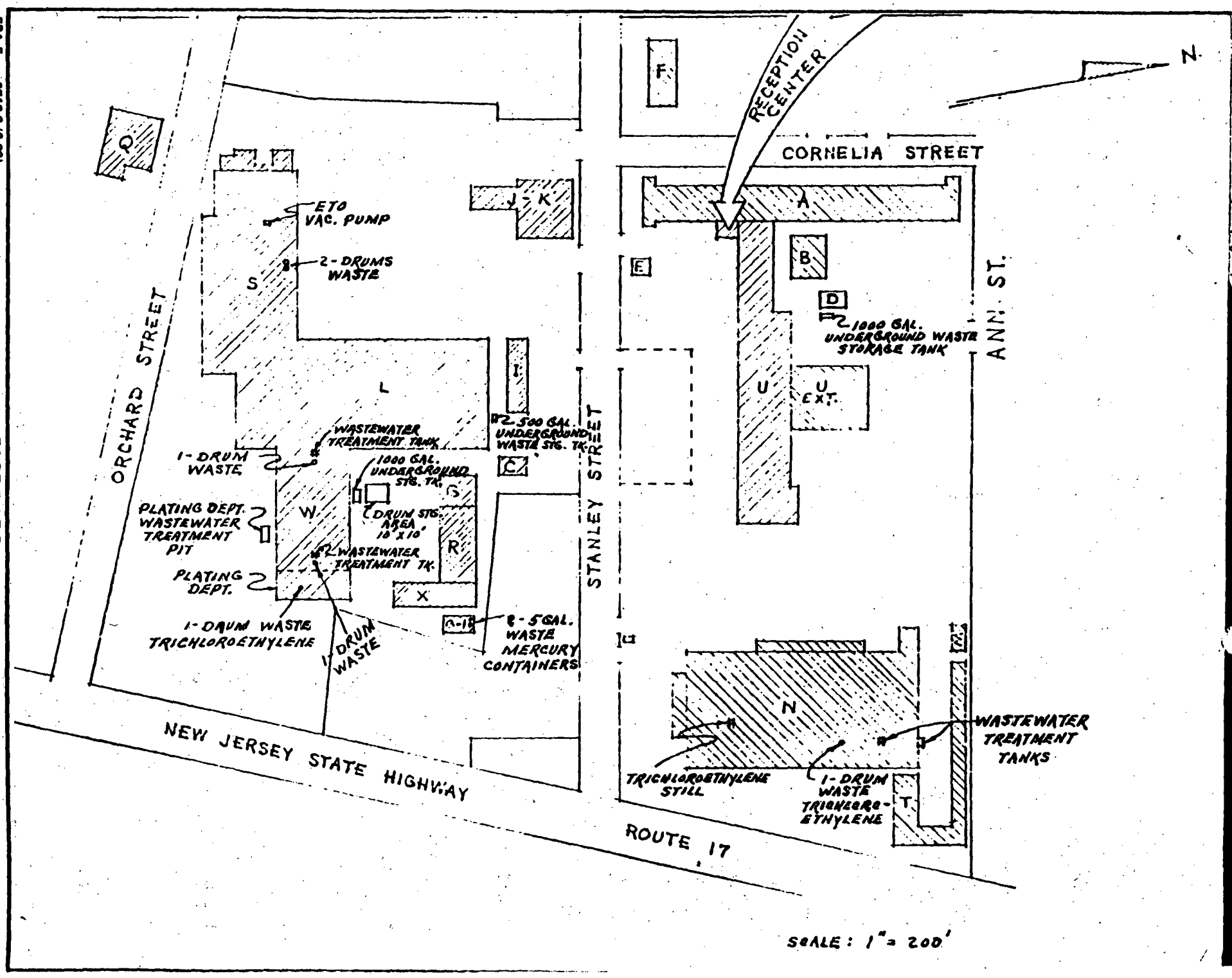
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, 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

CONTINUE ON PAGE 5

Continued from page 4.

V. FACILITY DRAWING (see page 4)



NJD003047822 BECTON DICKINSON

Form Approved OMB No. 158-S80004

EPA Form 3510-3 (6-80)

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

Approved OMB No. 158-S80004

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	0	0	3	0	4	7	8	2		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
07	01	01

☐ 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 process 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 (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

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
X1	S02	600	G		5				
X2	T03	20	E		6				
1	S01	1500			7				
					8				
3					9				
					10				

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

Form Approved OMB No. 158-S80004

CPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N J D 0 0 0 3 0 4 7 8 2 T/A C 1	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 B. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	F 0 0 6	250	G	S 0 1	Plating Wastes
2	D 0 0 2	400	G	S 0 1	Acid Waste
3	D 0 0 2	200	G	S 0 1	Alkaline Waste
4	D 0 0 1	400	G	S 0 1	Waste Alcohol/Water Mix
5	D 0 0 1	400	G	S 0 1	Waste Acetone/Water Mix
6	F 0 0 1	2000	G	S 0 1	Waste Chlorinated Solvents
7	X 7 2 6	2000	G	S 0 1	Waste Oils
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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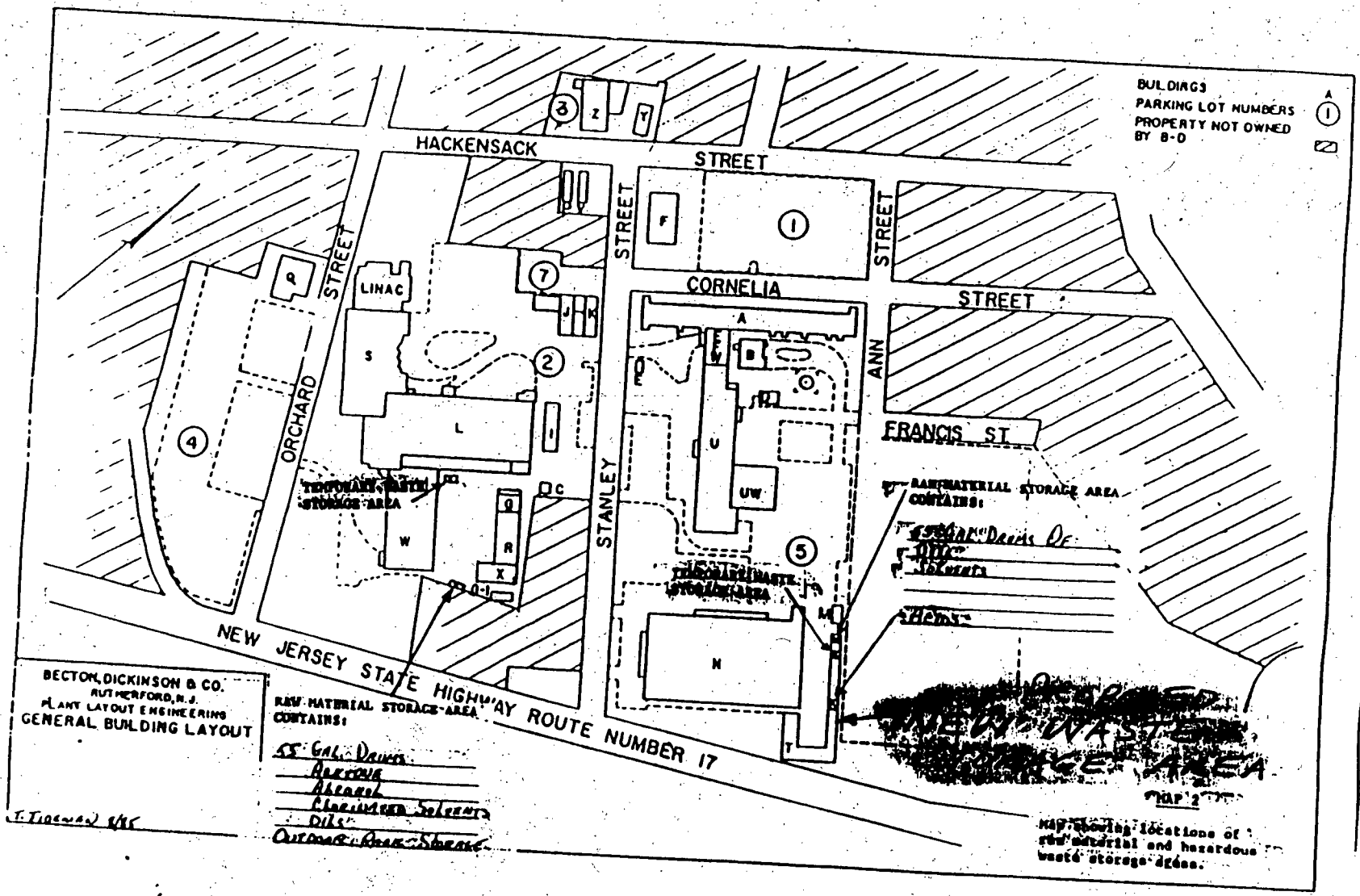
26					



Current 11/14/85

REFERENCE NO. 2

ERM-Northeast

RCRA INTERIM STATUS UNIT
CLOSURE PROCEDURES
BECTON, DICKINSON AND COMPANY
EAST RUTHERFORD, NEW JERSEY

SEPTEMBER, 1988

PREPARED FOR:

BECTON, DICKINSON AND COMPANY
FRANKLIN LAKES, NEW JERSEY

PREPARED BY:

ERM-NORTHEAST, INC.
88 SUNNYSIDE BOULEVARD
PLAINVIEW, NEW YORK 11803

1.0 INTRODUCTION

1.1 Background

Becton, Dickinson and Company (B-D) owns and operates a medical apparatus manufacturing plant in East Rutherford, Bergen County, New Jersey. Hazardous wastes, generated as a result of these manufacturing operations, are then stored on-site prior to disposal at authorized off-site facilities. B-D currently operates as an RCRA generator (EPA ID No. NJD000304782) and has interim status (EPA Part A permit) for storage and treatment units which are no longer operated. B-D's interim status authorization covers a container storage area, 3 underground storage tanks, a treatment tank and a vacuum pump. The use of these waste management facilities as RCRA treatment and storage units was discontinued in 1985 and 1986.

B-D is expected to cease manufacturing operations at the East Rutherford plant in 1990. As a result of this planned change, B-D submitted initial ECRA notices tb NJDEP in June, 1987. Since then, B-D reached a financial agreement with the Federal Reserve Bank of New York (FRB) for the transfer of a portion of the site in October 1989.

As part of its ECRA program, B-D has completed a series of comprehensive environmental investigations at the site. Over 90 ground water monitoring wells have been installed and sampled and over 400 soil samples have been collected. This investigation covered four RCRA interim status facilities (i.e., three former underground tank locations and a container storage area). A report of these investigations was submitted to NJDEP's Industrial Site Evaluation Unit in February, 1988.

B-D has also submitted an ECRA clean-up plan for a portion of the site (Parcels 1, 2, and 3) to the NJDEP. The cleanup plan has been developed to obtain ECRA clearance for the B-D/FRB property transfer. In addition to ECRA clearance, B-D is proceeding to officially close and delist the RCRA interim status facilities prior to the property transfer.

This report describes the East Rutherford plant's RCRA interim status units, provides the results of environmental investigations of these units and presents procedures for closing and delisting the units concurrently with obtaining ECRA clearance for the site.

The remainder of the report is organized in the following sections:

2.0 INTERIM STATUS UNITS

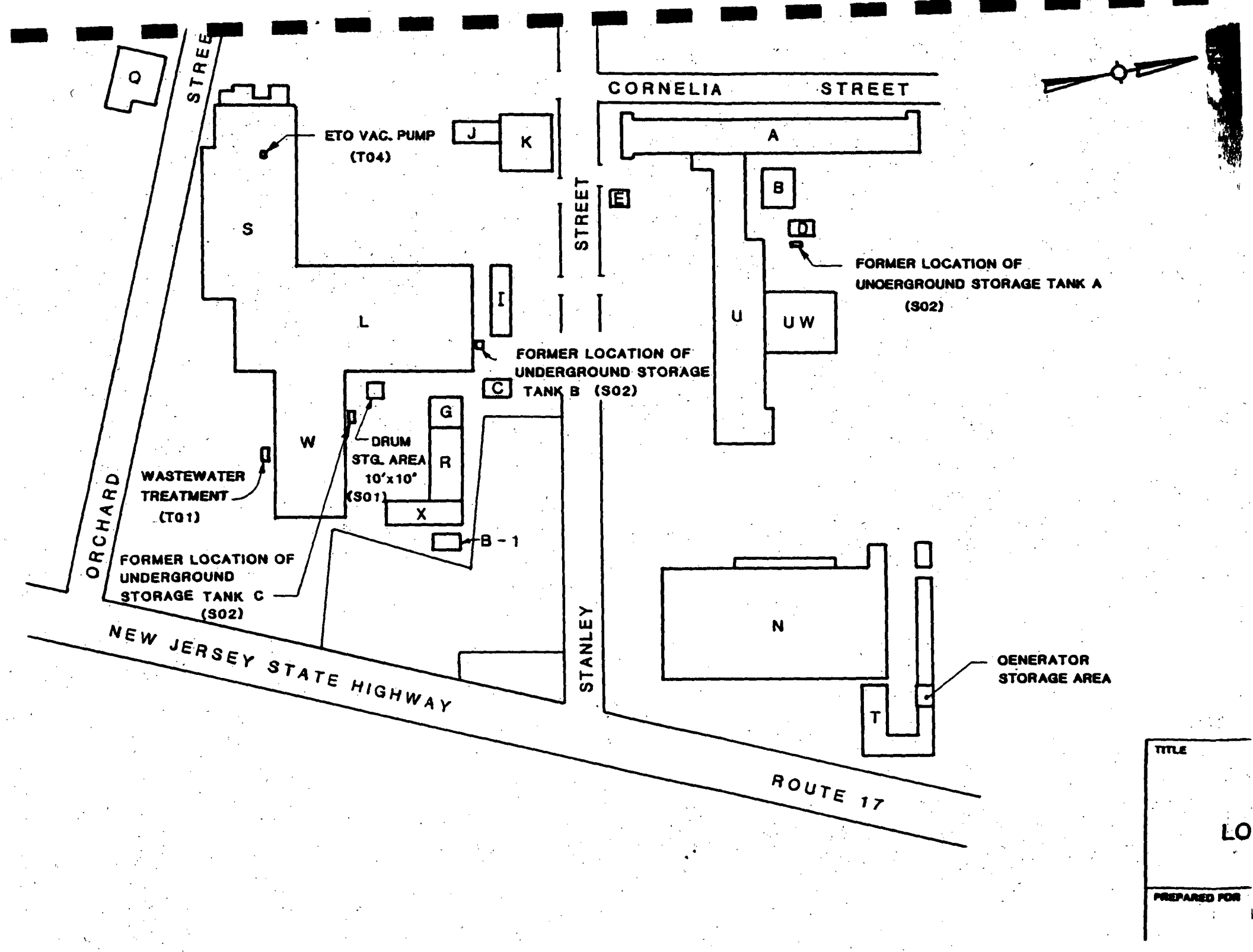
2.1 Current Usage

B-D's East Rutherford facility discontinued use of the interim status waste management units and has operated as a RCRA generator (less than 90 day waste accumulation in containers) since 1985/86. RCRA wastes are currently being accumulated in containers in Building T (shown on Figure 2-1). Building T has been used only for generator accummulation of hazardous waste and is, therefore, not included as an interim status unit requiring RCRA closure.

2.2 Description of Interim Status Units

B-D filed a RCRA Part A application with the USEPA in 1980. B-D was granted interim status for the operation of the units listed below. A copy of the Part A application is presented in Appendix A. The EPA process code for each unit is provided in parentheses.

- 1 container (drums) storage area (S0I)
- 3 underground storage tanks (S02)
- 1 wastewater treatment tank (T01)


CORNELIA STREET
STREET
STREET
ORCHARD
STANLEY
NEW JERSEY STATE HIGHWAY
ROUTE 17
A
B
C
D
E
G
I
J
K
L
N
O
R
S
T
U
UW
W
X
B - 1
ETO VAC. PUMP
(T04)
FORMER LOCATION OF
UNDERGROUND STORAGE TANK A
(S02)
FORMER LOCATION OF
UNDERGROUND STORAGE
TANK B (S02)
DRUM
STG. AREA
10'x10'
(S01)
WASTEWATER
TREATMENT
(T01)
FORMER LOCATION OF
UNDERGROUND
STORAGE TANK C
(S02)
GENERATOR
STORAGE AREA
TITLE
LO
PREPARED FOR

- 1 vacuum pump (T04)

Figure 2-1 presents a site plan of the East Rutherford plant indicating the location of the RCRA interim status units. Each of these units is discussed below.

2.2.1 Container Storage Area (S01)

Fifty-five gallon steel drums containing RCRA wastes were formerly stored in an area measuring approximately 10 feet by 10 feet, located on top of asphaltic pavement as shown on Figure 2-1. Wastes previously stored in this area are listed in the Part A application (Appendix A).

2.2.2 Underground Storage Tanks (S03)

Three underground steel tanks were used to store hazardous waste prior to disposal in authorized off-site facilities. B-D discontinued the operation of the tanks in 1985. In 1986, the tanks were removed, rendered unusable and transported to an authorized hazardous waste disposal facility in accordance with a NJDEP approved Closure Plan (presented in Appendix B). Figure 2-1 shows the locations of the former tanks (designated as A, B and C). Spent

degreasing solvents were stored in the tanks at locations A and C and used oil was stored in the tank at location B. A list of these wastes is presented in the Part A application (Appendix A).

2.2.3 Wastewater Treatment Tank (T01)

A rectangular concrete tank (Process Code T01) had been used to neutralize acidic wastewaters generated from the electroplating process, prior to discharge to the sanitary sewer system (NJPDES Permit No. NJ0001074). This wastewater treatment tank is located adjacent to the south side of Building W as shown on Figure 2-1. Treated effluent from the tank is discharged through the sanitary sewer system to the Bergen County Utilities Authority. Therefore, this tank should have been classified as an industrial waste management facility (IWMF) and not a RCRA treatment unit. Decommissioning of the wastewater treatment tank will be performed in accordance with NJAC 7:14A-4.7(g). Since this wastewater treatment tank is not a RCRA unit, its closure will not be discussed in detail in subseguent sections of this RCRA Closure Report. B-D is expected to discontinue use of the electroplating operation and the treatment tank

by May 31, 1989. Final decommissioning of the tank will be completed as part of the ECRA decontamination plan.

2.2.4 ETO Vacuum Pump (T04)

Medical apparatus was sterilized at the East Rutherford plant using ethylene oxide (ETO). A vacuum pump was used to transfer ETO to and from the sterilization chamber. The pump used water as a sealant, which was then discharged to the sanitary sewer system. ETO sterilization techniques and the corresponding use of the vacuum pump were discontinued ih 1986.

As a result of protective filing, the ETO pump was incorrectly classified in B-D's original Part A application as a RCRA unit (T04). Since the pump is not a RCRA unit it is not discussed in subsequent sections in this RCRA Closure Report.

3.0 RESULTS OF ENVIRONMENTAL INVESTIGATIONS AT THE SITE

B-D completed a comprehensive series of investigations to delineate environmental conditions at the former interim status units. This section presents a summary of the results of the investigations. Section 3.1 presents soil quality data collected during the tank closure project conducted in 1986. Section 3.2 presents a summary of the ECRA investigation activities conducted in 1987.

3.1 Underground Tank Removal/Closure Investigation

The three underground interim status storage tanks were removed in 1986 in accordance with a NJDEP approved Closure Plan (Appendix B). Post closure soil samples were collected in accordance with the approved plan. These samples were analyzed for total volatile organic compounds and total petroleum hydrocarbons. Figures 3-1, 3-2, and 3-3 present the locations of the former underground tanks and the post-excavation samples. A copy of the soil sampling program report, the laboratory reporting sheets and the chain of custody documentation are presented in Appendix C. Table 3-1 presents the results of the post-excavation sample analyses. A discussion of these results is presented below.

REFERENCE NO. 3

Form DWM-029
3/8

NEW JER DEPARTMENT OF ENVIRONMENTAL P ECTION
DIVISION OF WASTE MANAGEMENT

02-12-18

INSPECTION REPORT

REPORT PREPARED FOR:

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

3

FACILITY INFORMATION

Name: BECTON DICKINSON & COMPANY

Address: STANLEY ST
E. RUTHERFORD, NJ 07073

Lot: _____ Block: _____

County: Bergen

Phone: 201-460-2932

EPA ID#: NJD000304782

Date of Inspection: 9/25/87 & 10/6/87

PARTICIPATING PERSONNEL

State or EPA Personnel: JEFFREY STERLING

Facility Personnel: ALFRED ROMEL
Ted Tideman, Envir. Coordinator

Report Prepared by Name: Jeffrey Sterling

Region: METRO

Telephone#: (201) 669-3981

Reviewed by: [illegible]

Date of Review: 11/05-87

FACILITY NAME: Becton Dickinson & Co

ADDRESS: Stanley Street
E. Rutherford, NJ 07073

TIME IN: _____ COUNTY: Bergen

TIME OUT: _____ EPA ID : NJD000304782

DATE OF INSPECTION: 9/25/87 & 10/6/87

PHOTOS TAKEN ☐ YES ☑ NO

If yes, how many? _____

SAMPLE TAKEN ☑ YES ☐ NO NO. OF SAMPLES _____

NJDEP ID # STE016

MANIFESTS REVIEWED ☑ YES ☐ NO

Number of manifests in compliance _____

Number of manifests not in compliance one

List manifest document numbers of those manifests not in compliance.

NJA 0281315 – wrong waste # for PCB waste

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

Becton Dickinson & Company (BD) was inspected for RCRA compliance on 9/25/87 and 10/6/87. The facility contacts were: ALBERT ROMEL, Engineering manager, TED TIDEMAN, Plant Engineer, and John Beekhuysen. Becton Dickinson, EPA ID # NJD000304782, has an R&D lab, a production facility, and administrative offices (divisional HQ) in E. Rutherford, NJ. A total of approximately 880 employees work at this location, with ≈ 80 in the production area.

The production facility is currently operating at a reduced level. Becton Dickinson is in the process of transferring manufacturing operations to other, offsite, Becton Dickinson facilities. It is the company's ultimate intention to transfer their administrative office to their new headquarters in Franklin Lakes, NJ which is currently under construction. This site is expected to be completely closed within the near future. The Bureau of Industrial Site Evaluation (ECRA) is aware of the plant closing and a case manager has yet to be assigned.

Becton Dickinson used to make disposable spinal needles for use in the medical industry. This entailed grinding, stamping, electroplating, cleaning (solvents), testing and packaging. The bulk of the manufacturing activities have been transferred to offsite facilities

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

and many vacant buildings are now on site because of this.

The company currently makes specially ground needles. These are made manually (special order items). Hollow metal tubes (of various sizes) are grounded in order to create a sharp point on the tubes which later become the injection needles. The grounded needles are dipped in cleaning solution and are excited by high frequency sound waves to remove the grounded particles. The needles are then "passivated", i.e., treated with nitric acid (HNO_3) to retard rusting.

In addition to making the needles, the other components necessary to make the syringes are made onsite also. The company has a glass syringe manufacturing area in Building L. Here, tubes of glass are heated and are formed into different shapes. Metal fixtures that become a part of the finished product are made onsite in the handscrew department. Here, brass metal parts are machined into different shapes. The metal shavings that are generated are centrifuged to remove the machine oil. The shavings are sold to a metal recycler and the centrifuged oil is discarded as waste oil. The machined brass fixtures are cleaned in a vapor degreaser (1,1,1 TC. The cleaned brass fixtures are then sent to the company's plating department. Here, the parts are plated with chromium. The company generates waste chromic acid

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

from their plating operation. This waste stream is drummed and is manifested offsite. Before the parts are chrome plated, they are washed thoroughly in a series of tanks that have solutions containing various chemicals such as nickel compounds and cyanide compounds.

The plating operation results in the discharge of rinsewater. This is discharged to the local POTW under a NJPDES Permit # NJ0001074. This and all other process wastewater are discharged to the local POTW. Noncontact cooling water from the air conditioner, molding machines, boilers, etc. and stormwater are discharged under the same permit into Berry's Creek. The company also has NJDEP air permits.

Becton Dickinson had three (3) underground hazardous waste storage tanks. These used to be used to store waste oil and solvents used for degreasing (such as TCE). The three (3) underground waste storage tanks were excavated in accordance with a closure plan that was approved by the Bureau of Hazardous Waste Engineering (NJDEP). Two (2) underground fuel oil tanks were also removed. These were not waste oil tanks. The company indicated that they have many underground storage tanks that contain hazardous materials.

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

The removal of the underground oil tanks revealed free product in the soil, suggesting that one or both of the oil tanks leaked. The company's NJPDES permit was modified to include groundwater monitoring concerning the excavated hazardous waste storage tanks and the two (2) oil tanks. This revision was made on 7/1/87

The company notified the Bureau of Industrial Site Evaluation of their decision to close the site earlier this year.* As the preceding paragraphs indicate, the Bureau of Hazardous Waste Engineering and the Division of Water Resources also are familiar with this facility.

A site tour revealed that hazardous wastes were stored in the manufacturing area. The company's designated waste storage area is across the street from the manufacturing building next to the R&D & administrative building.

No major problems were noted. An NOV was issued for violations of NJAC 7:26-7.4(e)1, 9.4(g)8, 9.6(f)4, 9.6(f)5, 9.7(f), 9.7(h). Each violation was discussed with the company and they were urged to comply.

A sample was taken from one 55 gallon drum in the waste storage area. The drum was labeled "waste methanol/water". This sample was a routine sample.

* [illegible]

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

(1) Plating dept → D007, D002 → waste chromic acid solution
(2) Syringe mfg → D001, F003, F001 (solvents used for degreasing, cleaning, and drying)
(3) Machine shop → waste oil
(4) R&D lab → various waste types

* See attached Annual report for 1986 for representative list of waste streams.

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

1 x 55 gal perchlor-ethylene - (F001)
4 x 55 gal waste oil - (X722), [redacted]
1 x 55 gal ferrocyanide
2 x 55 gal "hazardous waste" - to be classified by company
1 x 55 gal "developer fixer additive" (no waste code)
1 x 55 gal varsol - D001
1 x 55 gal polymeric plastizer w/haz. waste label - no code
(from experimental molding dept. in - R&D area)
1 x 55 gal "haz waste liq." - D005
1 x 55 gal unidentified lab waste (will be identified before manifesting off site.
1 x 55 gal acetone - F003
1 x 55 gal methanol/water - F003

(X) (4 x 55 gal of waste chromic acid - (D007/D002) seen in plating department.)
→ X726 also generated

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?	✓		
	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.			
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 TSO facility?	✓		
7:26-7.4(a)4vi	The TSOF'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 8 (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.

Three underground haz waste tanks were removed. BHWE is handling this partial closure

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?	✓		
	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?			

		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 tp insure that waste received conforms to the accompanying manifest?			✓
	Dees 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?	✓		
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:			
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?			
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?	✓	N/A	
7:26-9.4(f)6	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?		✓	

have volunteer F.D.; Have fire drill here among themselves

		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?	✓		
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)	Adaquate aisle space to allow unobstructed movement of personnel fire protectipn 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 maoe the following arrangements, as aporooriate 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 pf 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	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)6	Arrangements with local fire departments to inspect the facility on a regular basis with at least two (2) inspections annually? Fire dept. comes in once per year on their own.		✓	
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? Plan is being revised.	✓		
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 161 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?	✓		
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 evacuatioo coutes (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	Closure plan			
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:			

undergoing partial closure
Waste storage tanks
already excavated

		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?	✓		
	<u>Post Closure Plan</u>			
7:26-9.9(g)	Does the facility have a written post-closure plan kept at the facility?			✓
	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 fihal 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) 19x55 gal drums of: acetone, methanol, varsol, chromic acid solution, cutting oil, DUOS liq. and 5 unclassified wastes			
7:26-10.4(b)	Is there a containment system for spills, leaks and precipitation?	✓		
	Is yes, describe the containment system. Inside storage shed. Concrete floor with sump			
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? Facility asked to replace a worn out label	✓		
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)6	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 ether 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?	✓		
	Is ~~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?			

no tanks used to store hazardous waste at this time. 3 former underground tanks were excavated.

Identify the waste treated/stored in each tank.

N/A

General Operating Requirements

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?			✓

Facility's (3) three underground hazardous waste tanks were excavated. The Division of Water Resources issued the company a Ground water Monitoring permit on 7/1/87 to investigate potential groundwater contamination from the former tanks.

The company has since installed monitoring ~~wells~~ wells.

* (there was evidence of soil contamination when the tanks were removed).

		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. See preceding page			
	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?	___	___	___

GENERATOR PRE-INSPECTION REVIEW

1. Did the generator notify the Agency that it vas generating an F-solvent vaste on Fora 8700-12 (Request for I.D. Nuaber) [262.12]?

2. Has the generator achieved interim or permitted status as a storage facility by filing a Part A, Part B, or via an interia status coapliance letter (ISCL)?

3. Is the generator a pharaaceutical plant?

4. Have all the generator's F-solvent vastes been delisted by the Agency?

5. Has the generator been granted a case-by-case extension by the Administrator [268.5]? And. if so. is that extension still In effect? If the extension is in effect, has the generator been providing progress reports on time?

6. Is the generator a Small Quantity Generator (100-1.000 Kg/month) of F-solvents [268.30]? (Determine whether the national capacity extension applies.)

7. Is the F-solvent vaste generated by a RCRA Corrective Action or a CERCLA response? If so, is the vaste considered soil or debris [268.30]?

8. Is the F-solvent vaste a solvent-vater mixture, solvent-containing sludge, or solvent-contaminated soil containing less than one percent total F001-F005 constituents by weight [268.30]? (Determine whether national capacity extension applies.)

9. Is the F-solvent vaste a vastevater (a solvent-vater mixture containing total organic carbon of one percent or less) [268.30]? (Deteraine appropriate BOAT level.)

10. Has the facility at which the generator's vaste is disposed beeh granted a variance from treatment standards per [268.44] (i.e., did the final decision appear in the Federal Register?)

11. Has the facility at which the generator's vaste is disposed received a "no migration" vaiver [268.6] or a case-by-case extension [268.5]?

Inspector: JEFFERY STERLING
Address: _____

Telephone No: 201-669-3960

RCRA LAND RESTRICTION F-SOLVENT GENERATOR CHECKLIST

I. HANDLER IDENTIFICATION

BECTON DICKINSON & Co. — A. Handler Name
STANLEY ST — B. Street (or other identifier)

E. RUTHERFORD — C. City
NJ — D. State
07073 — E. Zip Code
BERGEN — F. County Name

MANUFACTURE OF SYRINGES for medical Industry — G. Nature of Business: Identification of Operations

NJD00030478 2 — H. EPA ID #

TED TIDEMAN, Plant Engineer — I. Handler Contact (Name and Phone Number)

II. GENERATOR COMPLIANCE

A. F-Solvent Identification

1. Does the handler generate the following wastes?

a. F001 — ✓ Yes ___ No

b. F002 — ___ Yes ✓ No

c. F003 — ✓ Yes ___ No

If an F003 wastestream listed solely for ignitability has been mixed with a non-restricted solid or hazardous waste, does the resultant mixture exhibit the ignitability characteristic? ___ Yes ___ No

d. F004 — ___ Yes ✓ No

e. F005 — ___ Yes ✓ No

2. Source of the above: Form 8700-12 ___; Part A ___; Part B ___; other (specify) ✓ Manifests, RCRA insp. dated 9/25/87

Appendix A is intended to assist the inspector and enfocceacnt official in deteraining whether the faeility is generating F-solvent vastes, if such vastes vara net identified by the facility previously. If you are concerned that F-sblvent vastes aay ba aisclassified or aislabcled, turn to Appendix A. Note concerns below: _____

Handler Name: BECTON DICKINSON
ID Number: NJD 000 304 782
Inspector: J. STERLING
Date: 9/25/87

B. BOAT Treatability Group - Treatment Standards Identification — Comments

1. Did the generator correctly determine the appropriate treatability group [268.41] of the waste (Wastewaters containing solvents, pharmaceutical wastewaters containing spent methylene chlbride, all other spent solvent wastes)?

✓ Yes ___ No

C. Waste Analysis

1. Did the generator determine whether the waste exceeds treatment standards based on [268.7(a)]:

a. Knowledge of wastes ✓ Yes ___ No

b. TCLP ___ Yes ___ No

c. Other (specify) _____

If knowledge, note how this is adequate:
By definition of F001 & F003 waste

If determined by TCLP, provide date of last test, frequency of testing, and attach test results.

Dates/frequency: _____

Note any problems: _____

d. Were wastes tested using TCLP when a process or wastestream changed?

___ Yes ___ No

2. Did the F-solvent wastes exceed applicable treatability group treatment standards upon generation [~~268.3(a)(2)~~]?

✓ Yes ___ No
___ Some

3. Did the generator dilute the waste or the treatment residual so as to substitute for adequate treatment [268.3]

___ Yes ✓ No

D. Management

1. Onsite management

a. Were F-solvent wastes managed onsite?

✓ Yes ___ No

If yes, answer 1(b) and (c); if no, answer 2.

Handler Name: Becton Dickinson
ID Number: NJD000304782
Inspector: J. STERLING
Date: 9/25/87

Coaaents

✓ b. For vastes that exceed treatment standards, was treatment, storage, and/or disposal conducted?
___Yes ✓ No

If yes, TSDF Checklist aust be coapleted.

✓ c. Are test results maintained in the operating record [264.74(b)3/265.73(b)(3)]?
___Yes ✓ No no test results

2. Dffsite Managenent

a. If F-solvent wastes exceed treatment standards, did generator provide treatment facility [268.7(a)(1)]:

(i) EPA waste number? ✓ Yes ___No

(ii) Applicable treatment standard? ✓ Yes ___No

(iii) Manifest number? ✓ Yes ___No

(iv) Waste analysis data, if available?
none available ___Yes ___No

Identify offsite treatment facilities_____

b. If F-solvent wastes did not exceed treatment standards, did generator provide the disposal facility [268.7(a)(2)]:

(i) EPA Hazardous waste number? ___Yes ___No

(ii) Applicable treatment standard? ___Yes ___No

(iii) Manifest number? ___Yes ___No

(iv) Waste analysis data, if available?
___Yes ___No

(v) Certification that waste meets treatacnt standards? ___Yes ___No

N/A

Identify land disposal facilities receiving the BDAT certified wastes_____

Handler Name: Becton Dickinson
ID Number: NJD000304782
Inspector: J. STERLING
Date: 9-25-87

Comments

c. If waste is subject to nationwide variance [268.30] (e.g., solvent-water mixtures less than 1%), case-by-case extension [268.5] or petition [266.6] does generator provide notice to disposer that waste is exempt from land disposal restrictions [268.7(a)(3)]?

___Yes ___No N/A

E. Storage of F-Solvent Waste

1. Was F-solvent waste stored for greater than 90 days (after variance 180/270 days for SQG) [268.50(a)(1)]?

✓ Yes ___No

If yes, was facility operating as a TSD under interim status or final permit? ✓ Yes ___No

If yes, TSDF Checklist must be completed.

F. Treatment Using RCRA 264/265 Exempt Units or Processes (i.e., boilers, furnaces, distillation units, wastewater treatment tanks, etc.)

1. Were treatment residuals generated from RCRA 264/265 exempt units or processes? ___Yes ___No

If yes, list type of treatment unit and processes

_____

_____

_____

N/A

If the residuals from a RCRA-exempt treatment unit are above the treatment standards, the owner/operator is considered a generator of restricted waste. The inspector should determine whether the generator requirements, particularly waste identification requirements, have been met for the treatment residuals.

Handler Name: Becton Dickinson
ID Number: NJD000304782
Inspector: J. STERLING
Date: 9/25/87

APPENDIX A

Comments

SOLVENT IDENTIFICATION CHECKLIST

1. Does the handler generate any of the following F001 constituents (i.e., spent halogenated solvents used in degreasing) as a result of being used in the process either in pure form or commercial grade?

tetrachloroethylene	___Yes	___No
trichloroethylene	✓ Yes	___No
methylene chloride	___Yes	___No
1,1,1-trichloroethane	✓ Yes	___No
carbon tetrachloride	___Yes	___No
chlorinated fluorocarbons	___Yes	___No

2. Does the handler generate any of the following F002 constituents (i.e., spent halogenated solvents) as a result of being used in the process either in pure form or commercial grade?

tetrachloroethylene	___Yes	✓ No
trichloroethylene	___Yes	___No
methylene chloride	___Yes	___No
1,1,1-trichloroethane	___Yes	___No
chlorobenzene	___Yes	___No
trichlorofluoromethane	___Yes	___No
1,1,2-trichloro-1,2,2-trifluoroethane	___Yes	___No
ortho-dichlorobenzene	___Yes	✓ No

3. Does the handler generate any of the following F003 constituents (i.e., spent nonhalogenated solvents) as a result of being used in the process either in pure form or commercial grade?

xylene	___Yes	___No
acetone	✓ Yes	___No
ethyl acetate	___Yes	___No
ethyl benzene	___Yes	___No
ethyl ether	___Yes	___No
methyl isobutyl ketone	___Yes	___No
n-butyl alcohol	___Yes	___No
cyclohexanone	___Yes	___No
methanol	✓ Yes	___No

If the F003 wastestream has been mixed with a solid waste, does the resultant mixture exhibit the ignitability characteristic? ___Yes ___No } N/A

Hanu..er Name: Becton Dickinson
ID Nuaber: NJD 000 304 282
Inspector: J. STERLING
Date: ~~9/27~~ 9/25/87

Coaaents

4. Does the handler generate any of the following F004 constituents (i.e., spent nonhalogenated solvents) as a result of being used in the process cithcr in pure fora or comacrcial grade?

cresols and cresylic acid	___Yes	✓ No
nitrobenzene	___Yes	✓ No

5. Does the handler generate any of the following F005 constituents (i.e., spent nonhalogenated solvents) as a result of being used in the process either In pure fora or commercial grade?

toluene	___Yes	✓ No
methyl ethyl ketone	___Yes	✓ No
carbon disulfide	___Yes	✓ No
isobutanol	___Yes	✓ No
pyridine	___Yes	✓ No

6. Are any of the constituents listed in the questions 1-5 used for their "solvent" properties -- that is to solubilize (dissolve) or mobilize other constituents? The following questions will be helpful in confirming this determination.

(a) Chemical carriers? ✓ Yes ___No

If the answer is yes, list the constituents.

acetone & methanol used to dry needles (solubilize water particles)

(b) Degreasing/cleaning? ✓ Yes ___No

If the answer is yes, list the constituents.

1,1,1 TCE & TCE

(c) Diluents? ___Yes ✓ No

If the answer is yes, list the constituents.

Handler Name: Becton Dickinson
ID Number: NJD000304782
Inspector: J. STERLING
Date: 9/25/87

(d) Extractants? ___Yes ✓No Coaaents

If the answer is yes, list the constituents.

(e) Fabric scouring? ___Yes ✓No

If the answer is yes, list the constituents.

(f) Reaction and synthesis media? ___Yes ✓No

If the answer is yes, list the constituents.

If questions 1-6 led thc inspector to believe that the vaste aay ba an F-solvent, answer question 7.

7. Are any of the above constituents spent solvents? A solvent is considered "spent" when it has been used and is no longer used without being regenerated, reclaimed, or otherwise reprocessed. ✓Yes ___No

8. If the vaste is a mixture of constituents as determined in questions 1-7, answer this to determine whether it is a "solvent mixture" covered by the listings.

If the vastestreaa is nixed and contains more than one of the F001-F005 constituents listed in questions 1-5 (by volume), give the concentration before use of all the constituents in thc solvent aixture/blend. For example:

5%	methylene chloride
1%	trichloroethylene
25%	1,1,1-trichloroethane
68%	mineral spirits
100%	

If the vastestreaa is a mixture containing a total of 10% or nore (by volume) of one or mora of the F001, F002, F004, or F005 listed constituents before use, it is a listed vaste.

Hand : Name: _____
ID Nunber: _____
Inspector: _____
Date: _____

Coaaents

With respect to the F003 solvent wastes, if, before use, the vastestream is mixed and contains only F003 constituents, it is a listed waste. For example:

33%	acetone
16%	methanol
51%	ethyl ether
100%	

If the vastestream is a mixture containing F003 constituents and a total of 10% or more of one or nore of the F001, F002, F004, and F005 listed constituents before use, it is a listed waste.
For example:

50%	xylene	F003
12%	TCE	F001
38%	mineral spirits	
100%		

If in light of the above, the handler appears to be generating F001-f005 hazardous wastes, refer this facility to thc enforcement official for follow-up actions verifying the use of solvents at the facility.

~~021~~
02-72-18

(rec'd during RCRA 9/25/87)

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1986
- CERTIFICATION FORM -

I. EPA ID Number: NJD 000 304 782

II. Generator Name: Becton-Dickinson and Company

III. Contact Person: Ted Tideman

IV. Phoue Number: (201) 460-2932

V. Certification:

I certify chat the informacion given in chis annual report is true, accurate and complete.

Theodore H. Tideman	Theodore H Tideman	3/23/87
(Print or type name)	(Signature)	(Dace)

REFERENCE NO. 4

A GERAGHTY & MILLER SPECIAL REPORT

The New Jersey Ground-Water Situation

by David W. Miller

GERAGHTY & MILLER, INC.
Groundwater
Consultants

HACKENSACK, NEW JERSEY
7 Atlantic Street
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Syosset, New York 11791
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SUMMARY

Total ground-water pumpage in New Jersey is on the order of 750 mgd (million gallons per day), with almost 450 mgd withdrawn from the unconsolidated Coastal Plain aquifers of southern New Jersey, and 300 mgd from the sand and gravel and rock aquifers of northern New Jersey.

Because the Coastal Plain aquifers have a great areal extent, high recharge rate, and tremendous storage capacity, the ground-water potential for this region is at least several times the present rate of pumpage. Constraints on the future use of this resource will be caused by the impact of pumpage on streamflow, the severity of contamination from man's activities, and the economic and institutional feasibility of transporting ground water from undeveloped aquifer areas to water-short localities.

In some areas of heevy pumpage, such as eastern Monmouth and Ocean Counties, the devalopment of surface-water sources to supplement ground-weter supplies will be necessary. Other overstressed arees, such as western Caaden end northeastern Middlesex Counties, can be served by regional well fields located outside of the heavy demand centers.

In several northern New Jersey counties, such as Bergen, Essex, southern Pesaaie, Union and eastern Morris, heevy pumpage from the Brunawick shale and the stratified drift deposits, together with eonsumptive water use, has overstressed aquifers locally. Some potential for developing new supplies does exist at paints distant from present demand.

In western Morris, northern Passaic, northern Hunterdon, Sussex, and Warren Counties, ground-water development has not been extensive because of the area's rural nature. However, except for some limestones, the area's rock aquifers are relatively poor. Stratified drift deposits offer a greater potential, but they have not been sufficiently explored. Their full development would tend to diminish streamflow.

Urbanization and industrial activities have degraded ground-water quality, and will continue to limit the development of ground-water resources. The discovery of heavy metals and organic chemicals in ground-water supplies has forced the restriction and closing of public supply and domestic wells. Much of this contamination is related to land disposal of industrial and municipal waste and leaks and spills of petroleum and chemical products.

In spite of numerous local and some regional problems related to over-pumping and contamination, New Jersey's dependency on ground water for public supply, industry, and agriculture will increase in the future. This will be due, in large measure, to the economic, environmental, and institutional problems related to securing, transporting, treating and storing large volumes of surface water.

THE AQUIFER SYSTEMS

For a general discussion of ground-water conditions in New Jersey, the state can be divided into three broad geographic areas based on the distinctive rock types that occur in each (Figure 1). The Coastal Plain physiographic province is the largest area, and encompasses more than 5,000 square miles in the southern portion of the state. The geology of the Coastal Plain is characterized by a southeasterly dipping and thickening sequence of unconsolidated sediments.

The Triassic Lowlands are underlain by thousands of feet of red shale, with some sandstone, siltstone, conglomerate, basalt and diabase. The geologic formations in the Highlands region consist of hard crystalline rocks such as the Precambrian gneisses and quartzites; carbonates, such as the Kittatinny limestone; and relatively dense sandstones, conglomerates and shales, such as the Martinsburg.

Bedrock in both the Triassic Lowlands and the Highlands is overlain by unconsolidated deposits of glacial origin. In places, these surficial deposits are thick and permeable, and are commonly in direct hydraulic connection with the underlying bedrock and adjacent streams, rivers, and lakes.

In general, the principal water-bearing zone of the Triassic rocks ranges from less than 200 feet to 600 feet in depth. The median depth of industrial and municipal supply wells in Bergen County is 260 feet. High-yield wells tapping this aquifer in Essex County are between 300 and 400 feet deep. There appears to be a direct relationship between well yield and thickness of overlying unconsolidated glacial deposits. Wells generally produce more where the overlying deposits are relatively thick, stratified, and coarse-grained. These surface deposits are often in direct hydraulic connection with the bedrock, and act as a source of recharge because of their greater capacity to receive and store precipitation (Figure 12).

A number of high capacity wells tap the Triassic rocks. In Essex County, yields of 35 public supply, industrial, and commercial wells range from 33 to 820 gpm (gallons per minute) and average 364 gpm. Wells over 300 feet deep and larger than 8 inches in diameter have a median yield of 230 gpm in Passaic County. However, the ability to develop high capacity wells is not uniform throughout the region. Many wells drilled during exploration programs are never equipped as production wells because of poor yields.

Igneous rocks associated with the sedimentary formations, principally diabase and basalts, are highly resistant to erosion and form the ridges of the Watchung Mountains and the Palisades. They are poor aquifers, tapped primarily for domestic purposes by wells yielding 5 gpm or less.

Precambrian Rocks and Paleozoic Sediments: The Highlands Region is underlain by dense bedrock of limited ground-water potential. Rocks in the area immediately adjacent to the Triassic Lowlands, and situated in a northeast-southwest band through the central portion of northern New Jersey, consist chiefly of Precambrian gneisses (Figure 11). These crystalline rock formations contain ground water in joints and fractures of limited extent and storage capability. Well yields are relatively small, seldom over 150 gpm. In Sussex County, 45 percent of the domestic wells tapping the Precambrian gneiss yield 5 gpm or less.

Several very dense limestone formations containing solution cavities are associated with the Precambrian gneisses. In rare instences where these cavities have been penetrated by wells, yields can exeeed severel hundred gpm. In most cases, ground water is conteined in joints and fractures which typically yield 15 gpm or less to wells.

The northwestern portian of the state is characterized by e perallel series of valleys and ridges composed of Paleozoic ege sedimentary rocks (Figure 11). The ridges are resistant limestones, sandstones, and conglomerates. The valleys ere underlain by softer shales, siltstones, calcareous shsles, and limestones. Althpugh these rocks are not good aquifers, they are an iaportsnt source of water for domestie walls. The only exception is the Kittatinny Limestone, whieh underlies portions of Sussex, Warren, and Hunterdon Counties. In Hunterdon Cousity, industrial walls tapping this formation and penetrating solution cavities typically yield 400 gpm; a few produce as much as 1,500 gpm.

Glacial Sediments: Unconsolidated deposits overlying rock in northern New Jersey consist generally of till, clay, or stratified drift. These deposits are thickest in the valleys and thin or absent in upland areas. Permeable sands and gravels contained within the valley fill sediments that are suitable for ground-water development range in thickness from 50 to several hundred feet. Individual beds that can support high capacity wells are not extensive, and lithology may change radically over as little as 100 feet within the same valley. Well yields commonly reported for the glacial sediments represent successful wells located from a program of test drilling and pumping.

Although the rock aquifers have been mapped in some detail throughout both the Triassic Lowlands and the Highlands Region, the areal extent of important glacial aquifers is relatively unknown except in some of the more heavily developed areas of eastern Morris and western Essex Counties, Union County, the Ramapo River subbasin, and the Rockaway River subbasin (Figure 12).

Public supply and industrial wells tapping the more permeable stratified drift are almost uniformly capable of producing several hundred thousand gpd to more than one mgd. For example, yields of wells completed in Union County in 50 to 200 feet of sand and gravel sediments in Kenilworth-Newark Valley, Summit Valley, Union Valley, and Rahway Valley, average approximately 400 gpm. Wells in Essex and Morris Counties tapping glacial sands and gravels adjacent to the Passaic River and its tributaries produce one to 1.5 mgd. Total pumpage from the system of buried valleys in this latter area is about 20 mgd, with the highest yields from formations receiving recharge from adjacent streams.

Relationship Between Ground and Surface Water

Little effort has been devoted to establishing the relationship between ground-water withdrawals and streamflow in northern New Jersey. Many planners and regulatory personnel consider surface water and ground water as different resources. In fact, diversions have been awarded individually for either surface-water rights or ground-water rights in the same basin. The impacts of the aggregate diversion of the two interrelated resources are rarely investigated in detail.

Studies of the Ramapo River subbasin indicate that the Ramapo River is a losing stream during part of the year over a portion of its reach; at times it is a losing stream for its entire length from the state line to Pompton Lake. Generally, this seepage loss extends further downstream as the summer season continues. Much of the loss is attributable to ground-water pumpage along the Ramapo channel, substantiating the ability of ground-water pumpage within the basin to reduce river flow and at times actually cause river water to recharge the aquifer.

The Rockaway River subbasin, like the Ramapo, is an area where ground-water pumpage from the stratified drift along the river has an effect on streamflow during dry periods. Jersey City diverts water for public supply from the Boonton Reservoir on the Rockaway River downstream of these ground-water diversions, and a planned expansion of the area's sewage treatment plant will increase the consumptive use of ground water by 2020. Domestic sewage previously discharged back into the ground-water system via

cesspools and septic tanks will be discharged downstream of the reservoir, and will reduce ground-water recharge and streamflow.

There are several other locations where ground-water pumpage may be contributing to low streamflow. In the Whippany, Upper Passaic, and Lower Passaic River subbasins, the volume of reported public supply and industrial ground-water pumpage, together with grandfather rights pumpage, significantly affect the streams during low flow periods. The problem also is aggravated by the diversion of potential recharge out of the area through sewer systems. Surface-water resources in these basins are extensively developed for supply and receive and dilute waste water.

Other factors also distort the natural water balance between streams and aquifers. Intensive urbanization, e.g., widespread paving of aquifer recharge areas and construction of storm drains, reduces ground-water recharge and makes less water available to streams between periods of rainfall. The interrelationship of all factors must be considered in order to manage ground-water withdrawals where they are likely to impact surface-water resources.

Ground-Water Availability

The recharge of ground-water systems by precipitation in northern New Jersey is highly variable, and depends on factors such as the nature of surficial deposits, topography, rock lithology, and structural features. The storage capacity of rocks of the Triassic Lowlands, as well as most of the Precambrian and Paleozoic age rocks of the Highlands Region is low and

unevenly distributed: these rocks can be dewatered much more easily than the Coastal Plain sands. This is especially true if the water level in the rocks drops below the fractures which serve as major water producing zones.

Under pumping conditions some of the rock aquifers in northern New Jersey exhibit directional hydraulic behavior. At a given distance from a pumping well, water-level drawdowns are usually greater parallel to the strike, or bedding, of the rocks, than perpendicular to it. These factors make the prediction of maximum yields in the northern part of the state more difficult; detailed site-specific data are necessary in most areas.

Natural recharge rates to valley fill sediments may be as high as one mgd per square mile and additional recharge may be induced from an adjacent stream. Since many streams in northern New Jersey are utilized for community supply, and much of their flow is already committed to present or future river intake systems and impoundments, management decisions regarding greatly increased pumpage from alluvial deposits must be made with great care on an individual case-by-case basis.

Although the glacial deposits represent a major aquifer system and can generally yield larger quantities of water than rock aquifers, they are relatively thin and limited in extent. Thus, where recharge from surface-water bodies is not sufficient to meet the demands of local heavy pumpage, dewatering of these aquifers can take place, resulting in lowered water levels and declining yields.

Ground-water availability and problems resulting from excessive withdrawals are usually discussed in terms of an aquifer's "safe yield". Studies done for various counties have attempted to estimate this value for each county. However, from a planning viewpoint, safe yield should be considered as the greatest amount of ground water that can be used consumptively over a long term without causing undesirable effects. Depending on the area, these effects may include reducing streamflow, lowering lake levels, and dewatering shallow wells as a result of a falling water table.

Most reports equate safe yield with the pumpage which will approach, but not exceed, the average recharge rate for the study area. While maintaining the amount of pumpage below the average recharge rate will not cause ground-water mining (loss of ground water from storage for an indefinite period), it can result in a temporary loss of storage and in water-level declines until a new equilibrium elevation is reached. Actually, maximum potential yield depends on a wide range of prevailing hydrologic and environmental relationships in a particular area.

Another complicating factor in the intelligent management of the resource is consumptive use of ground water, i.e., where water is not returned to the ground-water system from which it was removed. On-lot septic systems and wells which recharge industrial process or cooling waters return water to the ground and do not represent consumptive uses. Wastewater discharges to sewers, which in turn discharge to surface waters, are assumed to be consumptive, and are an important factor in reducing ground-water availability, especially in northeastern New Jersey (Figure 13).

north-south band, east of the Passaic River, and near the Saddle River. Most of the southern and central part of the county is sewered: only public supply pumpage in the extreme northern section of the county is not used consumptively. The percentage of industrial pumpage used consumptively is unknown, but many of the industrial plants along the Passaic and Saddle Rivers discharge to the rivers, and the water is essentially lost from the ground-water system. There are indications of areawide water-level declines in southern Bergen County from overpumping the Triassic shales.

The opportunity for further development of ground water depends to a great degree on the future industrial pumpage, and the ability to develop surface water and ground water conjunctively in basins containing significant glacial deposits. The bedrock aquifer already appears to be overstressed in areas of concentrated pumpage.

Essex County: Ground water accounts for about 28 percent of the total water used in the county. More than 80 percent of the 35 mgd pumped for public supply is obtained from stratified drift deposits, mostly in the western portion of the county. This heavy pumpage and urbanization in the Livingston-Florham Park-Millburn area have resulted in severe water-level declines in both the unconsolidated and sandstone aquifers, which function as a single hydraulic unit in the area (Figure 12).

Heavy pumpage from the Triassic sediments in the Newark area has exceeded the average recharge to the system, and water levels have been declining for years with serious salt-water intrusion from Newark Bay and the Passaic River. Newark and the western valley-fill aquifer areas are of

mineralized water is found in stratified drift underlain by Precambrian rocks than in stratified drift underlain by shales and sandstones of the Triassic Lowlands. Where there is pumpage from deposits associated with streams, the water induced from the stream significantly affects the quality of ground water pumped from wells.

Salt-water encroachment has been noted in the Triassic shales of the Newark area where heavy industrial pumpage lowered water levels more than 100 feet. Data on the current status of this problem are not readily available. Saline water is also encountered in some unconsolidated deposits adjacent to estuaries.

Summary

Ground water serves as a major municipal, industrial, and domestic source in northern New Jersey. Where surface-water sources are being used to their capacity, even greater dependence will be placed on ground water. However, there are a number of significant constraints on continued development of ground water. In counties such as Bergen, Essex, southern Passaic, Union, and eastern Morris, heavy pumpage of the Brunswick shale and the stratified drift deposits together with consumptive use, has overstressed aquifers on a local basis and limited the availability of new ground-water supplies. In addition, the high degree of urbanization has eliminated many potential sites for new wells and has reduced recharge to the aquifer. In many cases, the large-scale development of particular aquifer areas has undoubtedly resulted in substantial impacts on surface-water sources. Some potential for developing new supplies does exist, but

typically, the sites are distant from points of present demand.

In western Morris, northern Passaic, northern Hunterdon, Sussex, and Warren Counties, ground-water development has not been extensive because of the rural nature of the area. However, the rock aquifers are relatively poor and cannot sustain high capacity well fields or concentrated pumpage. The area's stratified drift deposits do offer this potential, but they have not been explored, and the development of their full potential would diminish streamflow.

Another constraint on the ground-water resources of northern New Jersey is the relatively poor capacity of the various aquifers to store water. Usable water storage in the bedrock aquifers is limited to the first few hundred feet of joints and fractures. Unconsolidated aquifers are thin and of limited areal extent. Thus, unlike the Coastal Plain aquifers where huge volumes of water are stored in thick sand and gravel formations covering hundreds and even thousands of square miles, water-level declines in the northern counties due to heavy pumpage and/or drought conditions can reduce ground-water availability significantly, and result in water supply shortages. Monitoring ground-water levels in key areas of northern New Jersey is essential. Observation wells used for long-term water level monitoring should be located near centers of pumping and should provide the data necessary to estimate aquifer conditions in areas of heavy withdrawal.

Until now, ground-water development in northern New Jersey has been on a well-by-well basis as additional water supplies are needed by individual, municipal and industrial diverters. This strictly local approach has op-

erated for many years without any significant form of long-term planning or management. Ground water has been used to meet local needs with little consideration of regional effects, resulting in costly, unproductive disputes among individual ground-water diverters, inefficient use of the resource, and a general failure to protect its quentity or quality. Regional studies of ground-weter resources designed to support management plans should be carried out in key ground-weter use srees.

Municipalities and industries dependent on this resource should be cognizant of potential sources of contaminstion that may degrade the aquifer they tep and should participate in local land-uae planning that may affect the long-term yield of their ground-weter reaource. Finally, eatablishmant of local ordinances covering such setivitlss ss underground storage of chemicsis and hydrocsrbons can sssist in protseting ths reeource.

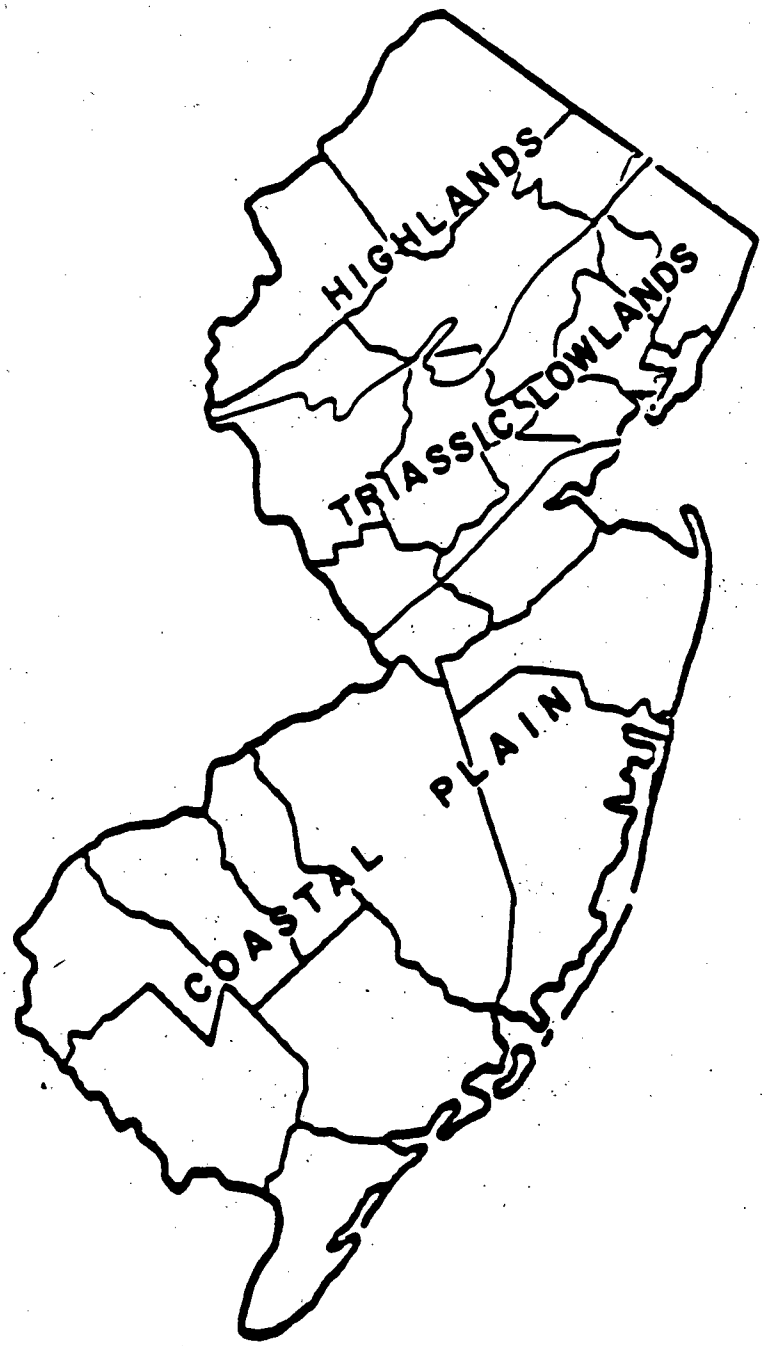


Figure 1 - PRINCIPAL GEOLOGIC REGIONS

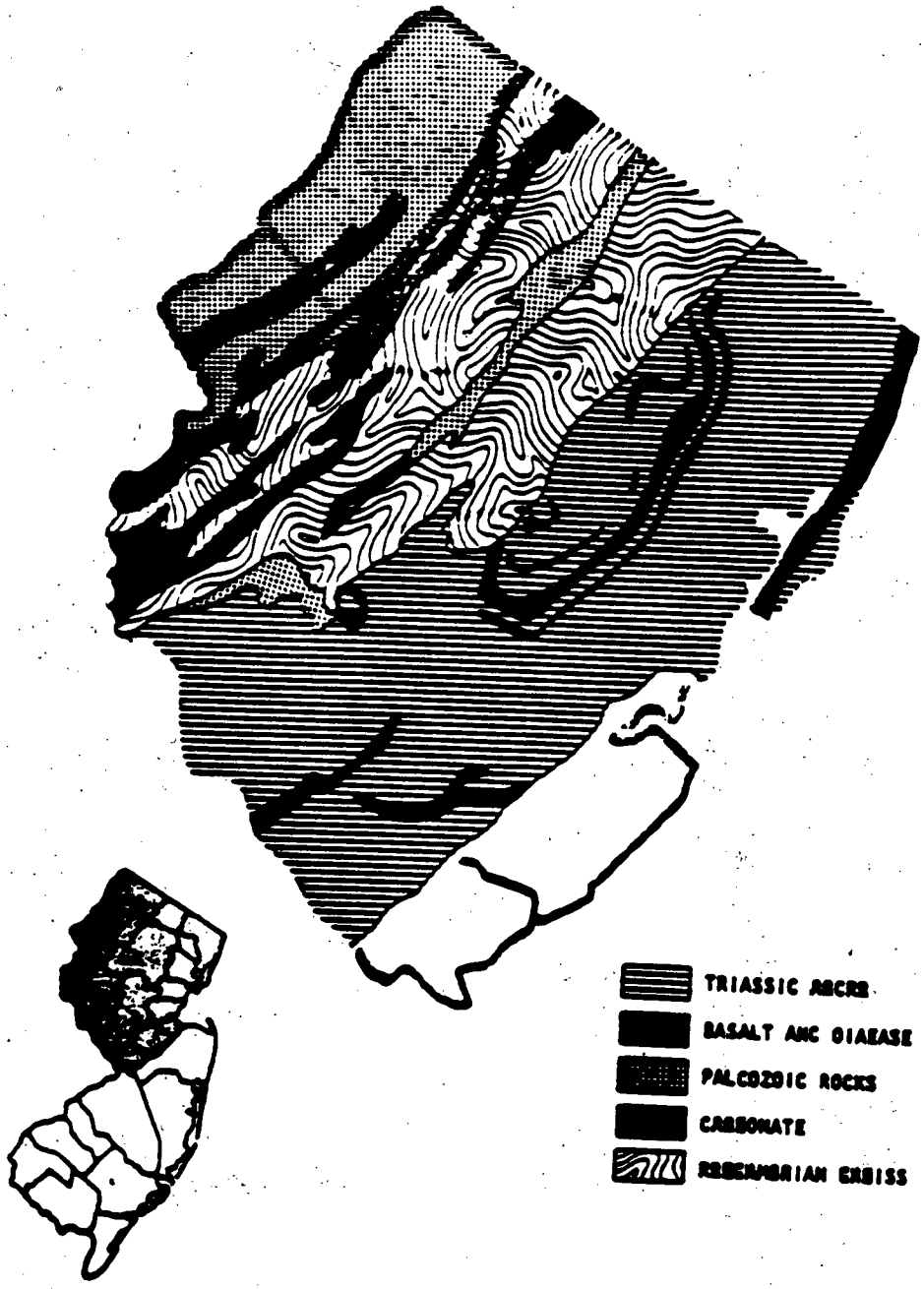


Figure 11 - BEDROCK GEOLOGY IN NORTHERN NEW JERSEY

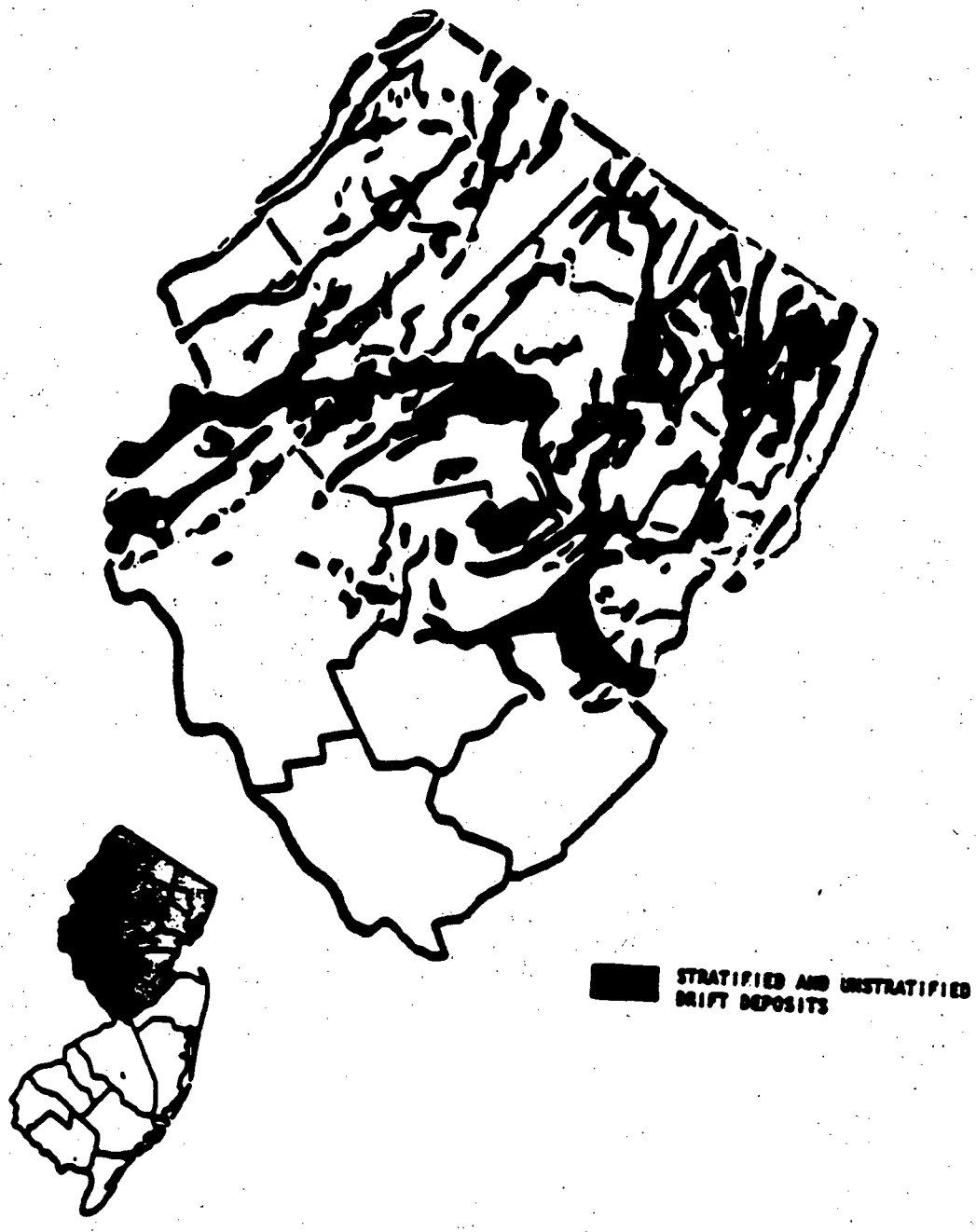


Figure 12 - POTENTIAL UNCONSOLIDATED AQUIFERS IN NORTHERN NEW JERSEY

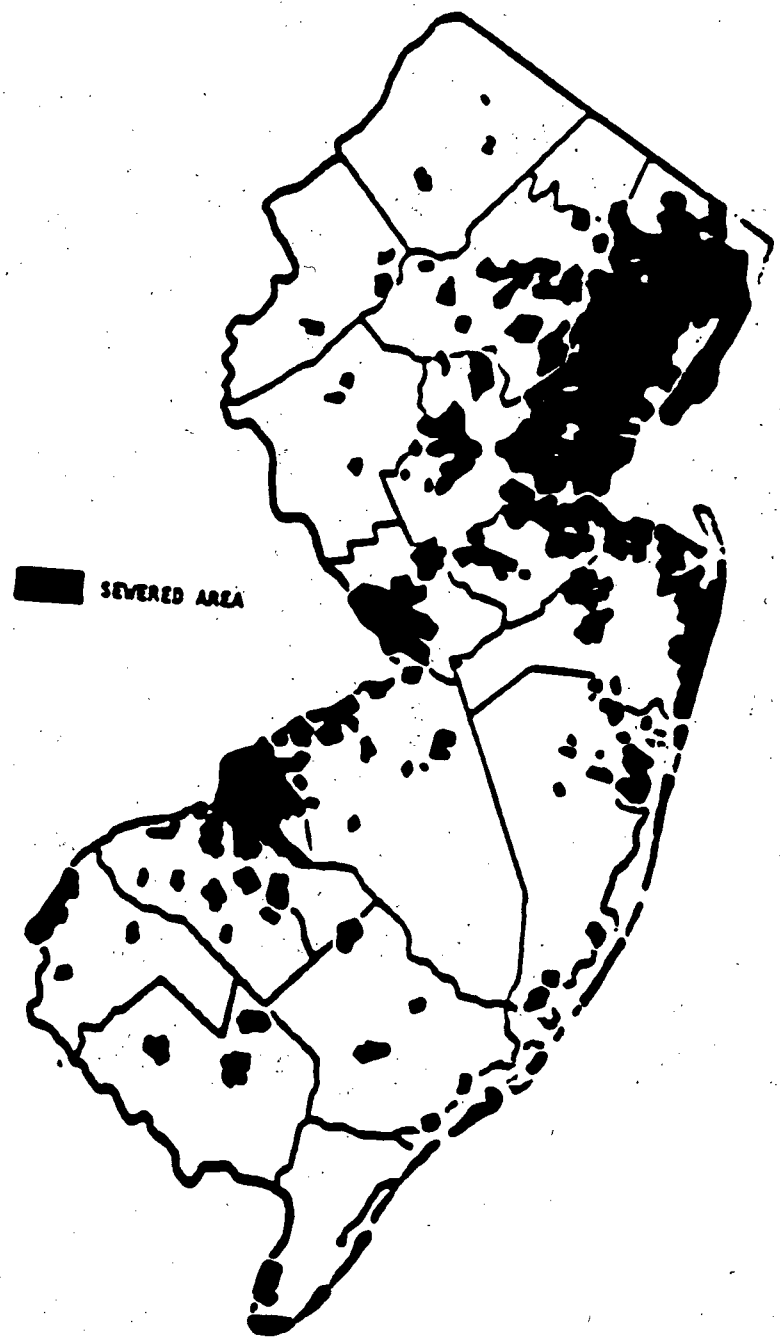


Figure 13 - EXTENT OF SEWERED AND UNSEWERED AREAS

REFERENCE NO. 5

Hazardous Waste Site Ranking System

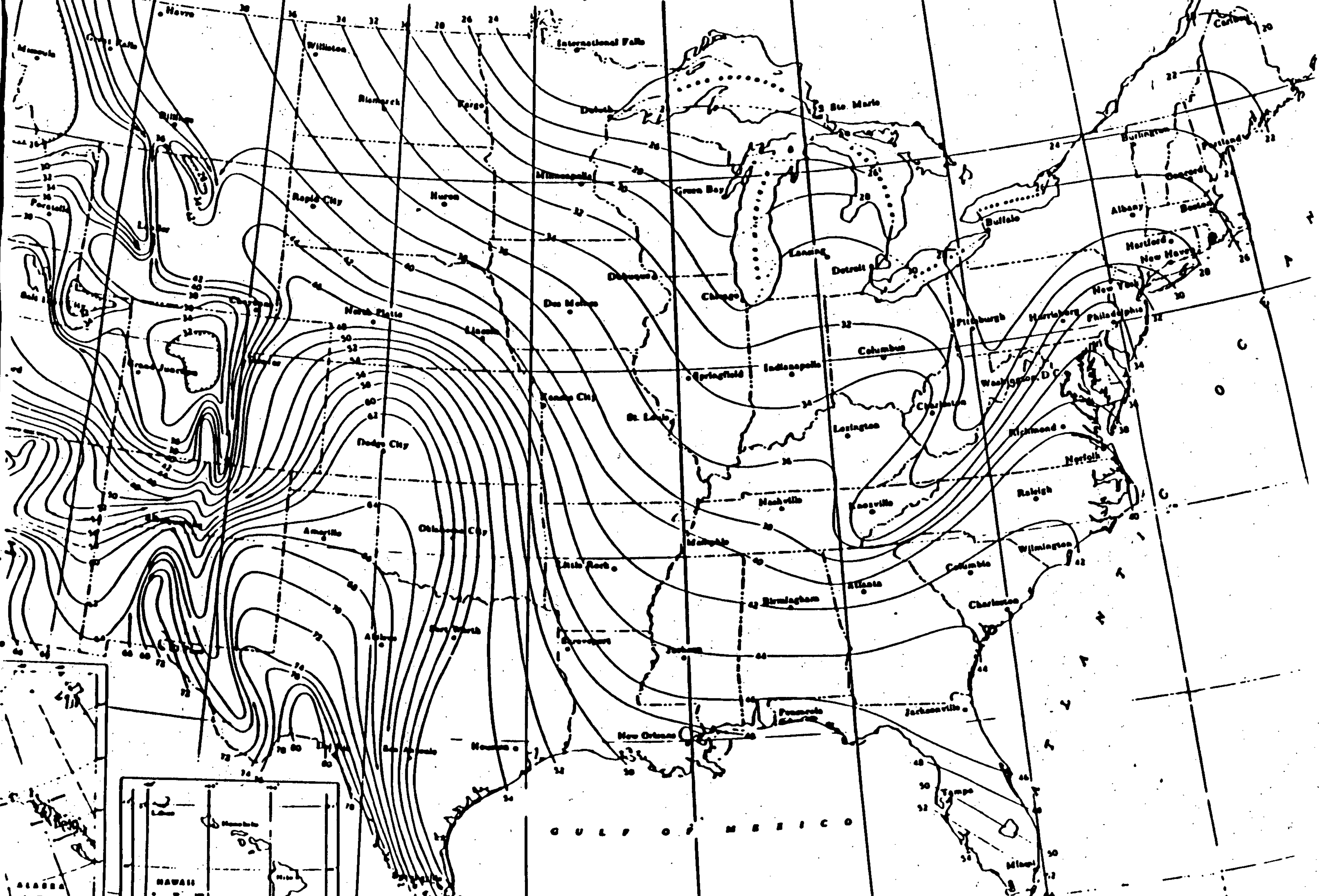
A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

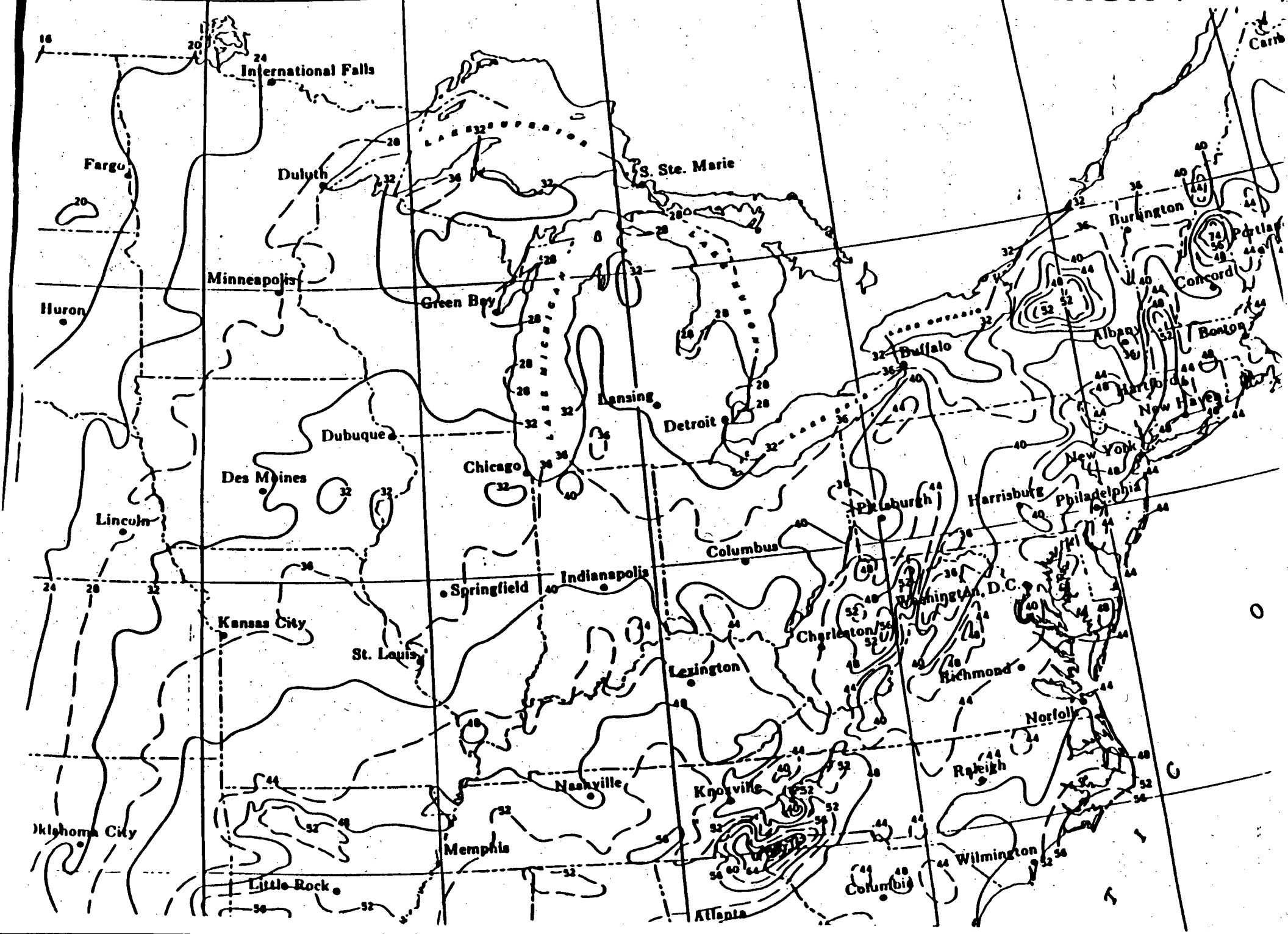
1984

MEAN ANNUAL LAKE EVAPORATION
(In Inches)



Based on period 1946-55

NORMAL ANNUAL TOTAL PRECIPITATION (Inches)



1 YEAR 24-HOUR RAINFALL (inches)

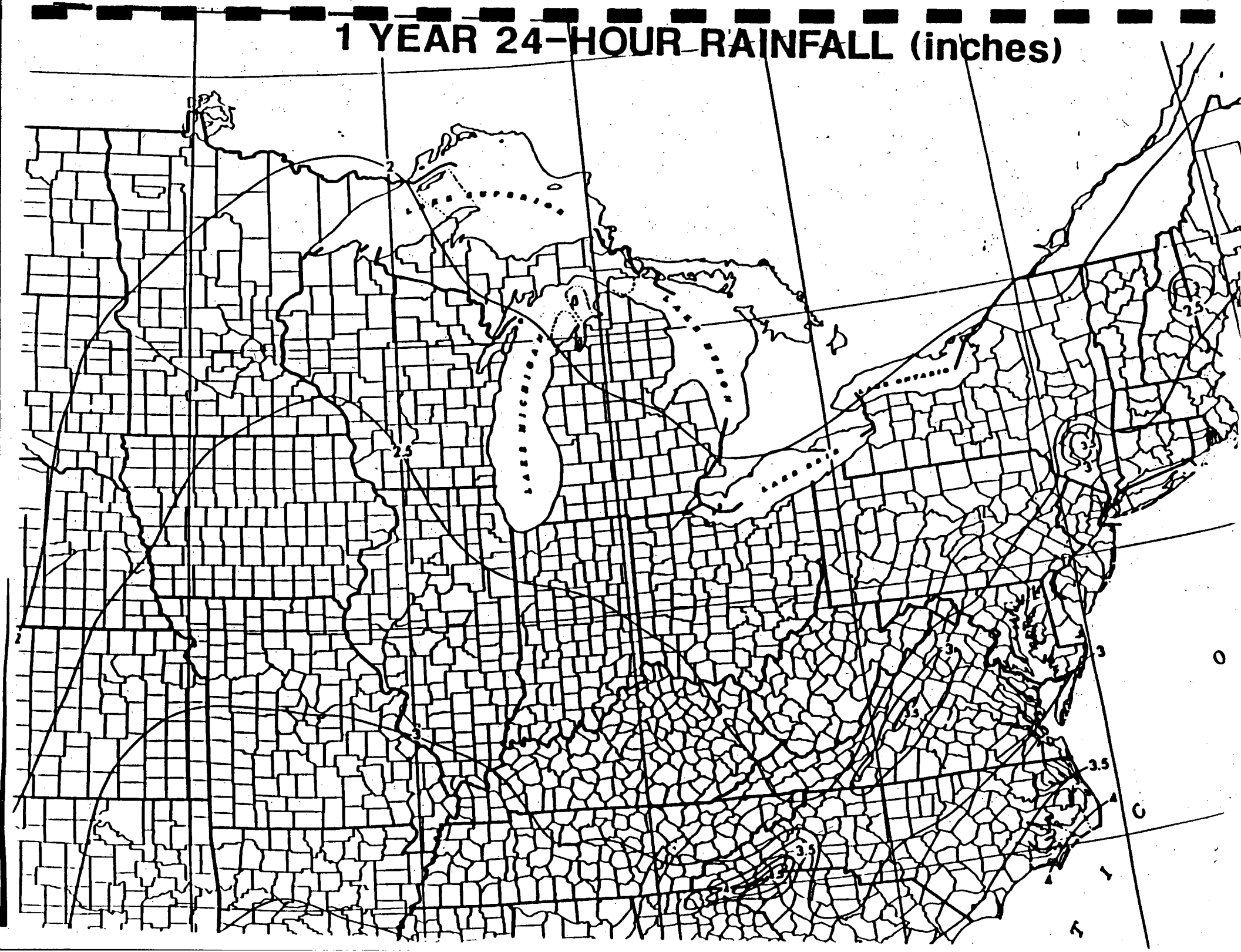


TABLE 2

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

REFERENCE NO. 6

Date: _____
Company
By: _____
Date: _____
Contractor
By: _____
Date: _____

[FR Doc. 84-1432 Filed 1-23-84; 8:45 am]
BILLING CODE 1505-10-M

[OW-FRL-2460-3]

Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey; Final Determination

AGENCY: U.S. Environmental Protection Agency.

ACTION: Notice.

SUMMARY: 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 Brunswick Shale and Sandstone Aquifer, underlying the Ridgewood Area, is the sole or principal source of drinking water for Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey, and that the aquifer, if contaminated, would create a significant hazard to public health. As a result of this action, Federal financially assisted projects constructed in the Ridgewood Area and its streamflow source zone (upstream portions of Ho Ho Kus Brook and Saddle River Run drainage basins) will be subject to EPA review to ensure that these projects are designed and constructed so that they do not create a significant hazard to public health.

ADDRESSES: The data on which these findings are based are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Water Supply Branch, 26 Federal Plaza, New York, New York 10273.

FOR FURTHER INFORMATION CONTACT: Damina J. Duda, Water Supply Branch, 26 Federal Plaza, New York, New York 10273 (212) 264-1600.

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 Brunswick Shale and Sandstone aquifer of the Ridgewood Area is the sole or principal source of drinking water for Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey. Pursuant to Section 1424(e), Federal financially assisted projects constructed in the Ridgewood Area and its streamflow source zone (upstream portions of Ho Ho Kus Brook, and

Saddle River Run drainage basins) will be subject to EPA review.

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 plan or design the project to assure that it will not so contaminate the aquifer.

On July 4, 1979, the Committee to Keep Our Water Pure petitioned EPA to designate the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area as sole source aquifer. On January 15, 1980, EPA published a notice in the Federal Register announcing a public comment period and setting a public hearing date. A public hearing was conducted on February 28, 1980, and the public was allowed to submit comments on the petition until March 20, 1980.

II. Basis for Determination

Among the factors to be considered by the Administrator in connection with the designation of an 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 Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is the "sole source" of drinking water for the approximately 68,620 residents of Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey.

2. There is no existing alternative drinking water source or combination of sources which provides fifty percent or more of the drinking water to the designated area.

3. The Brunswick formation is a soft red shale interbedded with coarse grained sandstone. The aquifer is overlain by permeable unconsolidated glacial and recent deposits. As a result of permeable soil characteristics, the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area 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 deicers, 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 and since the aquifer in this area is solely relied upon for drinking water purposes by the population of the Ridgewood Area, contamination of the aquifer could pose a significant hazard to public health.

III. Description of the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, Its Recharge Zone and Its Streamflow Source Zone

The Brunswick Shale and Sandstone Aquifer is a soft red shale interbedded with coarse grained sandstone. The formation, located in northern New Jersey, is fairly large, extending south into Pennsylvania and north into New York. Igneous intrusions which form the Watchung Mountains and the Palisades, also form the western and eastern boundaries of the Brunswick formation, respectively. The area in which Federal financially assisted projects will be subject to review is the portion of the Brunswick Shale and Sandstone Aquifer in the Ridgewood Area, its streamflow source zone, and its recharge zone.

For the purposes of this designation, the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is considered to include the entire municipalities of Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey. It's recharge zone is considered to be one and the same with this area. The streamflow source zone is that portion of the drainage basins of Ho Ho Kus Brook and Saddle River Run located upstream of the Ridgewood area. This includes all or a portion of the following New Jersey municipalities: Waldwick, Allendale, Ramsey, Mahwah, Franklin Lakes, Ho Ho Kus, Saddle River, Upper Saddle River, Woodcliff Lake, Hillside, Washington, Montvale, as well as Ramapo Township, New York.

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 is available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Region II, Water Supply Branch, 26 Federal Plaza, New York, New York 10278.

V. Project Review

EPA Region II is working with the Federal agencies that may in the future provide financial assistance to projects in the area of concern. Interagency procedures have been developed through which EPA will be notified of proposed commitments by Federal agencies for projects which could contaminate the Brunswick Shale and Sandstone Aquifer, upon which the Ridgewood Area is dependent for its sole source water supply. EPA will evaluate such projects and, where necessary, conduct an in-depth review, including soliciting public comments where appropriate. Should the Administrator determine that a project may contaminate the aquifer through its recharge zone so as to create a significant hazard to public health, no commitment for Federal financial assistance may be entered into. However, a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

Although the project review process cannot be delegated, the U.S. Environmental Protection Agency will rely to the maximum extent possible on any existing or future State and local control mechanisms in protecting the ground water quality of the Brunswick Shale and Sandstone Aquifer on which the Ridgewood Area is dependent for its sole source water supply. Included in the review of any Federal financially assisted project will be coordination with the State and local agencies. Their comments will be given full consideration and the Federal review process will attempt to complement and support State and local ground water protection mechanisms.

VI. Summary and Discussion of Public Comments

Most comments were generally in favor of designation. Two local governments submitted resolutions in support of designation. Only two commenters expressed any reservations regarding the designation.

One commenter expressed concern that the proposed designation would provide protection which is duplicative of State and local controls and may lead to unnecessary bureaucratic delays of

projects. 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 designation in the review and approval of Federal financially 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.

One commenter expressed concern that the area proposed for sole source designation could be an arbitrary political subdivision of the larger Brunswick aquifer system. The commenter questioned whether sufficient consideration had been given to the physical limits of the hydrologic system. The EPA recognizes that the aquifer does indeed cover a large area. However, a significant portion of the population in these other areas utilize other sources of water supply or have alternative sources available.

Concern was also raised that the Ridgewood Area may have alternative water supply available through adjacent water purveyors: specifically, the Passaic Valley Water Commission or the Hackensack Water Company. EPA has reviewed this matter and determined that either insufficient supply is currently available (in one case) or interconnections between the Ridgewood Area and the purveyor are currently not adequate to handle the Area's demand. Furthermore, the Brunswick Shale and Sandstone Aquifer in the Ridgewood Area is a source of water for export to adjacent purveyors during drought conditions.

The area considered for designation was determined to meet the criteria of an area which depends upon an aquifer for its sole or principal drinking water source and which, if contaminated, would pose a serious threat to the health of the Ridgewood Area residents.

VII. Economic and Regulatory Impact

Pursuant to the provisions of the Regulatory Flexibility Act (RFA), 5 U.S.C. 605(b), I hereby certify that the attached rule will not have a significant impact on a substantial number of small entities. For purposes of this Certification the "small entity" shall have the same meaning as given in Section 601 of the RFA. This action is only applicable to the Ridgewood Area.

The only affected entities will be those Area-based businesses, organizations or governmental jurisdictions that request Federal financial assistance for projects which have the potential for contaminating the aquifer so as to create a significant hazard to public health. EPA does not expect to be reviewing small isolated commitments of financial assistance on an individual basis, unless a cumulative impact on the aquifer is anticipated; accordingly, the number of affected small entities will be minimal.

For those small entities which are subject to review, the impact to today's action will not be significant. Most projects subject to this review will be preceded by a ground water impact assessment required pursuant to other Federal laws, such as the National Environmental Policy Act, as amended (NEPA), 42 U.S.C. 4321, et seq. Integration of those related review procedures with sole source aquifer review will allow EPA and other Federal agencies to avoid delay or duplication of effort in approving financial assistance, thus minimizing any adverse effect on those small entities which are affected. Finally, today's action does not prevent grants of Federal financial assistance which may be available to any affected small entity in order to pay for the redesign of the project to assure protection of the aquifer.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not major because it will not have an annual effect of $100 million or more on the economy, will not cause any major increase in costs or prices, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States enterprises to compete in domestic or export markets. Today's action only affects the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area. It provides an additional review of ground-water protection measures, incorporating State and local measures whenever possible, for only those projects which request Federal financial assistance.

Dated: January 12, 1983.

William D. Ruckelshaus,
Administrator.

[FR Doc. 84-1187 Filed 1-13-84; 8:45 am]
BILLING CODE 6560-50-M

REFERENCE NO. 7

TANK REMOVAL SOIL SAMPLING PROGRAM

Becton-Dickinson & Co.

East Ruthford, NJ

EPA I.D. No. NJD000304782

Fred C. Hart Associates, Inc.

HART

TANK REMOVAL SOIL SAMPLING PROGRAM

Becton-Dickinson & Co.

East Ruthford, NJ

EPA I.D. No. NJD000304782
NJ Facility No. CP-85-31

Tank Removal Soil Sampling Program

Becton-Dickinson Facility
East Rutherford, NJ
EPA I.D. No. NJD000 304782
NJ Facility Nb. CP-85-31

1.0 Introduction

On May 14, 1986 Stuart Triolo, Carl Scatena and Peg O'Brien of Fred C. Hart Associates, Inc. (HART) conducted a soil sampling program to characterize the surrounding soils after evacuation of three underground storage tanks. These tanks were removed from Areas A, B and C at the Becton-Dickenson facility in East Rutherford, New Jersey, shown in Figure 1.

The sampling and analysis methods followed the Revised Closure Plan for Hazardous Waste Tanks previously submitted to the NJDEP in April 1986. Aii Chaudhrey, Christine Andreas and Janine Tonelli from the NJDEP were present to observe the sampling.

2.0 Sampling Protocol

Samples were taken from the excavation pits using two different methods. Pits 6 and C were sampled using a hand auger and Pit A was sampled using trowels. The hand auger was necessary due to groundwater seepage into these pits as a result of the high water table in the area.

In an effort to eliminate cross-contamination between sample points, both the auger and the trowels were decontaminated using the method outlined in the approved closure plan. This decontamination consisted of:

1. Non-phosphate detergent and tap water wash
2. Tap water rinse
3. 10% nitric acid rinse

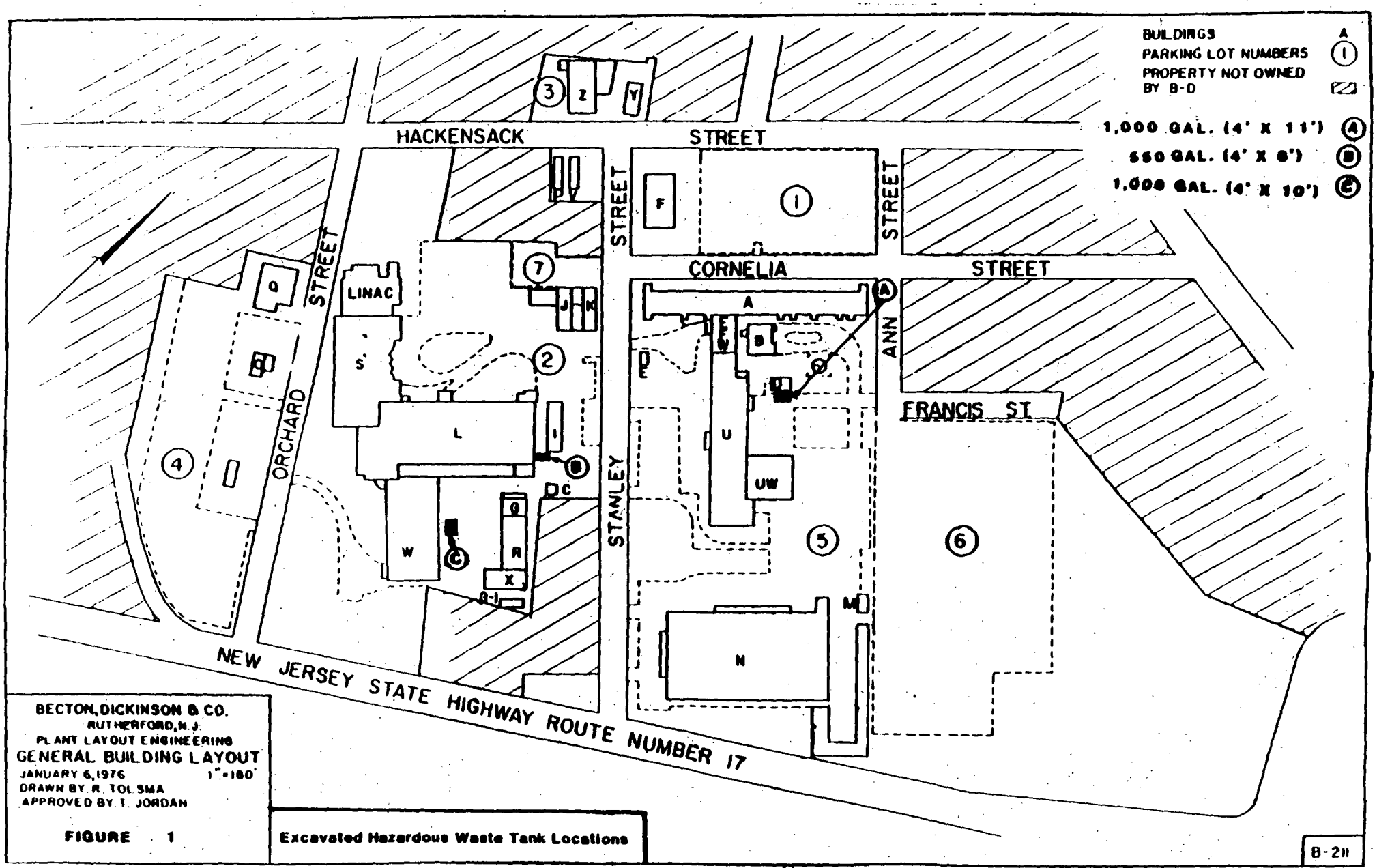
4. Distilled or deionized water rinse
5. Acetone rinse (pesticide grade)
6. Total air dry
7. Distilled or deionized water rinse

For each area, a series of sample sets were taken to determine the level of soil contamination, if any. A sample set consisted of two samples, one in a glass bottle for total petroleum hydrocarbons analysis and the second in a VOA vial with a septum cap for volatile organics analysis.

The first area sampled, labeled "C" on Figure 1, consisted of an excavation area approximately 12' by 5' with a five foot depth. The hole contained three feet of groundwater due to the high water table in the area. Sample sets were taken at four locations for area C. NJDEP personnel reduced the number of samples for this area from the previously scheduled five sample sets, as stated in the closure plan, due to the smaller size of the hole and inaccessibility of some of the originally designated sampling points.

The second area sampled at the East Rutherford facility was area "B", as shown on Figure 1. The tank removal from this section left a pit with dimensions of 8 feet by 4 feet with a depth of three feet. Approximately two feet of groundwater was in the pit at the time of sampling. As a result of the small size of the excavation, NJDEP advised that only two sets of samples needed to be taken to characterize this area, one set at either end of the pit.

The third area sampled in labeled area "A" on Figure 1. This excavation, the largest, was 14 feet by 5 feet with an average depth of six feet. Since this excavation was in a more elevated area, there was no groundwater seepage into the hole and samples were obtained using trowels. A total of six sets of soil samples were taken from area "A". One set was taken from the center of each side of the base and one set was taken from the center of the base. Also, a duplicate set of samples were taken from one of the sides.


BUILDINGS
PARKING LOT NUMBERS
PROPERTY NOT OWNED BY B-D
1,000 GAL. (4' X 11')
550 GAL. (4' X 8')
1,000 GAL. (4' X 10')
HACKENSACK STREET
STREET
CORNELIA STREET
ANN STREET
FRANCIS ST
STANLEY STREET
ORCHARD STREET
LINAC
NEW JERSEY STATE HIGHWAY ROUTE NUMBER 17
BECTON, DICKINSON & CO.
RUTHERFORD, N.J.
PLANT LAYOUT ENGINEERING
GENERAL BUILDING LAYOUT
JANUARY 6, 1976
1"=180'
DRAWN BY R. TOLSMA
APPROVED BY T. JORDAN
FIGURE 1
Excavated Hazardous Waste Tank Locations
B-211

During the sampling, a trip blank which had been previously prepared by Accutest Laboratories, Inc. was transported in the cooler along with the samples. A field blank was prepared after the decontamination of the sampling trowel. All samples were stored at 0°C after sampling and were delivered to Accutest Laboratories, following chain of custody procedures. The chain of custody documentation is given in Appendix 1. The laboratory results from Accutest are given in Appendix 2.

3.0 Results

Total petroleum hydrocarbon (TPH) content and volatile organic analyses were conducted on each set of samples delivered to Accutest Laboratories. The results of these analyses are given in Table 1. Table 2 provides a breakdown of the individual concentrations of the volatile organics found in each sample.

Area "C", from which samples 1A through 8A were taken, shows the highest levels total volatile organic concentrations. The highest concentration of volatiles is 550 ppb, still considerably below the allowable amount in soil of 1 ppm as determined by the Bureau of Industrial Site Evaluation (BISE). The other two excavation areas contained levels well below this maximum. Therefore, np further removal of soil is necessary for these excavations based on the results of the volatile organics.

Samples taken from an areas upgradient of the site provided a background concentration below the detection limit of 25 ppm. Areas A, B and C all contain higher than background levels of TPH's.

Only one sample from Area B contained TPH amounts slightly above the excavation limit of 100 ppm. Area "A" showed the highest level of TPH's with one sample having 2858 ppm TPHs. Some of the samples from "A" contain TPH's below the detection limit. Two of these samples, 23C and 25, the duplicates, show TPH concentrations lower than 25 ppm.

Area "C", the first area sampled, is the area which had samples consistently higher than the 100 ppm excavation limit. These samples contain between 300 and 735 ppm TPH's.

TABLE 1

BECTON-DICKINSON TANK REMOVAL
SOIL SAMPLING RESULTS[1]

Samples	Total Petroleum Hydrocarbons (PPM)	Total Volatile Organics (PPM)	Sample Area
1A	25.0		C
2A		0.466	C
3A	432		C
4A		0.122	C
5A	735		C
6A		0.427	C
7A	300		C
8A		0.539	C
98	112		B
10B		0.019	B
11B	25.0		6
12B		0.038	B
13C	2858		A
14C		0.018	A
15C	25.0		A
16C		0.022	A
17C	25.0		A
18C		None Detected	A
19C(Duplicate)	220		A
20C(Duplicate)		0.127	A
21C(Ouplicate)	553		A
22C(Duplicate)		0.038	A
23C	25.0		A
24C		0.014	A
25 (Background)	25.0		
26 (Background)		0.054	
Trip Blank		0.041	
Field Blank		0.049	

[1] As analyzed by Accutest Laboratories, North Brunswick, NJ

(0027c-4)

TABLE 2

BECTON-DICKINSON TANK REMOVEL

SOIL SAMPLING - VOLATILE ORGANICS[1]

Sample	Volatile Organic	Concentration (PPM)
2A	Methylene Chloride	0.021
	Trans-1,2-Dichloroethene	0.293
	Chloroform	BMDL[2]
	1,1,1-Trichloroethane	BMDL
	Trichloroethene	0.125
	Tetrachloroethene	0.027
	Ethyl Benzene	BMDL
4A	Methylene Chloride	0.018
	Trans-1,2-Dichloroethene	0.051
	1,1,1-Trichlorethane	BMDL
	Tetrachloroethane	0.053
6A	Methylene Chlbride	0.043
	Trans-1,2-Dichloroethene	0.158
	Trichloroethene	0.066
	Tetrachloroethene	0.160
	Toluene	BMDL
8A	Methylene Chloride	BMDL
	Trans-1,2-Dichloroethene	0.082
	Chloroform	BMDL
	Trichlorethene	0.233
	Tetrachloroethene	0.224
108	Trichloroethene	0.019
	Tetrachlorethene	BMDL
128	Methylene Chloride	0.021
	Trans-1,2-Dichloroethene	BMDL
	Chloroform	BMDL
	Trichloroethene	0.017
14C	Methylene Chloride	0.018
	1,1,1-Trichloroethane	BMDL
	Trichloroethene	BMDL
16C	Methylene Chloride	0.022
	Trichloroethene	BMDL

1 As analyzed by Accutest Laboratories, North Brunswick, NJ

2 BMDL = Below Minimum Detection Limit (less than 0.010 ppm)

(0027c-5)

TABLE 2 (Cont.)

BECTON-DICKINSON TANK REMOVAL
SOIL SAMPLING - VOLATILE ORGANICS[1]

Sample	Volatile Organic	Concentration (PPM)
180	None Detected	
20C	Methylene Chloride	0.127
	1,1,1-Trichloroethane	BMDL[2]
22C	Methylene Chloride	0.021
	Trans-1,2-Dichloroethene	BMDL
	Chloroform	BMDL
	1,1,1-Trichlorethane	BMDL
	Trichloroethene	0.017
24C	Methylene Chloride	0.014
26	Methylene Chloride	0.022
	1,1,1-Trichloroethane	BMDL
	Trichloroethene	0.013
	1,1,2,2-Tetrachloroethane	0.019
	Toluene	BMDL
	Benzene	BMDL
Trip Blank	Methylene Chloride	0.041
Field Blank	Methylene Chloride	0.049
	Trichloroethene	BMDL

1 As analyzed by Accutest Laboratories, North Brunswick, NJ

2 BMDL = Below Minimum Detection Limit (less than 0.010 ppm)

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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART#2A
SAMPLE ID.: SOIL FOR VOA/#0863
DATA FILE : >A2065::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	NO	100
2)	ACRYLONITRILE	NO	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	NO	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	NO	10
9)	CHLOROETHANE	NO	10
10)	2-CHLOROETHYL UINYL ETHER	ND	10
11)	CHLOROFORM	BMDL	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	NO	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	293	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	BMDL	10
23)	METHYLENE CHLORIDE	21	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	27	10
26)	TOLUENE	NO	10
27)	1,1,1-TRICHLOROETHANE	BMDL	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	125	10
30)	TRICHLOROFLUOROMETHANE	NO	10
31)	UINYL CHLORIDE	ND	10

BMDL=BELOU METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#4A
SAMPLE ID.: SOIL FOR VOA/#0865
DATA FILE : >A2064::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : V.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	51	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	18	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	53	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	BMDL	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	ND	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART#6A
SAMPLE ID.: SOIL FOR UOA/#0867
DATA FILE : >A2071::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1) ACROLEIN	ND	100
2) ACRYLONITRILE	ND	100
3) BENZENE	ND	10
4) BROMOFORM	ND	10
5) BROMODICHLOROMETHANE	ND	10
6) BROMOMETHANE	ND	10
7) CARBON TETRACHLORIDE	ND	10
8) CHLOROBENZENE	ND	10
9) CHLOROETHANE	ND	10
10) 2-CHLOROETHYL UINYL ETHER	ND	10
11) CHLOROFORM	ND	10
12) CHLOROMETHANE	ND	10
13) cis-1,3-DICHLOROPROPENE	ND	10
14) DIBROMOCHLOROMETHANE	ND	10
15) DICHLORODIFLUOROMETHANE	ND	10
16) 1,1-DICHLOROETHANE	ND	10
17) 1,2-DICHLOROETHANE	ND	10
18) 1,1-DICHLOROETHYLENE	ND	10
19) trans-1,2-DICHLOROETHYLENE	158	10
20) trans-1,3-DICHLOROPROPENE	ND	10
21) 1,2-DICHLOROPROPANE	ND	10
22) ETHYLBENZENE	ND	10
23) METHYLENE CHLORIDE	43	10
24) 1 1,2,2-TETRACHLORETHANE	ND	10
25) TETRACHLOROETHYLENE	160	10
26) TOLUENE	BMDL	10
27) 1,1,1-TRICHLOROETHANE	ND	10
28) 1,1,2-TRICHLOROETHANE	ND	10
29) TRICHLOROETHYLENE	66	10
30) TRICHLOROFLUOROMETHANE	ND	10
31) VINYL CHLORIDE	ND	10

BMDL=BELOU METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#SA
SAMPLE ID.: SOIL FOR UOA/#0869
DATA FILE : >A2069::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	BMDL	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	82	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	BMDL	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	224	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	ND	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	233	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART#10B
SAMPLE ID.: SOIL FOR UOA/#0871
DATA FILE : >A2070::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	NO	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	NO	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL UINYL ETHER	ND	10
11)	CHLOROFORM	NO	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	NO	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	NO	10
18)	1,1-DICHLOROETHYLENE	NO	10
19)	trans-1,2-DICHLOROETHYLENE	ND	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	ND	10
24)	1,1,2,2-TETRACHLORETHANE	NO	10
25)	TETRACHLOROETHYLENE	BMOL	10
26)	TOLUENE	NO	10
27)	1,1,1-TRICHLOROETHANE	ND	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	19	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	UINYL CHLORIDE	ND	10

BMDL=BELOU METHOD DETECTION LIMIT
MOL =METHOD DETECTION LIMIT
NO =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART#12B
SAMPLE ID.: SOIL FOR UOA/#0873
DATA FILE : >A2066::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	BMDL	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	BMDL	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	21	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	ND	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	17	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	UINYL CHLORIDE	ND	10

BMDL=BELOU METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#14C
SAMPLE ID.: SOIL FOR UOA/#0875
DATA FILE : >A2057::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPANE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	ND	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	18	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	BMDL	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	BMDL	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
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ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#16C
SAMPLE ID.: SOIL FOR VOA/#0877
DATA FILE : >A2059::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/8
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPANE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	ND	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	22	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	ND	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	BMDL	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

ACCUTEST
LABORATORIES
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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#18C
SAMPLE ID.: SOIL FOR VOA/#0879
DATA FILE : >A2058::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : W.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPANE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	ND	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	ND	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	ND	10
29)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	ND	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

ACCUTEST
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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#20C
SAMPLE ID.: SOIL FOR VOA/#0881
DATA FILE : >A2056::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPANE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	ND	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	127	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	BMDL	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	ND	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

ACCUTEST LABORATORIES
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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART#22C
SAMPLE ID.: SOIL FOR VOA/#0883
DATA FILE : >A2068::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	ND	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	ND	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL VINYL ETHER	ND	10
11)	CHLOROFORM	BMDL	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	ND	10
19)	trans-1,2-DICHLOROETHYLENE	BMDL	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	ND	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	21	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	BMDL	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	17	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	VINYL CHLORIDE	ND	10

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

ACCUTEST
LABORATORIES
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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART#24C
SAMPLE ID.: SOIL FOR UOA/#0885
DATA FILE : >A2067::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	NO	10
4)	BROMOFORM	NO	10
5)	BROMODICHLOROMETHANE	NO	10
6)	BROMOMETHANE	NO	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL UINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	NO	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	ND	10
18)	1,1-DICHLOROETHYLENE	NO	10
19)	trans-1,2-DICHLOROETHYLENE	ND	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	NO	10
22)	ETHYLBENZENE	NO	10
23)	METHYLENE CHLORIDE	14	10
24)	1,1,2,2-TETRACHLORETHANE	ND	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	ND	10
27)	1,1,1-TRICHLOROETHANE	ND	10
28)	1,1,2-TRICHLOROETHANE	NO	10
29)	TRICHLOROETHYLENE	NO	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	UINYL CHLORIDE	NO	10

BMDL=BELOU METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
NO =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

ACCUTEST
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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART#26
SAMPLE ID.: SOIL FOR UOA/#0887
DATA FILE : >A2055::S1

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/KG)	MDL(UG/KG)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	ND	100
3)	BENZENE	BMDL	10
4)	BROMOFORM	ND	10
5)	BROMODICHLOROMETHANE	NO	10
6)	BROMOMETHANE	ND	10
7)	CARBON TETRACHLORIDE	ND	10
8)	CHLOROBENZENE	ND	10
9)	CHLOROETHANE	ND	10
10)	2-CHLOROETHYL UINYL ETHER	ND	10
11)	CHLOROFORM	ND	10
12)	CHLOROMETHANE	ND	10
13)	cis-1,3-DICHLOROPROPENE	ND	10
14)	DIBROMOCHLOROMETHANE	ND	10
15)	DICHLORODIFLUOROMETHANE	ND	10
16)	1,1-DICHLOROETHANE	ND	10
17)	1,2-DICHLOROETHANE	NO	10
18)	1,1-DICHLOROETHYLENE	NO	10
19)	trans-1,2-DICHLOROETHYLENE	NO	10
20)	trans-1,3-DICHLOROPROPENE	ND	10
21)	1,2-DICHLOROPROPANE	NO	10
22)	ETHYLBENZENE	ND	10
23)	METHYLENE CHLORIDE	22	10
24)	1,1,2,2-TETRACHLORETHANE	19	10
25)	TETRACHLOROETHYLENE	ND	10
26)	TOLUENE	BMDL	10
27)	1,1,1-TRICHLOROETHANE	BMDL	10
28)	1,1,2-TRICHLOROETHANE	ND	10
29)	TRICHLOROETHYLENE	13	10
30)	TRICHLOROFLUOROMETHANE	ND	10
31)	UINYL CHLORIDE	NO	10

BMDL=BELOU METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**=PROBABLE LAB CONTAMINATION

ACCUTEST LABORATORIES
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ANALYSIS REPORT FOR VOLATILE ORGANICS BY GC/MS

CLIENT : HART TRIP BLANK
SAMPLE ID.: WATER FOR VOA/#0888
DATA FILE : >A2072::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : V.S.

COMPOUND	RESULT(UG/L)	MDL(UG/L)
1) ACROLEIN	ND	100
2) ACRYLONITRILE	ND	100
3) BENZENE	ND	5.0
4) BROMOFORM	ND	5.0
5) BROMODICHLOROMETHANE	ND	5.0
6) BROMOMETHANE	ND	5.0
7) CARBON TETRACHLORIDE	ND	5.0
8) CHLOROBENZENE	ND	5.0
9) CHLOROETHANE	ND	5.0
10) 2-CHLOROETHYL VINYL ETHER	ND	5.0
11) CHLOROFORM	ND	5.0
12) CHLOROMETHANE	ND	5.0
13) cis-1,3-DICHLOROPROPENE	ND	5.0
14) DIBROMOCHLOROMETHANE	ND	5.0
15) DICHLORODIFLUOROMETHANE	ND	5.0
16) 1,1-DICHLOROETHANE	ND	5.0
17) 1,2-DICHLOROETHANE	ND	5.0
18) 1,1-DICHLOROETHYLENE	ND	5.0
19) trans-1,2-DICHLOROETHYLENE	ND	5.0
20) trans-1,3-DICHLOROPROPENE	ND	5.0
21) 1,2-DICHLOROPROPANE	ND	5.0
22) ETHYLBENZENE	ND	5.0
23) METHYLENE CHLORIDE	41	5.0
24) 1,1,2,2-TETRACHLORETHANE	ND	5.0
25) TETRACHLOROETHYLENE	ND	5.0
26) TOLUENE	ND	5.0
27) 1,1,1-TRICHLOROETHANE	ND	5.0
28) 1,1,2-TRICHLOROETHANE	ND	5.0
29) TRICHLOROETHYLENE	ND	5.0
30) TRICHLOROFLUOROMETHANE	ND	5.0
31) VINYL CHLORIDE	ND	5.0

BMDL=BELOW METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**PROBABLE LAB CONTAMINATION

ACCUTEST
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ANALYSIS REPORT FOR UOLATILE ORGANICS BY GC/MS

CLIENT : HART FIELD BLANK
SAMPLE ID.: WATER FOR UOA/#0889
DATA FILE : >A2073::N3

METHOD : EPA 624
ANALYSIS DATE: 5/27/86
ANALYST : U.S.

	COMPOUND	RESULT(UG/L)	MDL(UG/L)
1)	ACROLEIN	ND	100
2)	ACRYLONITRILE	NO	100
3)	BENZENE	NO	5.0
4)	BROMOFORM	NO	5.0
5)	BROMODICHLOROMETHANE	ND	5.0
6)	BROMOMETHANE	NO	5.0
7)	CARBON TETRACHLORIDE	ND	5.0
8)	CHLOROBENZENE	ND	5.0
9)	CHLOROETHANE	ND	5.0
10)	2-CHLOROETHYL UINYL ETHER	ND	5.0
11)	CHLOROFORM	ND	5.0
12)	CHLOROMETHANE	NO	5.0
13)	cis-1,3-DICHLOROPROPENE	NO	5.0
14)	DIBROMOCHLOROMETHANE	NO	5.0
15)	DICHLORODIFLUOROMETHANE	ND	5.0
16)	1,1-DICHLOROETHANE	ND	5.0
17)	1,2-DICHLOROETHANE	ND	5.0
18)	1,1-DICHLOROETHYLENE	ND	5.0
19)	trans-1,2-DICHLOROETHYLENE	NO	5.0
20)	trans-1,3-DICHLOROPROPENE	ND	5.0
21)	1,2-DICHLOROPROPANE	NO	5.0
22)	ETHYLBENZENE	ND	5.0
23)	METHYLENE CHLORIDE	49	5.0
24)	1,1,2,2-TETRACHLORETHANE	NO	5.0
25)	TETRACHLOROETHYLENE	NO	5.0
26)	TOLUENE	NO	5.0
27)	1,1,1-TRICHLOROETHANE	ND	5.0
28)	1,1,2-TRICHLOROETHANE	ND	5.0
29)	TRICHLOROETHYLENE	BMDL	5.0
30)	TRICHLOROFLUOROMETHANE	ND	5.0
31)	UINYL CHLORIDE	ND	5.0

BMDL=BELOU METHOD DETECTION LIMIT
MDL =METHOD DETECTION LIMIT
ND =NON DETECTABLE

**PROBABLE LAB CONTAMINATION

REFERENCE NO. 8

NUS CORPORATION
SUPERFUND DIVISION

PPOJECT NOTES

TO: D. Cohen DATE: 10/31/89

FROM: A. Culmone COPIES:

SUBJECT: Clarification of telecon information - telecons attached

REFERENCE: Bergen County EPI PA Sites
Original filed in PA PM File 02-8910-05

1) Public Water Supply Systems -
a) Jersey City Water Dept. - Lyndhurst, Clifton
b) Passaic Valley Water Comm. - Nutley, No. Arlington, Clifton
c) Newark Water Dept. - Bellville
d) Hackensack Water Co. - Rutherford, E. Rutherford, Carlstadt, Moonachie, Wood-Ridge, Hasbrouck Heights, Teterboro, Sa. Hackensack, Hackensack, Teaneck, Little Ferry, Maywood, Bogota, Ridgefield Park, Ridgefield, Secaucus, Fairview

The above mentioned towns are supplied by surface water ~~supply~~ RC 10/30/89 supplies whose intakes ~~tar~~ are not located in the migration pathway or are greater than 3 mi upstream of the site.

The well located at Lyndhurst High School is open to the residents of the town to fill their own jugs.
There are no reported domestic wells located in the communities noted above that are used for potable purposes except Teaneck, Bogota, Ridgefield Park and Hackensack.

(over)

(P1)

NUS 443A SB 1182

Wallington, Lodi, Saddle Brook, Elmwood Park, Garfield, Fairlawn have wells used for public supply purposes. Many of these wells are closed due to contamination. Supplimentary water is purchased from the Passaic Water Valley Water Comm. and the Hackensack Water Co. in these areas.

A. Calvo

NUS CORPORATION TELECON NO

CONTROL NO:	DATE:	TIME:
02-8810-18	11/2/88	0810

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Jim Folds	Belleville Water Dept.	(201) 450-341

AND:

A. Calmne

DISCUSSION:

Re: Community Water Supply

From: Newark Water Dept.
surface water reservoirs > 3 mi.
7500 domestic connections

7500 x 3.8 = 28,500 # pop. served

Knows of 3 domestic wells but not currently used. All on community H_2O supply. Appx. potential pop. 12
3 x 3.8 = 11.4

ACTION ITEMS:

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File

DATE: 10/20/88

FROM: A. Culman

COPIES:

SUBJECT: Avon Sanitary LF & Palazzi Bros.

REFERENCE: Personal Interview: Lyndhurst Health Officer, Peter Forte

Health Dept. has no records on either site.
Their records only date back to 1984. The State monitored the landfill site.
Lyndhurst Water Dept. buys H_2O from J.C. Water Dept.
May also soon purchase additional H_2O from Passaic Valley Water Comm.

There is a public well at Lyndhurst H.S. - operated by Lyndhurst Water Dept. A copy of the 1987 water analyses is attached.

There are other private wells in the area for domestic use. Lyndhurst Water Dept. has this info.

Will have the Fire Inspector contact me on Fri., 10/21 with any info regarding fires or hazardous conditions at these locations.

NUS 643A 90 1182

NUS CORPORATION TELECON N

CONTROL NO:	DATE:	TIME:
02-8810-18	11/3/88	11:00

DISTRIBUTION:

Town Sanitary LF

BETWEEN:	OF:	PHONE:
Carol Connelly	Kearny Water Dept.	(201)

AND:

A. Culmone IN

DISCUSSION:

Kearny - Water Supply - part owner of gravity fed system reservoir in North Jersey District Water Supply - Wanaque Res. > 3 mi

2 non potable wells industrial use with back flow check valves

- West Hudson Hospital, 206 Bergen Ave, Kearny permit # 410, James Shaw, Div. Plant Operation
- Clear Cast Div of P+C. 450 Schuyler Ave. permit # 506, Larry S. Caso

4 surface water intakes non-potable industrial usage with back flow check valves

- PSE+G, Hackensack Ave, Kearny permit # 798, Hackensack River

ACTION ITEMS:

Mr. Charles Manzenmaier

- River Terminal Development Co, 100 Central Ave. Kearny, Passaic River permit # 57

Frank Kobola

(over)

- Franklin Plastic's, 113 Passaic Ave., Kearny
Passaic River, permit # 48

- Monsanto Corp, Pennsylvania Ave., Kearny
Passaic River, permit # 286, Celso Balan (Tech. Serv. Super.)

Pop' ≈ 37,500
Services ≈ 7500

DEP - James Montgomery, Phys. Connection Program, Bureau Safe Drinking H_2O

NUS CORPORATION TELECON NO.

CONTROL NO:	DATE:	TIME:
02-8810-18	11/9/88	1135

DISTRIBUTION:

Avon Sanitary LF

BETWEEN:	OF:	PHONE:
Mike Fessler	Veritek Co.	(201) 492-8744

ANO:

A. Culmone

(NUS

DISCUSSION:

Re: Well at Clear Cast
(Veritek Co. - environmental consultant
for Clear Cast)

Well ~~depth~~ depth. approx 200 ft.

Use - cooling water

Geology - unknown - bedrock
assumed to be Brunswick

ACTION ITEMS:

NUS CORPORATION TELECON N

CONTROL NO:	DATE:	TIME:
02-8810-18	11/4/88	1100

DISTRIBUTION:

Avon Landfill

BETWEEN:	OF:	PHONE:
Bob Noe	No. Arlington Water Dept.	(201)

AND:

A. Culmar (N

DISCUSSION:

Public Water Supply - Passaic Valley Water Comm.
- surface H_2O Reservoirs >3 mi.
- no municipal wells

Appx. population 18,000

Chas. Agel - H_2O Dept. Supt. will call back Mon. to give any additional info possibly needed.

ACTION ITEMS:

NUS CORPORATION TELECON NO

CONTROL NO:	DATE:	TIME:
02-8810-18	10/31/88	1455

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Stu Palfreyman	Health Office Clifton	(201) 470-5750

AND:

A. Culmone (NU

DISCUSSION:

Clifton community water supply is provided by the Passaic Valley Water Comm.

There are 3 potable wells in Clifton:

1) Municipal well at 900 Clifton Ave.
2) Brookdale Beverage Corp. 955 Bloomfield Ave.
3) Public Non Community - Swepco Tube Corp. 1 Clifton Blvd.

The well at City Hall Campus - depth is 150'

Population of Clifton is approx 75,000

ACTION ITEMS: Contact No. for PVWC
Wendell Imhiffer
340-4300

NUS CORPORATION TELECON NO

CONTROL NO:	DATE:	TIME:
02-8810-18 NTC2&I	10/27/88	1400

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Wally Orrego	Lyndhurst H_2O Dept.	(201) 438-377

AND:

A. Culmone (NU

DISCUSSION:

Depth of well - 153'

Depth at which well is screened - 145'

Is it bedrock - yes

90'-110' clay barrier

flow 1.5" - 200 gpm

back up well same general conditions

Kearny, North Arlington - Passaic Valley -, Nutley, Belleville

Rutherford - Hackensack and all towns to the north

Clifton - Jersey City H_2O Dept.

ACTION ITEMS:

C2-8810-18

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File 02-8810-18 NJC2 II

DATE: 10/25/88

FROM: A. Culmone

COPIES:

SUBJECT: Public Water Supply + Private wells Town of Lyndhurst

REFERENCE: Avon Sanitary L F

Personal Interview of Helen Polito, Lyndhurst Water Dept.

Only 1 active well in town - Forest Ave. at the High School.

2nd well currently inactive on Cleveland Ave. but provides potential back-up supply.

All township residents currently on municipal water. No private wells are used.

Water is purchased from the Jersey City Water Dept.

~~Number of connections~~

Lyndhurst Pop. 20,000

NUS 443A 88 1182

NUS CORPORATION TELECON N

CONTROL NO:	DATE:	TIME:
02 8810-18	11/2/88	5:30

DISTRIBUTION:

Avon Sanitary LF

BETWEEN:	OF:	PHONE:
Water Dept Foreman	Nutley Public Works Dept	(201) 284-[illegible]

ANO:

A. Calmone

DISCUSSION:

Nutley - Passaic Valley Water Comm.
community supply
- surface reservoirs 72 mi
1 well in town with public access
on Board of Ed. property
depth - 300'
direction of flow W → E
Franklin Ave. + Kennedy (High School)
no connection to public H_2O supply
active
Town Pop. 29,000 ≈
domestic connections ≈ 9000 x 3.8 -
34,200 persons
Contradictory info

ACTION ITEMS:

REFERENCE NO. 9

SUBJECT TO REVISION

WATER WITHDRAWAL POINTS AND NJGS CASE INDEX SITES WITHIN 5.0 MILES OF:

LATITUDE 404731
LONGITUDE 740612

DRAFT

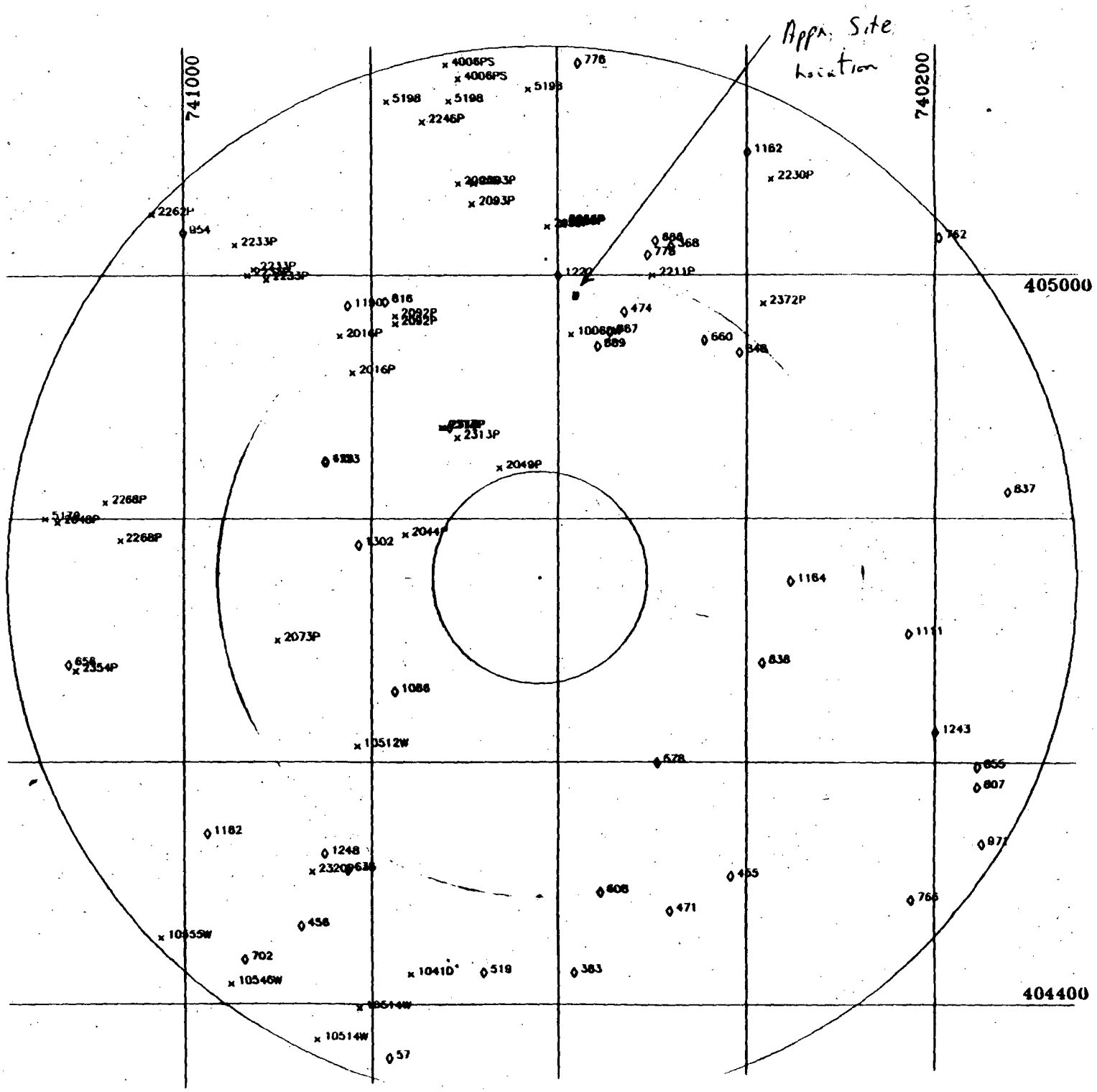
SCALE: 1:63,360
(1 Inch = 1 Mile)

× WATER WITHDRAWAL POINTS
◊ NJGS CASE INDEX SITES
| 1 MILE AND 5 MILE RADII INDICATED

NJGS CASE INDEX DATA RETRIEVED FROM:
NEW JERSEY GEOLOGICAL SURVEY
ON 12/22/87

PLOT PRODUCED BY:
NJDEP
DIVISION OF WATER RESOURCES
BUREAU OF WATER ALLOCATION
CN-029
TRENTON, NJ 08625

DATE: 10/18/88



Page 1 LIST NJDES CASE INFO / SITES WITHIN 5.0 MILES OF 404921 LAT. 740548 LON. AS OF 12/22/87 (IN ORDER BY SITE NUMBER) - 11/19/88

SITENUM	NAME	LAT	LON	DISTANCE	CONTAM	FMCODE1	FMCODE2	STATUS1	STATUS2
174	FENICE CORP., EAST RUTHERFORD, BERGEN CO.	404845	740710	1.4	12	0110	3070	2	J
276	GREAT BEAR SPRING CO., BERGEN CO.	405200	740300	3.9	53	0103	3070	2	
368	HERRY'S CREEK PROJECT, WOODRIDGE, BERGEN CO.	405014	740410	1.3	38	100	0	1	D
377	SHEFCO TUBE, CLIFTON, PASSAIC CO.	405111	741018	4.5	57	3070	0	0	
429	SEL REX, NUTLEY, ESSEX CO.	404828	740829	2.6	00	0130	3070	1	
474	U O P JOHNSON, EAST RUTHERFORD, BERGEN CO.	404942	740518	0.6	00	103	101	1	E
483	DUPONT CHEMICAL, LODI, BERGEN CO.	405313	740417	4.6	00	100	3070	1	B
500	LODI MUNICIPAL WELL V.O. CONTAM, LODI, BERGEN CO.(SEE ALSO 629)	405230	740530	3.6	0	120	3070	1	E
578	CONRAIL SECAUCUS, HUDSON CO.	404600	740457	3.9	1	103	102	1	
592	REISTER CHEMICAL, RIDGEFIELD, BERGEN CO.	405030	740035	4.8	1	110	3070	1	E
601	CHECKO SCRAP METAL, GARFIELD, BERGEN CO.	405327	740614	4.7	50	130	3070	1	
616	GIVAUDAN CORP., CLIFTON, PASSAIC CO.	404947	740751	1.9	00	130	3070	1	E
660	SCIENTIFIC CHEMICAL PROCESSING, CARLSTADT, BERGEN CO.	404939	740427	1.2	00	0110	3070	1	C
670	SHEICHLEY SERVICES, BERGEN CO.	405255	740615	4.1	00	0110	3070	1	G
688	DIAMOND SHAMROCK, CARLSTADT, BERGEN CO.	405017	740458	1.3	50	103	101	1	
762	AMERICAN OIL CORP--LITTLE FERRY TER	405018	740150	3.5	00	0103	0101	1	B
775	CONAM CHEMICAL CORP., CARLSTADT, BERGEN CO.	405010	740503	1.1	00	0130	3070	1	A
776	CURTISS-WRIGHT CORP	405144	740547	2.7	00	3070	0	1	A
838	POUGHKEEPSIE FINISHING CORP (2ND CASE?), CLIFTON	405157	740857	4.1	00	0103	3070	1	B
832	SAM GABBAY, INC., FAIRVIEW, BERGEN CO.	404919	740037	4.5	00	0102	0	4	B
837	SPONGE CLEAN PRODUCTS CO, INC, N. BERGEN, HUDSON CO.	404813	740114	4.2	00	0101	3070	1	B
838	SHAKE D CO, SECAUCUS, BERGEN CO.	404649	740250	3.4	00	0110	3070	1	B
848	MORAC CO--DIV OF SEAGRAVE COATING, CARLSTADT, BERGEN CO.	404922	740405	1.5	00	0103	0101	1	B
851	WHIFFANY PAPER BOARD CO, INC	405243	740716	4.1	00	0103	3070	1	B
867	GENERAL FOAM CORP, E. RUTHERFORD, BERGEN CO.	404932	740527	0.4	63	0103	0101	1	
868	TEXACO AT MAIN & PARK ST., RIDGEFIELD PARK, BERGEN CO.	405107	740130	4.3	51	3070	0	1	B
889	J.B.M.T. PRINTING, E. RUTHERFORD, BERGEN CO.	404925	740535	0.2	00	0101	0100	1	B
954	ROOM RICHARD'S FURNITURE, MONTCLAIR, ESSEX CO.	405021	741000	3.9	0	0140	3070	1	C
970	E.C. ELECTROPLATING, GARFIELD, BERGEN CO.	405220	740610	3.4	0	0	0	3	
1086	G M Z CONCRETE, NORTH ARLINGTON, BERGEN CO.	404635	740745	3.6	53	0103	0	1	B
1111	FERGUSON IRON WORKS, N. BERGEN, HUDSON CO.	404703	740217	4.1	63	0101	0100	1	B
1114	RIDGEFIELD PARK EXXON, RIDGEFIELD PARK, BERGEN CO.	405102	740155	3.9	63	0103	0100	1	G
1133	HARBOR TOWING AND OIL, NUTLEY, ESSEX CO.	404828	740830	2.6	53			3	
1162	UNITED WIRE HANGER CORP. HASBROUCK HEIGHTS, BERGEN CO.	405100	740400	2.5	52			3	
1164	PLAZA AMOCO/BECKEY'S EXXON, SECAUCUS, HUDSON CO.	404729	740332	2.9				3	
1190	ITT AVIONICS, 100 KINGSLAND RD., CLIFTON, PASSAIC CO.	404945	740815	2.2	04			3	
1219	EMPIRE OVERALL, ELMWOOD PARK, BERGEN CO.	405329	740645	4.8	00	0110	3070	1	C
1222	WALLINGTON WATER DEPT., WALLINGTON, BERGEN CO.	405000	740600	0.8	00	0130	3070	1	C
1243	EL GRANITE AMOCO, UNION CITY, HUDSON CO.	404615	740200	4.9	51	3050	3070	1	C
1246	STILE MYCAL, S. HACKENSACK, BERGEN CO.	405210	740249	4.2	63	0100	3070	1	C
1251	GARFIELD WATER DEPARTMENT, GARFIELD, BERGEN CO.	405256	740722	4.3	01	0120	3070	1	
1302	RESEARCH ORGANIC/INORGANIC CHEM CORP,BELLEVILLE, ESSEX CO.	404747	740808	2.7	00	0130	3070	1	E

Number of Observations: 42

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	2603935	1	404931	740552	F	0.2	03	12	225	GIRB		125
[illegible]	[illegible]	2602717	1	404908	740809	F	4.2	17	07	400	GIRB		150
[illegible]	[illegible]	2603831	1	404930	740820	T	2.2	13	16	500	GIRB		150
	[illegible]	2604625	2	404930	740830		2.2	13	16	450	GIRB		150
	[illegible]	[illegible]	3	[illegible]	[illegible]		[illegible]	13	16	500	GIRB		150
	LTT AVIONICS DIVISION	2604692	4/SEALED	404912	740812		2.1	13	16	500	GIRB		200
2944P	[illegible]	4600002		404752	740738	S	2.3	03	39	300	GIRB		60
2945P	[illegible]	2604036	1	404935	740638		1.3	03	32	302	GIRB		250
[illegible]	[illegible]	4600060	2	405026	740567	F	1.5	03	05	490	GIRB		200
	[illegible]	[illegible]	4	[illegible]	740507	F	1.2	03	05	526	GIRB		80
	[illegible]	[illegible]	5	[illegible]	740557	F	1.2	03	05	430	GIRB		[illegible]
[illegible]	[illegible]	4600177	6	405209	740309	F	3.9	03	59	404	GIRB		65
	[illegible]	4600053	2	405210	740305	F	4.0	03	59	435	GIRB		0
	[illegible]	2603018	3	405210	740309	F	4.0	03	59	400	GIRB		50
	[illegible]	4600173	4	[illegible]	740305	F	4.0	03	59	400	GIRB		140
	[illegible]	2601599	5 RESEALED	405210	740306	F	4.0	03	59		GIRB		
[illegible]	[illegible]	[illegible]	2	405248	740024	H	4.6	31	02	300	GIRB		[illegible]
	[illegible]	[illegible]	3	[illegible]	740021	H	4.5	31	02	404	GIRB		[illegible]
[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	13	[illegible]	250	GIRB		[illegible]
	[illegible]	4600063	2	404700	740600	T	3.9	13	01	400	GIRB		150
	[illegible]	2605113	3	404700	740600	T	3.9	13	01	400	GIRB		150
[illegible]	[illegible]	4600065	2	405005	740045	F	4.5	03	49	484	GIRBS		50
	[illegible]	4600096	3	405005	740045	F	4.5	03	49	492	GIRBS		75
	[illegible]	4600097	4	405005	740045	F	4.5	03	49	597	GIRBS		100
	[illegible]	4600098	5	405005	740045	F	4.5	03	49	500	GIRBS		[illegible]
	[illegible]	4600099	6	405005	740045	F	4.5	03	49	600	GIRBS		[illegible]
[illegible]	[illegible]	4600066	6	404936	740745	F	1.7	31	02	397	GIRB		[illegible]
	[illegible]	4600067	7	404940	740745	F	1.7	31	02	250	GIRB		110
[illegible]	[illegible]	2604317	1	405045	740704	F	2.0	03	12	580	GIRB		150
	[illegible]	2604341	2	405045	740654	S	1.9	03	12	300	GIRB		150
	[illegible]	2604382	3	405035	740535	T	1.7	03	12	470	GIRB		430
[illegible]	[illegible]	4600125	1	405000	740600		1.0	03	05	170	GIRB		600
2230P	[illegible]	2105288	1	405047	740345	T	2.4	41	03	140	GIR		[illegible]
2233P	[illegible]	4600156	30	405000	740919	F	3.2	13	16	407	GIRB		100
	[illegible]	4600156	32	405015	740725	F	3.1	31	02	650	GIRB		[illegible]
	[illegible]	[illegible]	33	[illegible]	740415	T	3.1	31	[illegible]		GIRB		150
	[illegible]	[illegible]	37	405038	740607	F	3.0	31	02	750	GIRB		300
2246P	[illegible]	2604149	1	405115	740727	H	2.6	03	65	300	GIRB		200
	[illegible]	2604250	2	405115	740727	U	2.6	03	65	300	GIRB		185
[illegible]	[illegible]	2605312	2	405212	740845	U	1.2	31	02	600	GIRB		415
2263P	UPPER MONTCLAIR COUNTRY CLUB	2601199	1	405052	741025		4.4	31	02	450	GIRB		90
	UPPER MONTCLAIR COUNTRY CLUB	2604390	2	405059	741035		4.6	13	02	335	GIRB		132
	UPPER MONTCLAIR COUNTRY CLUB	2604835	3	405030	741020	F	4.2	31	02	300	GIRB		50
	UPPER MONTCLAIR COUNTRY CLUB	FOUND	5W	405050	741040	T	4.6	13	02	12	GIRB		1100
2268P	[illegible]	2604258	1	404749	741041	S	4.6	13	02	239	GIRB		65
	[illegible]	FOUND		404608	741051	F	4.6	13	02	14	SW		[illegible]
[illegible]	[illegible]	[illegible]	1	404845	740714		1.4	03	32	267	GIRB		110
	[illegible]	[illegible]	2	404845	740715		1.4	03	32	314	GIRB		135
	[illegible]	[illegible]	3	404845	740715	F	1.4	03	[illegible]	416	[illegible]		[illegible]
	[illegible]	[illegible]	4	[illegible]	[illegible]	T	1.4	[illegible]		[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]	[illegible]	3	404945	[illegible]		1.8	[illegible]	[illegible]	338	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	T	[illegible]	[illegible]	[illegible]		[illegible]		
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	T	[illegible]	[illegible]			[illegible]		

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEOL	GEOZ	CAPACITY
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	CHELTON CO	405208	740702	T	3.4	31	02		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	OKONITE CO	405143	740712	1	3.0	31	07		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	PASSAIC IN	405218	740702	1	3.6	31	02		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	TOOL INC.	405136	740704	T	3.8	31	07		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	PANTASOTE	405204	740704	T	3.3	31	02		SP		
4025PS	KALAMA CHEMICAL, INC.	PASSAIC RIVER		405206	740745	T	3.6	03	21		SHPAS		
5086	HACKENSACK WATER COMPANY	4600065	2	405221	740157		4.8	03	04	550	GIRB		180
5127	LODI BOROUGH	4600068	ARNOT ST.	405240	740518		3.8	03	31	300	GIRB		160
	LODI BOROUGH	4600069	4	405249	740502		4.0	03	31	307	GIRB		295
	LODI BOROUGH	4600070	5	405249	740502		4.0	03	31	300	GIRB		355
	LODI BOROUGH	4600071	7	405249	740502		4.0	03	31	332	GIRB		355
	LODI BOROUGH	4600072	LAWRENCE	405217	740420	D	3.6	03	31	373	GIRB		500
	LODI BOROUGH	4600073	COLUMBIA	405240	740410	U	4.1	03	31	409	GIRB		375
	LODI BOROUGH	2601067	TERRACE	405157	740558		3.0	03	31	607	GIRB		190
	LODI BOROUGH	2601010	GARFIELD	405218	740538		3.4	03	31	459	GIRB		150
	LODI BOROUGH	2603183	CORABELLE	405231	740435		3.8	03	31	470	GIRB		200
5198	WALLINGTON BOROUGH	2603933	DUE	405131	740619		2.5	03	65	400	GIRB		140
	WALLINGTON BOROUGH	2603027	LESTER ST	405125	740710		2.7	03	65	400	GIRB		130
	WALLINGTON BOROUGH	4600075	8	405125	740750		3.0	03	65	503	GIRB		80
	WALLINGTON BOROUGH	4600074	5	405125	740750		3.0	03	65	506	GIRB		150
5282	GARFIELD WATER DEPARTMENT	2604016	1A	405256	740651		4.2	03	21	400	GIRB		300
	GARFIELD WATER DEPARTMENT	2604063	2	405312	740648	U	4.5	03	21	475	GIRB		150
	GARFIELD WATER DEPARTMENT	2604010	5	405209	740639		3.3	03	21	276	GIRB		150
	GARFIELD WATER DEPARTMENT	2604064	8C	405250	740742		4.3	03	21	405	GIRB		400

Number of Observations: 79

[illegible] SITES WITHIN 5.0 MILES OF 404921 LAT. 74.548 LON. AS OF 12/22/87 (IN ORDER BY DECREASING LONGITUDE) - 11/19/88

SITENUM	NAME	LAT	LON	DISTANCE	CONTAM	FMCODE1	FMCODE2	STATUS1	STATUS2
377	[illegible], CLIFTON, PASSAIC CO.	405111	741016	4.5	57	3070	0	0	
954	FOUR RICHARD'S FURNITURE, MONTCLAIR, ESSEX CO.	405021	741000	3.7	0	0140	3070	1	C
838	[illegible] (CHO GROUP), CLIFTON	405157	740857	4.1	00	0103	[illegible]	1	B
1133	[illegible] TOLL [illegible], MONTCLAIR, ESSEX CO.	401828	740030	2.6	53			3	
429	[illegible], MONTCLAIR, ESSEX CO.	404828	740829	3.6	[illegible]	0130	[illegible]	1	
1150	[illegible] ELECTRONICS, INC., [illegible], CLIFTON, PASSAIC CO.	404945	[illegible]	2.2	04			3	
1302	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0130	[illegible]	1	E
616	GIVAUDAN CORP., CLIFTON, PASSAIC CO.	404947	740751	1.9	00	130	3070	1	E
1086	[illegible] CONCRETE, NORTH ARLINGTON, BERGEN CO.	404635	740745	3.6	53	0103	0	1	B
1251	FAIRFIELD [illegible] INDUST. [illegible] FLD., BERGEN CO.	405256	740715	4.3	01	0120	3070	1	
851	[illegible] PAINT [illegible] CO., INC	405243	740716	4.1	00	0103	3070	1	B
174	[illegible] CORP. [illegible], BERGEN CO.	404815	740710	1.4	12	0110	3070	2	J
1119	[illegible], EAST PARK, BERGEN CO.	405327	740645	4.8	00	0110	3070	1	C
570	STETCHLEY SERVICES, BERGEN CO.	405255	740615	4.1	00	0110	3070	1	G
501	[illegible] SERVICE [illegible], GARFIELD, BERGEN CO.	405327	740614	4.7	50	130	3070	1	
970	[illegible] ELECTRO [illegible], GARFIELD, BERGEN CO.	405229	740610	3.4	0	0	0	3	
1222	WALLINGTON WATER [illegible], WALLINGTON, BERGEN CO.	405000	740600	0.8	00	0120	3070	1	C
776	CURTISS-WRIGHT CORP	405144	740547	2.7	00	3070	0	1	A
889	J.B.M.T. FRITTINE, S. RUTHERFORD, BERGEN CO.	404925	740535	0.2	00	0101	0100	1	B
500	LODI MUNICIPAL [illegible] V.O. DONTAN, LODI, BERGEN CO. (SEE ALSO 629)	405230	740530	3.6	0	130	3070	1	E
867	SHERWOOD [illegible], S. RUTHERFORD, BERGEN CO.	404932	740527	0.4	63	0103	0101	1	
474	[illegible] JOHNSON, EAST RUTHERFORD, BERGEN CO.	404942	740518	0.6	00	103	101	1	E
775	COGAN CHEMICAL CORP., CARLSTADT, BERGEN CO.	405010	740503	1.1	00	0120	3070	1	A
588	DIAMOND SHAMROCK, CARLSTADT, BERGEN CO.	405017	740458	1.3	50	103	101	1	
578	CONRAIL SECONDUS, HUDSON CO.	404600	740457	3.9	1	103	102	1	
361	FERRIS CREEK PROJECT, WOODRIDGE, BERGEN CO.	405014	740448	1.3	38	100	0	1	D
860	SCIENTIFIC CHEMICAL PROCESSING, CARLSTADT, BERGEN CO.	404928	740427	1.2	00	0110	3070	1	C
183	[illegible] CHEMICAL, LODI, BERGEN CO.	405313	740417	4.6	00	100	3070	1	B
808	[illegible] OF [illegible], CARLSTADT, BERGEN CO.	404922	740435	1.5	00	0103	0101	1	B
157	[illegible] SITE [illegible], BERGEN CO.	405100	740400	2.5	52		0	3	
491	[illegible] CO., [illegible], BERGEN CO.	404649	[illegible]	3.4	[illegible]	0110	[illegible]	1	[illegible]
1164	PLAZA AMOCO/EXXON & EXXON, SECAUCUS, HUDSON CO.	404729	740332	2.9				3	
276	UNION BEAR STRING CO., BERGEN CO.	405200	740300	3.9	53	0103	3070	2	
246	STONE PROAL, S. HACKENSACK, BERGEN CO.	405210	740249	4.2	63	0100	3070	1	C
1111	PETROLEUM TANK WORK, N. BERGEN, HUDSON CO.	404703	740217	4.1	63	0101	0100	1	B
1243	EL GIGANTE AMOCO, UNION CITY, HUDSON CO.	404615	740200	4.9	51	3050	3070	1	C
762	AMERADA OIL CORP--LITTLE FERRY TER	405018	740158	3.5	00	0103	0101	1	B
1114	RIDGEFIELD PARK EXXON, RIDGEFIELD PARK, BERGEN CO.	405102	740155	3.9	63	0103	0100	1	G
868	TEXACO AT MAIN & PARK ST., RIDGEFIELD PARK, BERGEN CO.	405107	740130	4.3	51	3070	0	1	B
837	SPONGE CLEAN PRODUCTS CO, INC, N. BERGEN, HUDSON CO.	404813	740114	4.2	00	0101	3070	1	B
832	SAM GASBAY, INC., FAIRVIEW, BERGEN CO.	404919	740037	4.5	00	0102	0	4	B
592	MEISTER CHEMICAL, RIDGEFIELD, BERGEN CO.	405030	740035	4.8	1	110	3070	1	E

Number of observations : 42

Page 1 of PRELIMINARY SURVEY OF WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF 404921 LAT. 740548 LON. (IN UNDER BY DECREASING LONGITUDE) - 11/19/88

NUMBER	NAME	SOURCE ID	LOC ID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	MOD1	GEO2	CAPACITY
2268P	FOREST HILL FIELD CLUB	POND		404808	741051	F	4.6	13	02	14	SP		1200
2268P	FOREST HILL FIELD CLUB	2604258	1	404749	741041	S	4.6	13	02	238	GIRB		60
2262P	UPPER MONTCLAIR COUNTRY CLUB	POND	SW	405450	741040	T	4.6	13	02	12	GEOD		1100
2262P	UPPER MONTCLAIR COUNTRY CLUB	2604390	2	405059	741035		4.6	13	02	335	GIRB		132
2262P	UPPER MONTCLAIR COUNTRY CLUB	2601199	1	405052	741025		4.4	31	02	490	GIRB		90
2262P	UPPER MONTCLAIR COUNTRY CLUB	2604835	3	405030	741020	T	4.2	31	02	300	GIRB		60
2233P	HOFFMANN-LAROCHE INC.	4600156	32	405015	740927	F	3.4	31	02	650	GIRB		260
2233P	HOFFMANN-LAROCHE INC.	4600155	20	405000	740919	F	3.2	13	16	402	GIRB		100
2233P	HOFFMANN-LAROCHE INC.	4600157	33	405003	740915	F	3.1	31	02		GIRB		165
2233P	HOFFMANN-LAROCHE INC.	4600159	37	404958	740907	F	3.0	31	02	720	GIRB		300
2073P	INTERNATIONAL MINERALS & CHEM.	4600092	1	404700	740900	T	3.9	13	01	352	GIRB		100
2073P	INTERNATIONAL MINERALS & CHEM.	4600093	2	404700	740900	T	3.9	13	01	400	GIRB		150
2073P	INTERNATIONAL MINERALS & CHEM.	2605113	3	404700	740900	T	3.9	13	01	400	GIRB		150
2261P	FRITZSCHE, DODGE & OLCOTT	2603812	2	405212	740045	U	4.2	31	02	600	GIRB		218
2066P	MILES LABORATORIES	2603833	2	405248	740824	M	4.6	31	02	300	GIRB		200
2066P	MILES LABORATORIES	2604613	3	405247	740821	M	4.5	31	02	408	GIRB		200
2016P	ITT AVIONICS DIVISION	2601834	1	404930	740820	T	2.2	13	16	500	GIRB		150
2016P	ITT AVIONICS DIVISION	2601835	2	404930	740820		2.2	13	16	450	GIRB		150
2016P	ITT AVIONICS DIVISION	2601906	3	404930	740820		2.2	13	16	500	GIRB		150
2016P	ITT AVIONICS DIVISION	2604692	4/SEALED	404912	740612		2.1	13	16	500	GIRB		200
10512W	V.H. SWENSON CO., INC.	2602717	1	404608	740809	F	4.2	17	07	400	GIRB		150
5198	WALLINGTON BOROUGH	4600075	8	405125	740750		3.0	03	65	503	GIRB		80
5198	WALLINGTON BOROUGH	4600074	5	405125	740750		3.0	03	65	506	GIRB		150
2092P	STANDARD CORPORATION	4600006	6	404936	740745	F	1.7	31	02	297	GIRB		235
2092P	STANDARD CORPORATION	4600007	7	404940	740745	F	1.7	31	02	250	GIRB		110
4029FS	[illegible] CHEMICAL, INC.	PASSAIC RIVER		405206	740745	T	3.6	03	21		SPGR		
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	G.S. UPPER	405308	740742	T	4.6	03	21		SPGR		
5282	GARFIELD WATER DEPARTMENT	2604064	8C	405250	740742		4.3	03	21	400	GIRB		100
[illegible]	[illegible] UNION CO.	4600042		404752	740738	S	2.3	03	39	200	GIRB		[illegible]
[illegible]	[illegible] WATERS INC.	2601167	1	405115	740727	U	2.6	03	65	300	GIRB		[illegible]
[illegible]	[illegible] WATERS INC.	2604220	2	405115	740727	U	2.6	03	65	300	GIRB		165
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	WIPPANY CO	405208	740727	T	3.5	31	02		SP		
2313P	FENCO OF LYNDHURST INC.	4600173	2	404845	740715		1.4	03	32	313	GIRB		185
2313P	FENCO OF LYNDHURST INC.	2601699	3	404845	740715	F	1.4	03	32	410	GIRB		150
2313P	FENCO OF LYNDHURST INC.	4600172	1	404845	740711		1.4	03	32	267	GIRB		110
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	DEKONTE CO	405143	740712	T	3.0	31	07		SP		
5198	WALLINGTON BOROUGH	2603027	LESTER ST	405125	740710		2.7	03	65	400	GIRB		130
2313P	FENCO OF LYNDHURST INC.	2603804	4	404840	740706	F	1.4	03	32	352	GIRB		185
2093P	ORVAL KENT FOOD COMPANY, INC.	2604317	1	405045	740704	F	2.0	03	12	580	GIRB		150
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	TUCK IND.	405136	740704	T	2.8	31	07		SP		
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	FONTASDIE	405204	740704	T	3.3	31	02		SP		
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	CHELTEN CO	405208	740702	T	3.4	31	02		SP		
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE DAM	PASSAIC IN	405218	740702	T	3.6	31	02		SP		
2093P	ORVAL KENT FOOD COMPANY, INC.	2604382	3	405035	740655	T	1.7	03	12	470	GIRB		430
2093P	ORVAL KENT FOOD COMPANY, INC.	2604341	2	405045	740654	S	1.9	03	12	300	GIRB		150
5282	GARFIELD WATER DEPARTMENT	2604016	1A	405256	740651		4.2	03	21	400	GIRB		300
5282	GARFIELD WATER DEPARTMENT	2604063	2	405312	740648	U	4.5	03	21	475	GIRB		150
2049P	GILA CORPORATION	2604036	1	404825	740638		1.3	03	32	302	GIRB		230
5282	GARFIELD WATER DEPARTMENT	2604010	5	405309	740638		3.3	03	21	276	GIRB		150
5198	WALLINGTON BOROUGH	2603933	DUL	405131	740618		2.5	03	65	400	GIRB		140
2055P	[illegible] CHEMICAL, INC.	2603[illegible]	4	405024	740607	F	1.3	03	65	576	GIRB		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	740552		[illegible]	03	21	207	GIRB		[illegible]
[illegible]	[illegible] INC.	[illegible]	3	[illegible]	740557	F	1.2	03	65	192	GIRB		[illegible]
[illegible]	[illegible] INC.	[illegible]	5	[illegible]	740527	T	[illegible]	[illegible]	65	450	GIRB		[illegible]
[illegible]	[illegible] SUPPLY CO.	[illegible]	1	404931	740352	F	[illegible]	03	13	255	GIRB		125
5127	[illegible]	[illegible]	[illegible]	405216	740538		.4	03	21	457	GIRB		[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5127	[illegible]	4600069	4	405249	740602		4.0	03	31	307	GIRB	295
5127	[illegible]	4600070	5	405249	740602		4.0	03	31	300	GIRB	355
5127	[illegible]	4600071	7	405249	740602		1.0	03	31	332	GIRB	355
[illegible]	[illegible]	4600125	1	405000	740300		1.0	03	05	170	GIRB	600
5127	[illegible]	[illegible]	[illegible]	405231	740435		[illegible]	03	31	470	GIRB	300
5127	[illegible]	[illegible]	[illegible]	[illegible]	740430	H	[illegible]	03	31	[illegible]	GIRB	500
5127	[illegible]	[illegible]	[illegible]	[illegible]	740110	U	4.1	03	31	409	GIRB	375
2573P	[illegible] CHOCOLATE [illegible], CORP.	2602067	1	404946	740350		1.8	03	05	302	GIRB	90
2573P	[illegible] CHOCOLATE [illegible], CORP.	2602533	2	404946	740350		1.8	03	05	393	GIRB	50
2573P	[illegible] CHOCOLATE [illegible], CORP.	2603053	3	404946	740350		1.8	03	05	378	GIRB	55
[illegible]	[illegible]	[illegible]	1	[illegible]	740345	I	2.4	41	03	140	GI	700
2657P	PINNEKIN YARN CO., INC.	4600177	0	405208	740309	F	3.9	03	59	404	GIRB	65
2657P	PINNEKIN YARN CO., INC.	2603018	3	405210	740309	F	4.0	03	59	400	GIRB	50
2657P	PINNEKIN YARN CO., INC.	4600063	2	405210	740305	F	4.0	03	59	435	GIRB	0
2657P	PINNEKIN YARN CO., INC.	4600176	4	405208	740305	F	1.0	03	59	400	GIRB	140
2657P	PINNEKIN YARN CO., INC.	[illegible]	5 [illegible]	[illegible]	740305	F	1.0	03	59		GIRB	
[illegible]	[illegible] WATER COMPANY	4600095	2	405221	740157		4.3	03	04	550	GIRB	190
2082P	[illegible] PAPER COMPANY	4600095	2	405005	740045	F	4.5	03	49	484	GIRBS	50
2082P	[illegible] PAPER COMPANY	4600096	3	405005	740045	F	4.5	03	49	492	GIRBS	75
2082P	[illegible] PAPER COMPANY	4600097	4	405005	740045	F	4.5	03	49	597	GIRBS	100
2082P	[illegible] PAPER COMPANY	4600098	5	405005	740045	F	4.5	03	49	500	GIRBS	90
2082P	[illegible] PAPER COMPANY	4600099	6	405005	740045	F	4.5	03	49	600	GIRBS	50

Number of Observations: 75

REFERENCE NO. 10

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: Becton Dickinson & Co. TDD: 02-8910-28

Site Address: Stanley St
Street, Box, etc.

E. Rutherford
Town

Bergen
County

NJ
State

NUS Personnel:

Name	Discipline
A. Calmar	Env. Scientist
J. Harrison	Technician
J. Reickhoff	Biologist

Weather Conditions (clear, cloudy, rain, snow, etc.):

Clear

Estimated wind direction and wind speed: 0-5 SW

Estimated temperature: ≈60°F

Signature: Anthony F. Calmar Jr. Date: 10/26/89

Countersigned: [illegible] Date: 10/26/89

PRELIMINARY ASSESSMENT

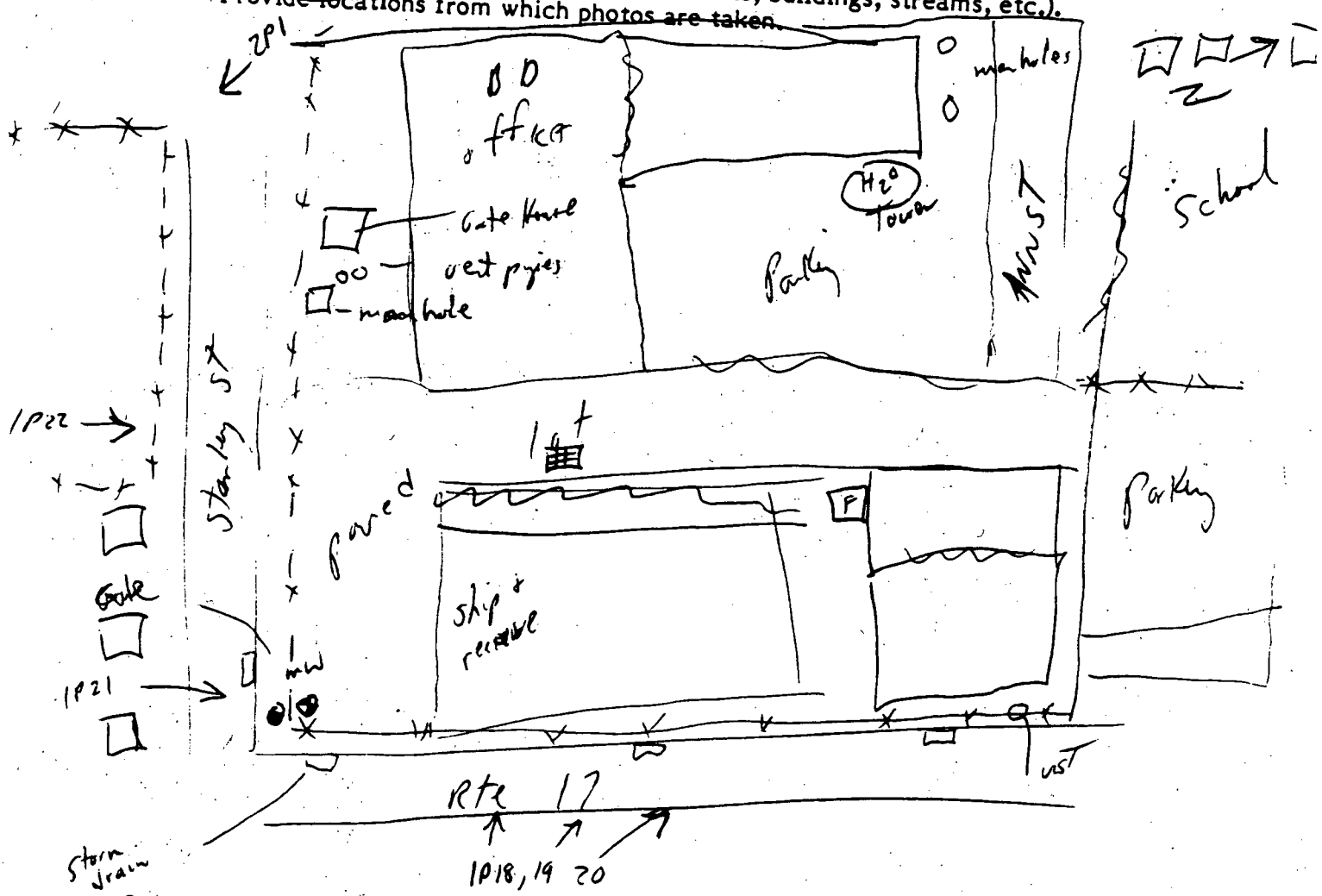
INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: Becton Dickinson + Co. TDD: 02-8910-28

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.



Signature: Anthony F. Culmone Jr. Date: 10/26/89

Countersigned: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: Becton Dickinson & Co. TDD: 02-8910-28

Notes (Periodically indicate time of entries in military time):

On site 1105 ~~Noo~~ Ae 1024n whole site fenced in
1115 North Side of site marshland fenced here
also to NW corner of site H.G. Becton
Regional H.S.
1118 underground storage tank NE corner of property
Fence wrought iron spike type
Catch basins along Rte 17
Monitoring wells SE corner of property ≈ 8" and
≈ 4" dia. 8" approx. not locked
1125 Site Slope <3% catch basin ≈ 100' from
fence center of parking lot site active
No signs of stressed biota
Area across street to south has same type
fencing & gates with current excavation
1130 2 Red vent pipes noted to NW corner of
Gate house coming out of ground
Note: in doing site map use top. quad with blds for
outlines & Cty Road. map for streets. Place
specifics from sketch on that map.

Signature: [signature] Date: 10/26/89
Countersignature: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: Becton Dickinson & Co. TDD: 02-8910-28

Notes (Cont'd):

1140 Access to High School from Ann ST.
Many houses lining streets in area

1145 Leaving Site

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony F. Calmore Jr. Date: 10/26/89

Countersignature: [illegible] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: Becton Dickinson & Co. TDD: 02-8910-28

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
1P18-20	10/26/89	1108	J. Harrison	View Panoramic looking across Rte 17 from SE corner to NE corner
1P21	10/26/89	1120	J. Harrison	view of NW SE corner of site
1P22	10/26/89	1125	J. Harrison	View through main parking lot looking - catch basin & fuel tank
2P2	10/26/89	1134	J. Harrison	view of construction area across Stanley St.

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony F. Cubrano Jr. Date: 10/26/89

Countersignature: [illegible] Date: 10/26/89

0002 WS
02-8910-28

Work Plan No. 02-8910-28-W1

NUS/FIT REGION 2
PRELIMINARY ASSESSMENT (PA)
MANAGEMENT TASK WORK PLAN

OF Becton Dickinson & Co.

LOCATED IN: E. Rutherford, Bergen Co., New Jersey

TDD NO.: 02-8910-28

TOD Manager: ~~Peter Babich~~ D. Cohen 10/18/89 P. Babich AC 10/23/89

Project Manager: Anthony Culmone

Date Prepared: 10/18/89

Distribution: Name	Initial/Date
A. Culmone	AC 10/24/89
J. Harrison	10/24/89
J. Reickhoff	JR 10/24/89

Reviews and Approvals

Quality Assurance Representative: D. Lawson

Date: 10/23/89

FIT Office Manager: RM Yoman

Date: 10/24/89

NUS/FIT REGION 2
PRELIMINARY ASSESSMENT
MANAGEMENT TASK WORK PLAN

CONTENTS

	Page
Summary of the PA Work Scope	3
Deliverable/Final Product to EPA	4
Technical Approach and Dperating Guidelines	5
Personnel Requirements	5
Project Schedule	5
Reference Information/Data Sources	5
Interface Planning Requirements	6
Health and Safety Considerations	6
Records and Documentation	6
QA Program Applicability	7
Quality Control Actions	7

Attachment A: TDD
Attachment B: Safety Plan

SUMMARY OF THE PA WORK SCOPE

This work plan provides controls for the performance of all tasks necessary to conduct the PA specified in the TDD provided as Attachment A.

The objective of the PA is to determine the following:

Does the suspected hazardous waste site pose a threat to the public health and environment?

and, if so,

What further action should be taken?

To accomplish this objective, the following three tasks are encompassed by this work plan:

1. Review and evaluation of available file search information from sources including Federal, State, County, and/or municipal environmental and health offices to determine if hazardous substances are currently or may have been handled and/or stored on the site. Further, if the current or past presence of hazardous substances is suspected, an attempt will be made, based on file search information, to identify hazardous contaminant characteristics, determine the quantity that may be on the site, and characterize the site management practices. An off-site reconnaissance will be considered and warranted if, based on evaluation of site discovery documentation and file search information, the possibility exists that hazardous substances are located on the site.

2. Performance of an off-site reconnaissance to accomplish one or both of the following purposes:

   - To verify the site location and, if successful, attempt to observe and document site characteristics that may evidence the presence or past disposal of hazardous substances.

   - To identify possible hazardous substance migration pathways and receptors, and hazardous substance handling and containment practices.

3. Preparation of a PA report characterizing hazardous substances that may be present, and documentation supporting both the characterization of possible hazardous substances and also recommendations on what, if any, further action should be taken.

DELIVERABLE/FINAL PRODUCT TO EPA

The deliverable/final product to be prepared for EPA will include:

1. Potential Hazardous Waste Site Preliminary Assessment Report that includes:

   - A brief, concise site description
   - A brief summary of the site history, identifying the current and past operator's who may be responsible for possible hazardous substances located on the site.
   - Information on whether the site is currently or has been under regulatory control by Federal or State agencies
   - A recommendation and statement on what further action should be taken.

2. Supporting reference documentation from the following sources:

   - Reference file search information and data sources.
   - Off-site reconnaissance documentation and photos (if an off-site reconnaissance is warranted).

Before release to EPA, the PA report will be reviewed for technical accuracy and editorial correctness. Qualified individuals independent of PA report preparation will act as reviewers.

When required reviews have been completed, required approvals will be obtained in the following sequence:

1. PA Project Manager
2. Regional QA Representative
3. FIT Office Manager

All reviews and approvals will be documented on a Document/Report Review and Approval Log to be retained in the project file.

TECHNICAL APPROACH AND OPERATING GUIDELINES

The following guidance will be used in the performance of PA tasks referenced in this work plan:

(1) U.S. EPA, Characterization of Hazardous Waste Sites - A Methods Manual, Volume 1 - Site investigations EPA/600/4-84/075, April 1985, Section 4.

(2) U.S. EPA, Preliminary Assessment Guidance for Fiscal Year 1988, OSWER 9345.0-01, January, 1988.

PERSONNEL REQUIREMENTS

Each PA will have a Site Manager (a person responsible for the project, as referred to in the Superfund QA Manual, Issue D, QAP 15.1, pgh. 5.3 as "TDD Project Manager." This may be a FIT 2 Project Manager or Site Manager) who will be the principal investigator for the PA. The Site Manager (and, if it is not the same person, the project manager) will be identified on the cover of this work plan. Technically qualified personnel to whom tasks may be delegated will be listed under distribution on the cover of this work plan. Their initials and dates will evidence their understanding of the tasks to be performed.

PROJECT SCHEDULE

The copy of the project TDD provided in Attachment A presents an estimated schedule for completion of project tasks. The major tasks, identified as specific elements, are listed with interim deadlines to indicate the estimated completion dates.

REFERENCE INFORMATION/DATA SOURCES

All available site discovery documentation received from EPA will be reviewed and retained in the project file. Additionally, reference file search information and data sources will be retained in the project file.

INTERFACE/PLANNING REQUIREMENTS

Interface with U.S.EPA pertaining to the performance of PA tasks will be through the Regional Project Officer, Amy Brochu, at 201-906-6802 or designee.

HEALTH AND SAFETY CONSIDERATIONS

NUS is contractually committed to provide FIT employees with a safe and healthy work environment in the vicinity of hazardous waste sites. If an off-site reconnaissance is planned a safety plan for off-site reconnaissance in the vicinity of possible hazardous waste sites must be executed, distributed to project personnel and docket filed.

RECORDS AND DOCUMENTATION

All records evidencing the validity of PA tasks performed will be retained in the PA technical directive project file. These records include

- TOD/AOC
- Work Plan/Safety Plan
- *Off-Site Reconnaissance Information Reporting Form
- *Photographs of Possible Hazardous Waste Site
- Correspondence/Notes
- Deliverables (i.e., the PA Report)
- Records of reviews and approvals for project control documents and deliverables

Note:

*These documents will be required if it is determined that a site reconnaissance is warranted.

QA PROGRAM APPLICABILITY

The following portions of the NUS Superfund Division Quality Assurance Manual (Issue D) are applicable to the performance of specific work activities.

Number	Subject
QAP 2.5	Work Plans
QAP 3.1	Collection of Evidentiary Data
QAP 3.2	Data Reduction, Validation, and Reporting of Evidentiary Data
QAP 4.1	Off-Site Reconnaissance
QAP 8.1	Controlled and Accountable Documents
QAP 8.2	Issuance and Distribution of Controlled Documents
QAP 8.4	Technical Reports
QAP 13.1	Nonconformance Reporting, Evaluation, and Disposition
QAP 14.1	Implementation and Documentation of Corrective Actions
QAP 15.1	Storage and Retrieval of Quality Assurance Records and SFD Project Files

QUALITY CONTROL ACTIONS

To ensure that QA Program requirements are met, all quality-affecting SI prestudy work encompassed by this Work Plan must be performed in conformance with the following FIT 2, FITOM-approved, quality control work instructions (WI).

Number	Subject
WI-2-1.1	Project File Preparation
WI-2-1.2	Project Docket Logs
WI-2-1.3	Document Control Numbers

QUALITY CONTROL ACTIONS (CONTINUED)

Number	Subject
WI-2-2.4	Preparation, Review, Approval, and Disposition for the Technical Directive Document (TDD), and Superfund Project Accounting System Form (SPAS), and Acknowledgement of Completion (AOC).
WI-2-1.5	Work Plan Preparation, Review, and Approval
WI-2-1.6	Documentation of Field Activities
WI-2-1.7	Photograph Documentation of Field Activities
WI-2-1.9	Review and Approval of Project Deliverables
WI-2-1.10	Legal Considerations
WI-2-1.11	Community Relations
WI-2-1.12	Off-Site Investigations

ATTACHMENT A

TDD

(Attach Copy of TDD)

TDD Status:

(☐)

☒ Non-RPD-approved TDD copy is attached. The RPD-approved TDD had not yet been returned from EPA when this work plan was approved.

☐ RPD-approved TDD attached.

Note: The RPD-approved TDD and ADC originals will be placed in the project file as accountable documents.

FIT ZONE I
CONTRACT NO. 68-01-7346
TECHNICAL DIRECTIVE DOCUMENT

1A. Cost Center: F-2

2. TOO Number: 02-8910-28

18. Account Number: $475NJAVRP

2A. Amendment:
- ☐ Administrative
- ☐ Technical

3A. Priority:
- ☐ High
- ☒ Medium
- ☐ Low

3B. Key EPA Contact:
Name: Amy Brochu
Phone: 201-906-6802

4A. Estimate of Technical Hours: 100

4B. Subcontract: NA

4C. Estimate of Subcontract Cost: NA

5A. SSIO:

5B. CERIO Number: NJ000304782

5C. EPA Site Name: Becton Dickinson & Company

5D. City/County/State: East Rutherford, Bergen, NJ

6. Desired Report Format:
- ☐ Formal Report
- ☐ Letter Report
- ☒ Standard Report
- ☐ Formal Briefing
- ☐ Other (Specify): ☐ _____

7A. Activity Start Date: 10-17-89

7B. Estimated Completion Date: 12-29-89

8A. Type of Activity:
- ☐ PA
- ☐ SI/SSI
- ☐ ESI/LSI
- ☐ HRS Support
- ☐ QA Support
- ☐ Special Studies
- ☒ RCRA PA
- ☐ Enforcement Support
- ☐ Program Management
- ☐ Equipment Maintenance
- ☐ RCRA SI
- ☐ Training
- ☐ General Technical Assistance

8B. FIT/SCAP Goal: Will Deliverable Meet a Unit of the Goal?
- ☐ Yes
- ☐ No

9. General Task Description:
Preliminary Assessment

10. Specific Elements:
1. Assemble available information and conduct any additional information search.
2. Review and evaluate information and conduct off-site reconnaissance.
3. Submit Preliminary Assessment Report and PreScore Analysis.

☐ Additional Scope Attached

11. Interim Deadlines:
- 10-24-89
- 10-31-89
- 12-29-89

12. Comments:
Overtime Approved

13. Authorizing:
- ☒ FIT-RPO
- ☐ HQ-PO
- ☐ HQ-OPO

Amy Brochu (FIT-RPO Signature)

14. Date:

15. Received by:
- ☐ Accepted
- ☐ Accepted with Exceptions (Attach)
- ☐ Rejected

(Contractor FITOM Signature)

Ronald M. Naman

16. Date:

Note: Boxes 1A., 18., 15., and 16 are to be completed by the FITOM.

SHEET 1 White - FITOM Copy
SHEET 2 Green - Project Officer's Copy (Washington, D.C.)
SHEET 3 Canary - RPO Copy
SHEET 4 Pink - ZPMO Copy
SHEET 5 Goldenrod - Contracting Officer's Copy (Washington, D.C.)

PAWP
Rev. No. 2
Work Plan No. 02-8910-28-W1

ATTACHMENT B

SAFETY PLAN

(Must Have Identifying Control No.)

Ref. 02-8910-28-SP
(Work Plan No.)
W1
AC 10/23/89

ATTACHMENT B

ABBREVIATED SITE SAFETY PLAN FOR OFF-SITE RECONNAISSANCE

SITE NAME: BECTON DICKINSON & COMPANY TDD NO.: 02-8910-28
ADDRESS: STANLEY ST.
EAST RUTHERFORD, NJ

PURPOSE OF SITE VISIT: OFF-SITE RECONNAISSANCE
PROPOSED DATE OF WORK: 10/26/89
SITE STATUS: ____ Active ____ Inactive X Unknown

SITE DESCRIPTION: UNKNOWN

SITE HISTORY: UNKNOWN

*** All work will be conducted off site from public access areas only. ***

Perimeter identified (Fenced, or other identifiable perimeter identification)?

TO BE IDENTIFIED DURING OFF-SITE

MONITORING EQUIPMENT:

___ HNu
X TLD Badge
___ OVA
___ Radiation mini-alert
___ Victoreen Radiation Detector
___ Draeger Tubes

PROPOSED SITE INVESTIGATION TEAM
(Minimum or Two People)

A. Colman
J. Harrison
J. Reickhoff

___ Information is not presently available to accurately complete the Abbreviated Site Safety Plan for off-site reconnaissance and will be completed during the file search.

PLAN PREPARATION: DATE

Prepared by: J. FROST (10/17/89)

Approvals:

Regional Health A Safety Manager: Robert E. Carson (10/23/89)

Regional FIT Office Manager: RM Norman (10/24/89)

TDO NO. 02-8910-28

Ref. 02-8910-28-SP
(Work Plan No.)

EMERGENCY INFORMATION:

LOCAL RESOURCES:

Ambulance (Name): ~~AMBU-AIDE, INC.~~ Local — Phone ~~201/939-4796~~ 438-0165

Hospital (Name): HACKENSACK HOSPITAL — Phone 201/441-2000

Police (Local or State): LOCAL — Phone 201/438-0165

Fire Dept. (Name, Volunteer?): LOCAL — Phone 201/438-0165

Radio Channel: _____ — Phone _____

Nearest Phone: TO BE DETERMINED

OFFICE RESOURCES:

Region 2 FIT Office	201-225-6160 / 1-800-888-6160
Amy Brochu - Acting EPA RPO	201-906-6802 (Office)
Ron Naman - FITOM	201-873-0166 (Home)
Bob Carson - RHSM	201-679-4823 (Home)
Paul Clay - ZPMO	703-522-8802 (Office)

EMERGENCY CONTACTS: (Medical and Health)

- (NUS Consulting Physicians - University of Pittsburgh) Dr. Hodgson

  24-Hour Number — 412-648-3240

- Elmer Burd (NUS Zone Health and Safety Manager)

  Office — 412-788-1080

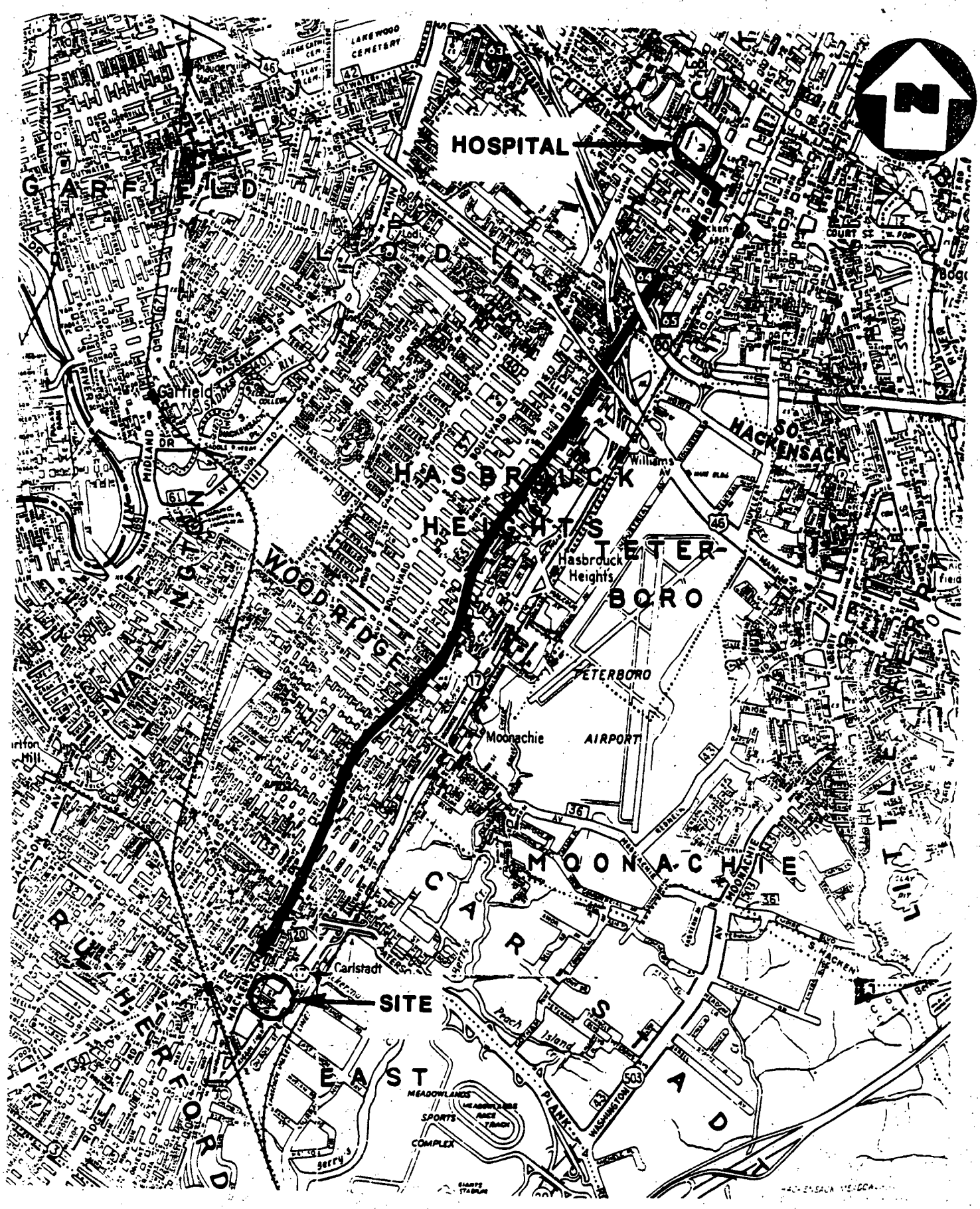
- Regional Health Maintenance Program
  EnviroCare Health Services

  Dr. Holstein — 201-225-5454

- Poison Information Center — NJ 800-962-1253
  NY 212-926-8005

DIRECTIONS TO HOSPITAL (Include approximated distance, and attach map).

PROCEED NORTHWEST ON STANLEY ST ABOUT 1/2 BLOCK. TURN RIGHT ON TO HACKENSACK ST. GO ABOUT 4 1/2 MILES TO ESSEX ST. TURN LEFT. HOSPITAL WILL BE 2 BLOCKS ON RIGHT.



ROUTE TO HOSPITAL

BECTON, DICKINSON & COMPANY

EAST RUTHERFORD, N.J.

NUS CORPORATION

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: Becton Dickinson & Co. TDD: 02-8910-28

Site Address: Stanley St
Street, Box, etc.

E Rutherford
Town

Bergen
County

NJ
State

NUS Personnel:

Name	Discipline
H Coleman	Env. Scientist
J. Rieckhoff	Env. Scientist
M Yeager	Field Tech.

Weather Conditions (clear, cloudy, rain, snow, etc.):

Clear

Estimated wind direction and wind speed: SW, 5-10 mph

Estimated temperature: 20°F

Signature: Anthony T Coleman Jr Date: 12/15/89

Countersigned: [illegible] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: ~~10/26/~~ 12/15/89

Site Name: Rector Dickinson TDD: 02 89/10-25

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.). Provide locations from which photos are taken.

NA

see recon dated 10/26/89

Signature: [illegible] Date: 12/15/89

Countersigned: [illegible] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/11/89

Site Name: Becton Dickinson TDD: 02-8910-28

Notes (Periodically indicate time of entries in military time):

At site 0728

Returned to site to retake pictures since the first set did not turn out

Left Site 0747

Signature: [signature] Date: 12/15/89

Countersignature: [signature] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: Becton Dickinson TDD: 02 8910-28

Notes (Cont'd):

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: [illegible] Date: 12/15/89

Countersignature: [illegible] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: Becton Dickinson TDD: 02-8910-28

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
1P1+2	12/15/89	0730	A Coleman	NW at SE corner of the site
1P3	12/15	0734	A Coleman	Looking N from center of south side of property
1P4	12/15	0736	A Coleman	Used pipes outside guard shack at SW corner
1P5	12/15	0739	A Coleman	View of site from High School Entrance Road
1P6	12/15	0743	A Coleman	View of property across Stanley St. from RT. 17
1P7-9	12/15	0747	A Coleman	View from RT. 17 up Stanley St. and E. border of site

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony F Coleman Date: 12/15/89

Countersignature: John D Rockhoff Date: 12/15/89

REFERENCE NO. 11

NEAREST SURFACE WATR
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 5.1 FEET
NUS CORPORATION
TITLE: THREE MILE VICINITY MAP
SITE :
BECTON-DICKINSON
EAST RUTHERFORD, N.J.
DATE : 12/21/89
TDD : 02-8910-28
QUAD : WEEHAWKEN, N.J.
FIGURE NUMBER:
SCALE: 1"= 2000'

REFERENCE NO. 12

TRENDS IN THE WATER QOALITY OF AN URBAN ESTUARY: HACKENSACK MEADOWLANDS, NEW JERSEY

Chrlstiae Cheag, Edward Koasevick[1]

ABSTRACT: The Hackensack Meadowlaoda Development Commlaaloa (HMDC), a Nev Jersey state planning agency, has been conducting a suaaer watar quality prograa aince 1971. Saapllng sites on the tidal portion of the Hackensack River and its tributaries have been monitored for thirteen parameters. The data generated has allowed the HMDC to assess trends in a perturbed urban estuary over time. Parametric and non-parametric statistical analysis reveal that the system maintains the capacity to buffer stress. Comparing out results to precipitation allowed ua to measure td what extent natural cycles influence water quality.
(KEY TERMS: Estuary; water quality; trends; parametric and non-parametric statistical analysis.)

INTRODUCTION

Tha Hackensack Meadowlands District encompasses almost 20,000 acres of tidal marshes and upland less than six miles west of Kldtown Manhattan. Neglected and relatively undeveloped, it Increased ia value as surrounding land succumbed to haphazard growth. Recent uses have ranged from futile attempts at tide control, to the siting of power generating, chemical processing, metal finishing, and municipal water treatment facilities along the banks of the river and its tributaries. The area also serves as a repository for solid waste, and is criss-crossed by an extensive urban transportation network.

Enabling legislation in 1969 established a development commission whose mandate included balancing development with ecological considerations. The collection of water quality information commenced almost immediately, documenting the extent of paat abuse. A continuation of this prograa allows one to trace the effect of concerted efforts on the part of regulatory agencies on a perturbed urban estuary. Previous reports include, "Water Quality in a Disordered Ecosystem (HMDC, 1970)," and "Water quality in a Recovering Ecosystea (HMDC, 1976)." This report will examine the data generated from 1978 to 1987, relying on atatistieal analysis in order to depict trends over this period.

Study Area

Situated within the Piedmont physiographic province in Northeaatern New Jersey, the tidal portion of the Hackensack River drains an area of 93 square mlies over a reach of 22 miles before Its confluence with the Passaic River at Newark Bay. Approximately one third of thia area falls within the Hackenaack Meadowlands Land Use Control District,

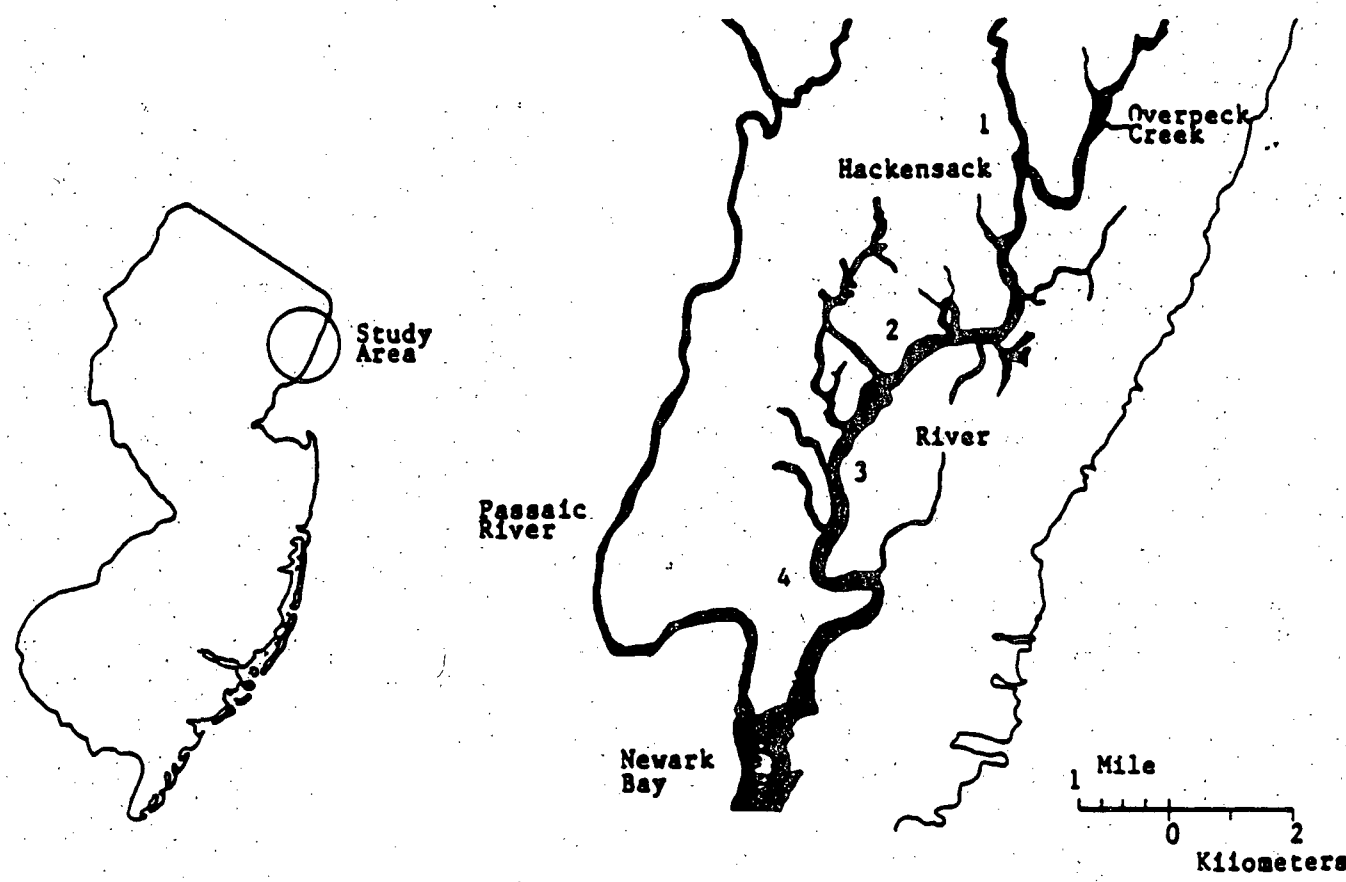
---

[1] Respectively, Water Quality Speclallat and Supervisor of Laboratory Operations and Research, Hackensack Meadowlands Development Commlsaloa, Two DeKprte Park Plaza, Lyndhurst, New Jersey 07071.

which includes over 6,000 acres of wetlands. The vegetation and tidal regime are consistent with a mid-Atlantic saltmarsh, containing mudflats, halophyte dominant narahea, salinity ranging from 0-15 ppt., and semi-dirunal tides in the maia watercourse.

Suszkowski (1978) estimated freshwater flow to Newark Bay at the mouth of the Hackensack at 9.2 m^3/sec, 40 percent froa wastewater discharges. Another estimate (HMDC, 1976), places the relative contribution of wastewater ten percent lower, the balance aade up of water released from an upstream reservoir (20%) and precipitation (S0%). The New Jersey Department of Environmental Protection monitors 7 municipal treatment facilities among the 50 discharge permittees ia this District. The largest treatment plant ia situated directly on the river at river mile 12.7. Its contribution is 2.8 a^3/sec of secondary treatment effluent. Two power generating stations utilize over a biilion gallons a day as cooling water. Tet the river elassification allows secondary contact recreation and the maintenance and propogation of natural biota. An active boating, trapping and hunting community exists, and it is not unusual to encounter the harvesting of klllfish to be used elsewhere as bait.

Map 1: Study Area - Hackensack Meadowlands



The four sampling sites yielding data for this report cover tea miles of the river. Three of the stations are spaced at two mile intervals starting three ailes north of the mouth. The laat station is thlrteea river miles froa Newark Bay, well within the tidal reach of the river (Map 1). The depth of the ehaaael at meaa low water ranges from 16 to

REFERENCE NO. 13

Newark

N. J.—N. Y.—PA.

1:250 000-scale map of

Atlantic Coast Ecological Inventory

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)

WAGING BIRDS (431-460)

431 Waging birds
432 Herons
433 Egrets
434 Rane
435 Ibises
436 Bitterns
437 Great blue heron (S)
438 Wood ibis (S)
439 Anninga
440 Little blue heron (S)
441 Yellow-crowned nigm heron (S)
442 Black-crowned mgnt heron
443 Florida sandhill crane (S)
444 Louisiana heron (S)
445 Limgain (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

[illegible]

Produced by
U. S. FISH AND WILDLIFE SERVICE
1980

Produced by U. S. Fish and Wildlife Service

Base map prepared by U. S. Geological Survey 1969

Atlantic coast ecological inventory compiled in 1980 by Fish and Wildlife Service from data furnished by Federal agencies, State agencies, and other sources. Map scale limitation precludes the portrayal of all available information on species occurrence and distribution. A detailed text—Atlantic Coast Ecological Inventory—is available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402

LEGEND

POPULATED PLACES

Over 500,000 — BOSTON
100 000 to 500 000 — RICHMOND
25 000 to 100 000 — EVANSION
5,000 to 25 000
1,000 to 5 000
Less than 1 000

BAR ROUTE

Normal gauge
Narrow gauge

DOUMDARIES

International
State
County
Park or reservation
Area
Spot elevation in feet

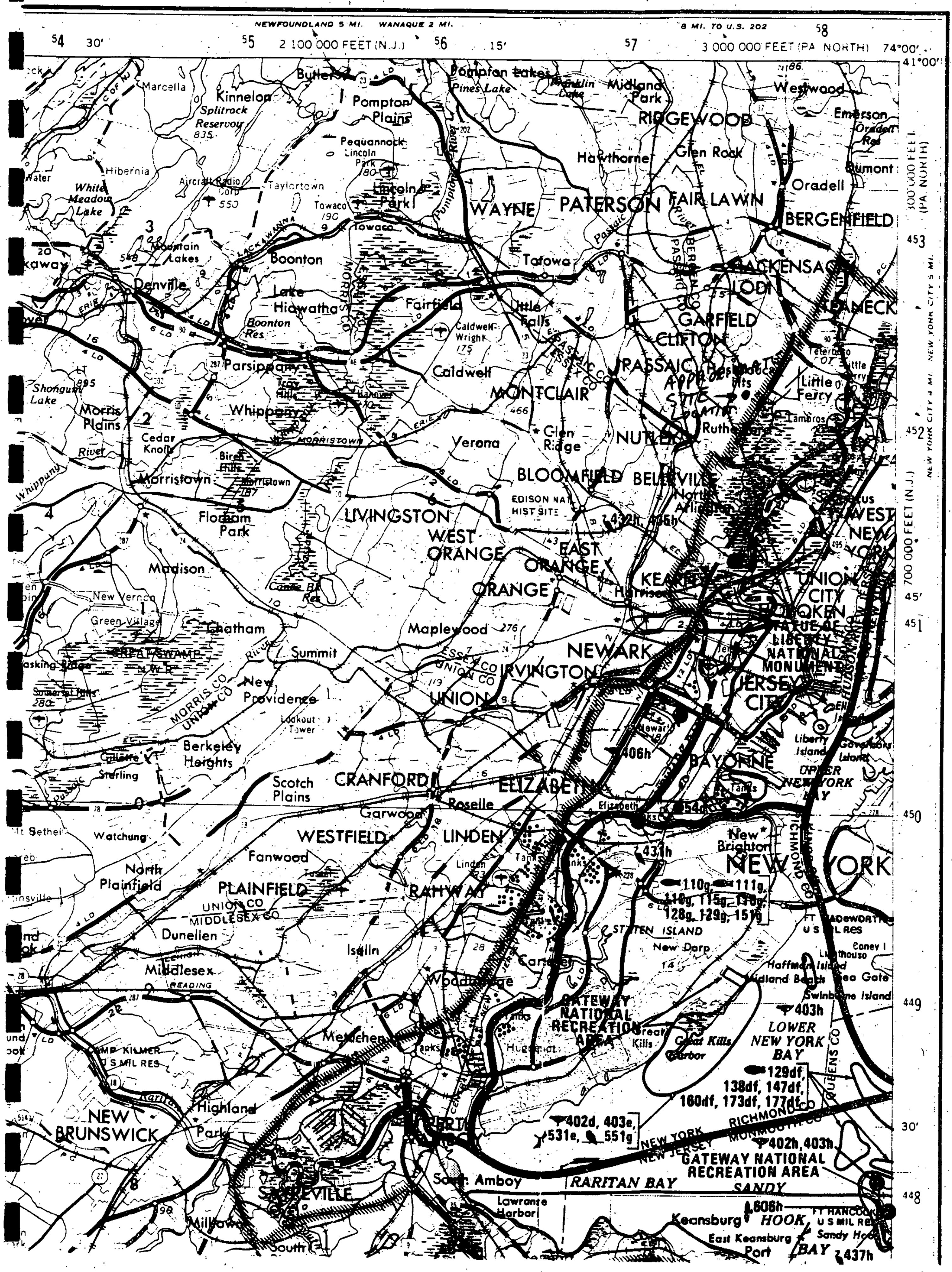
Landplane airport
Landing area
Seaplane airport
Seaplane anchorage
Power line
Woods brushwood

ROADS

Primary, all weather, hard surface
Secondary, all weather, hard surface
Light-duty, all weather, improved surface
Fair or dry weather, unimproved surface
Trail
Interchange

Route markers: Interstate, U.S., State

Lighthouse
Depth curve in feet
Limit of danger, Hole
Rocks, Awash
Foreshore flat
Intermittent or dry stream
Marsh or swamp



NEWFOUNDLAND 5 MI.
WANAQUE 2 MI.
8 MI. TO U.S. 202
54
30′
55
2 100 000 FEET (N.J.)
56
15′
57
3 000 000 FEET (PA NORTH)
58
74°00′
41°00′
300 000 FEET (PA. NORTH)
453
452
45′
451
450
449
30′
448
700 000 FEET (N.J.)
NEW YORK CITY 4 MI.
NEW YORK CITY 5 MI.
Marcella
Kinnelon
Splitrock Reservoir
835
Butler
Pompton Lakes
Pines Lake
Franklin Lake
Midland Park
Westwood
Emerson
Oradell Res
Pompton Plains
RIDGEWOOD
Glen Rock
Hawthorne
Dumont
Oradell
Pequannock
Lincoln Park
Hibernia
Aircraft Radio Corp
550
Taylortown
Towaco
190
Lincoln Park
White Meadow Lake
WAYNE
PATERSON
FAIR LAWN
BERGENFIELD
Mountain Lakes
Boonton
Totowa
HACKENSACK
Denville
Lake Hiawatha
Fairfield
LODI
TEANECK
Boonton Res
Caldwell Wright
175
Little Falls
GARFIELD
CLIFTON
Parsippany
Caldwell
PASSAIC
Little Ferry
Shongum Lake
Morris Plains
Whippany
MONTCLAIR
466
Cedar Knolls
Verona
Glen Ridge
NUTLEY
Rutherford
Birch Hills
Morristown
Morristown
187
BLOOMFIELD
BELLEVILLE
EDISON NAT HIST SITE
North Arlington
Florham Park
LIVINGSTON
WEST ORANGE
EAST ORANGE
WEST NEW YORK
Madison
ORANGE
KEARNY
Harrison
UNION CITY
HOBOKEN
New Vernon
Green Village
Chatham
Maplewood
276
STATUE OF LIBERTY NATIONAL MONUMENT
GREAT SWAMP N W R
Summit
NEWARK
IRVINGTON
JERSEY CITY
Basking Ridge
Somerset Hills
280
New Providence
ESSEX CO
UNION CO
UNION
MORRIS CO
UNION CO
Lookout Tower
Liberty Island
Governors Island
Berkeley Heights
Gillette
Sterling
406h
BAYONNE
UPPER NEW YORK BAY
Scotch Plains
CRANFORD
ELIZABETH
Roselle
Garwood
454d
Mt Bethel
Watchung
WESTFIELD
LINDEN
New Brighton
Fanwood
431h
NEW YORK
North Plainfield
PLAINFIELD
RAHWAY
110g, 111g, 116g, 115g, 120g, 128g, 129g, 151g
UNION CO
MIDDLESEX CO
STATEN ISLAND
Dunellen
New Dorp
Iselin
Coney I
Middlesex
Hoffman Island
Midland Beach
Sea Gate
Swinburne Island
Woodbridge
GATEWAY NATIONAL RECREATION AREA
403h
LOWER NEW YORK BAY
Metuchen
Great Kills
Great Kills Harbor
Hugenot
CAMP KILMER U S MIL RES
129df, 138df, 147df, 160df, 173df, 177df
QUEENS CO
NEW BRUNSWICK
Highland Park
402d, 403e, 531e, 551g
RICHMOND CO
MONMOUTH CO
NEW YORK
NEW JERSEY
402h, 403h
GATEWAY NATIONAL RECREATION AREA
South Amboy
RARITAN BAY
SANDY
SAYREVILLE
Lawrence Harbor
606h
Keansburg
HOOK
FT HANCOCK U S MIL RES
Sandy Hook
East Keansburg
Port
BAY
437h
Milltown
South

REFERENCE NO. 14

Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

Index D-
Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

July 1985

State of New Jersey Department of Environmental Protection/Division of Water Resources

INDEX D - Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

ARTHUR KILL	
(Perth Amboy) - The Kill and its saline New Jersey tributaries between the Outerbridge Crossing and a line connecting Ferry Pt., Perth Amboy to Wards Pt., Staten Island, N.Y.	SE2
(Elizabeth) - From an east-west line connecting Elizabethport with Bergen Pt., Bayonne to the Outerbridge Crossing	SE3
(Woodbridge) - All freshwater tributaries	FW2-NT
BEAR SWAMP BROOK (Mahwah) - Entire length	FW2-TP(C1)
BEAR SWAMP LAKE (Ringwood)	FW2-NT(C1)
BEAVER BROOK (Meriden) - Entire length	FW2-NT
BELCHER CREEK (W. Milford) - Entire length	FW2-NT
BERRYS CREEK (Secaucus) - Entire length	FW2-NT/SE2
BLACK BROOK	
(Meyersvilie) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment and tributaries within the Great Swamp National Wildlife Refuge	FW2-NT(C1)
BLUE MINE BROOK	
(Wanaque) - Entire length, except segment described below	FW2-TM
(Norvin Green State Forest) - That portion of the stream and any tributaries within Norvin Green State Forest	FW2-TM(C1)
BRUSHWOOD POND (Ringwood)	FW2-NT(C1)
BUCKABEAR POND (Newfoundland) - Pond, its tributaries and connecting stream tp Clinton Reservoir	FW2-NT(C1)
CANISTEAR RESERVOIR (Vernon)	FW2-TM
CANISTEAR RESERVOIR TRIBUTARY (Vernon) - The southern branch of the eastern tributary to the Reservoir	FW1
CANOE BROOK (Chatham) - Entire length	FW2-NT
CEDAR POND (Clinton) - Pond and all tributaries	FW1
CHARLOTTEBURG RESERVOIR (Charlotteburg)	FW2-TM
CHERRY RIDGE BROOK	
(Vernon) - Entire length, except segments described below	FW2-NT
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of Wawayanda State Park and the Newark Watershed lands	FWi
CLINTON BROOK	
(Mossmahs Brook) (W. Milford) - Source to, but not including, Clinton Reservoir	FW2-NT(C1)
(Newfoundland) - Clinton Reservoir dam to Pequannock River	FW2-TP(C1)
CLINTON RESERVOIR (W. Milford)	FW2-TM(C1)
CLOVE BROOK - See STAG BROOK	

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SEI waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

REFERENCE NO. 15

STATE OF NEW JERSEY
NEW JERSEY ADMINISTRATIVE CODE

Title 7. Department of Environmental Protection

Office of the Commissioner
Division of Parks and Forestry
Division of Marine Services
Division of Water Resources
Division of Fish, Game and Wildlife
Division of Waste Management
Division of Environmental Quality
Office of Green Acres and Outdoor Recreation
Delaware and Raritan Canal Commission
Pinelands Commission

Published and Distributed By
OFFICE OF ADMINISTRATIVE LAW
CN 301
Trenton, New Jersey 08625

TRANSMITTAL No. 1988-5 Supp. 5-16-88

TITLE 7

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUBTITLE D. DIVISION OF WATER RESOURCES

	CHAPTERS INCLUDED	Chapter Expiration Date
7:8	Storm Water Management	2-5-93
7:9	Water Pollution Control	1-21-91
7:10	Safe Drinking Water Act	9-4-89
7:11	Bureau of Water Facilities Operation	6-6-88
7:12	Shellfish Growing Water Classification	6-6-88
7:13	Flood Hazard Area Control	5-4-89
7:14	Water Pollution Control Act	4-27-89
7:14A	The New Jersey Pollutant Discharge Elimination System	6-4-89
7:14B	Underground Storage Tanks	12-21-92
7:15	Water Quality Management Planning and Implementation Process	4-2-89
7:16	General Administration	none
7:17	Hard Shell Clam Depuration Pilot Plant Program	4-7-91
7:18	Regulations Governing Laboratory Certification and Standards of Performance	8-6-91
7:19	Schedules and Procedures for Establishing Privileges to Divert Water and for Obtaining Water Supply Allocation Permits	4-15-90
7:19A	Emergency Water Supply Allocation Plan Regulations	2-19-90
7:19B	Water Emergency Surcharge Schedule Rules	2-19-90
7:20	Dam Safety Standards	5-6-90
7:20A	Standards and Procedures for Establishing Privileges to Divert Water and for Obtaining Water Usage Certifications for Agricultural or Horticultural Purposes	12-19-88
7:21	Water Resources Management	none
7:22	Construction Grants for Wastewater Treatment Facilities	1-5-92
7:23	Flood Control Bond Grants	6-18-89
7:24	Dam Restoration Grant Regulations	5-19-91

(d) The Department shall issue public notice to all interested parties (including affected municipalities and dischargers) and shall hold public hearing(s) as part of any reclassification proceeding.

(e) A reclassification for more restrictive uses shall be made whenever:

1. It is demonstrated to the satisfaction of the Department that there are existing uses of the specific segment that are nbt included in the designated uses; or

2. Where a reclassification for less restrictive uses has been granted pursuant to N.J.A.C. 7:9-4.10, the bases for that reclassification no longer exist; or

3. It is demonstrated to the satisfaction of the Department that any uses in Section 101(a)(2) of the Federal Clean Water Act, protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, which are not included in the designated uses listed in this subchapter are attainable.

(f) A reclassification for more restrictive uses may be made when:

1. It is demonstrated to the satisfaction of the Department that the waters should be set aside to represent the natural aquatic environment and its associated biota; or

2. It is demonstrated to the satisfaction of the Department that a more restrictive use is necessary to protect a unique ecological system or threatened/endangered species.

(g) In those cases in which a thermal discharge is involved, the procedures for reclassifying segments for more restrictive uses shall be consistent with section 316 of the Federal Clean Water Act.

7:9-4.12 Designated uses of FW1, PL, FW2, SE1, SE2, SE3, and SC waters

(a) In all FW1 waters the designated uses are:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established aquatic biota; and

4. Any other reasonable uses.

(b) In all PL waters the designated uses are:

1. Cranberry bog water supply and other agricultural uses;

2. Maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system;

3. Public potable water supply after such treatment as required by law or regulations;

4. Primary and secondary contact recreation; and

5. Any other reasonable uses.

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established biota; and

4. Any other reasonable uses.

7:9-4.13 Designated uses of mainstem Delaware River and Delaware Bay (Summarized From the DRBC "Administrative Manual; Part III: Basin Regulations, Water Quality; Including Amendments Through June 29, 1983")

(a) The designated uses for Zone 1C, 1D, and 1E are:

1. Agricultural, industrial and public water supply after reasonable treatment;

2. Wildlife.

REFERENCE NO. 16

G3C-TR3645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MOCELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

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9401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

becton
LATITUDE 40:49:48 LONGITUDE 74: 5:38 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	3705	15321	44930	92040	137034	293030
RING TOTALS	0	3705	15321	44930	92040	137034	293030

> I

becton
LATITUDE 40:49:48 LONGITUDE 74: 5:38 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	1510	5592	17345	34162	52577	111186
RING TOTALS	0	1510	5592	17345	34162	52577	111186

	POPULATION	HOUSING
.25	0	0
.50	3,705	1,510
1.0	19,026	7,102
2.0	63,956	24,447
3.0	155,996	58,609
4.0	293,030	111,186

* Based on observations during the off-site reconnaissance, residences in the 0-0.25 mile range indicated a population of approximately 400 people.

REFERENCE NO. 17

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

PERRY-WAGNER PUBLISHING CO., INC.

A Leader in the Environmental Information Field

Brunswick, Maine Washington, D.C.

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.

2. 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 groimd 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 p*H* of 5.0). After 24 hours, the resulting extract is then tested to determine if it contains any of the contaminants identified iii 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 mure 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 Wasta

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 componem 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 intetmediate, or component in a formulating process) of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes (except wastewater and spent carbtm from hydrogen chloride purificatim) 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 ituermediate, or compment in a formulating process) ol tetra-, penta-, or hexachlorohenzene under alkaline conditions	(H)
F027	Discarded unused formulations containing tri-, tetra-, or	(H)

REFERENCE NO. 18

The RECORD, December 22, 1989

EPA fines Becton Dickinson

Firm violated right-to-know law

By Eve Markowitz
Record Staff Writer

Becton, Dickinson and Co. of Franklin Lakes has agreed to pay a $43,350 fine for violating a widely ignored environmental right-to-know law.

The 1986 law requires companies to file data with the U.S. Environmental Protection Agency on the types and amounts of hazardous chemicals they release. The settlement, along with two others announced Thursday, was the first within the EPA's New Jersey-New York district.

Many companies have been ignoring the law, and the EPA aimed to catch some of the culprits when it inspected 119 facilities in the past year. It found violations at 36 firms that had failed to file data on their 1987 releases.

Under the Emergency Planning and Community Right-to-Know Act, companies with 10 or more workers that produce, process, or use more than "threshold" levels of certain chemicals must reveal the amounts they emit into the air, land, or water.

Becton Dickinson was fined $51,000 for failing to file its information. But it submitted the data within a week of the EPA inspec-

See BECTON Page C-2

BECTON

From Page C-1

tion, and the fine was dropped to $43,350, said Kim Helper, a spokesman for the agency's regional office.

Becton Dickinson spokesman Jim Tobin said the fine has already been paid. He couldn't explain why the company hadn't filed its information on time.

Becton, a medical devices and diagnostic-products manufacturer, reported releasing three solvents into the air from its East Rutherford plant in 1987 — 5,854 pounds of acetone, 6,381 pounds of methanol, and 8,552 pounds of methyl chloroform.

A company's fine is determined by its size, amount of stored chemicals, and level of emissions. Two other companies that agreed to pay fines are Dubion Finishes Corp. of Newark ($1,000) and the Queens Plating Co. of Long Island City, N.Y. ($7,500).

"The failure of these facilities to report their emissions violated the intent of the act and undermined EPA's ability to use this data in its environmental protection efforts," said Constantino Sidamon-Eristoff, the EPA's regional administrator.

Helper said the EPA will continue to schedule inspections of companies that "should have filed and to our best knowledge have not filed."

REFERENCE NO. 19

PC80-1-B32
N.J.

CHARACTERISTICS OF THE POPULATION

General Population Characteristics

NEW JERSEY

1980

Census of Population

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U.S. Department of Commerce
BUREAU OF THE CENSUS

Table 44. **General Characteristics for Counties and County Subdivisions: 1980**

[For meaning of symbols, see Introduction. For definitions of terms, see appendixes A and B]

Counties / County Subdivisions	Race: Total persons: Total	Total persons: Male	Total persons: Female	Total persons: Under 18 years	Total persons: 55 years and over	Total persons: Median age	Total persons: In group quarters	White: Persons	White: Households: Total	White: Households: Persons	Black: Persons	Black: Households: Total	Black: Households: Persons	Spanish origin[1]: Persons	Spanish origin[1]: Households: Total	Spanish origin[1]: Households: Persons
Atlantic County	194 119	91 153	102 956	51 062	66 787	33.0	2 667	154 831	55 866	152 721	34 134	11 566	33 593	7 590	2 008	7 [illegible]
Absecon city	6 859	3 294	3 565	1 893	778	32.9	20	4 624	2 219	4 613	166	58	157	72	33	[illegible]
Atlantic City city	40 199	17 359	32 840	9 737	9 466	38.5	1 431	18 614	9 032	17 596	20 029	7 290	19 703	2 323	861	2 [illegible]
Brigantine city	9 315	4 101	4 217	1 661	1 324	34.5	15	8 136	3 377	6 144	74	36	74	101	38	[illegible]
Buena borough	3 662	1 774	1 966	966	465	31.7	4	3 320	1 172	3 309	58	18	59	483	114	[illegible]
Buena Vista township	4 959	3 418	3 541	2 357	704	25.7	6	5 289	1 424	5 274	1 366	399	1 389	527	119	[illegible]
Corbin City city	254	125	129	42	76	66.3	-	266	107	...	10	2	...	1	-	[illegible]
Egg Harbor township	19 381	9 418	9 963	6 185	1 843	28.9	27	17 154	4 137	17 137	1 941	594	1 948	344	180	[illegible]
Egg Harbor City city	4 618	2 160	2 458	1 254	425	31.1	30	3 426	1 389	3 403	509	162	493	716	199	[illegible]
Estell Manor city	848	429	419	277	87	29.6	-	799	257	799	43	11	...	2	1	[illegible]
Folsom borough	1 893	947	945	703	122	26.8	-	1 814	544	1 817	54	17	55	24	3	[illegible]
Galloway township	12 176	6 149	6 027	3 347	1 088	27.6	55	11 340	3 474	11 316	698	209	701	181	52	[illegible]
Hamilton township	9 499	4 691	4 808	2 677	1 070	29.7	202	7 966	2 856	7 850	1 378	419	1 281	211	64	[illegible]
Hammonton town	12 298	5 915	6 383	3 307	1 530	33.7	118	11 722	3 968	11 597	125	35	120	939	238	[illegible]
Linwood city	8 144	2 985	3 159	1 738	710	34.3	142	4 078	1 922	5 934	20	5	19	57	18	[illegible]
Longport borough	1 249	549	700	153	475	58.2	70	1 247	561	...	2	-	...	5	1	[illegible]
Margate City city	9 179	4 214	4 966	1 666	1 969	66.0	-	9 105	3 824	9 136	12	1	...	55	14	[illegible]
Mullica township	5 243	2 549	2 694	1 779	538	25.9	47	4 310	1 391	4 247	433	124	428	704	158	[illegible]
Northfield city	7 795	3 725	4 070	2 072	1 052	35.2	218	7 654	2 485	7 449	90	20	44	38	15	[illegible]
Pleasantville city	13 433	6 166	7 209	3 950	2 111	31.2	290	6 321	2 566	4 106	6 712	1 993	6 666	538	188	[illegible]
Port Republic city	837	410	427	299	88	33.9	-	834	297	836	1	1	...	-	-	[illegible]
Santana Point city	10 330	4 829	9 501	2 381	1 910	33.2	136	9 997	4 166	9 588	243	98	242	88	38	[illegible]
Venmar City city	11 704	5 357	6 347	2 188	2 623	40.6	3	11 499	4 866	11 506	35	15	32	115	41	[illegible]
Weymouth township	1 266	619	661	390	153	29.2	3	1 166	880	1 137	133	33	105	34	8	[illegible]
Bergen County	849 335	405 372	440 013	199 135	109 276	35.4	7 484	784 834	281 975	779 166	33 066	10 853	31 929	28 514	8 342	26 [illegible]
Allendale borough	5 801	2 852	3 049	1 804	556	33.7	181	5 811	1 490	5 661	15	5	12	41	14	[illegible]
Alpine borough	1 548	787	762	410	124	36.4	-	1 488	488	1 496	19	2	7	36	6	[illegible]
Bergenfield borough	25 566	12 306	13 262	6 145	3 167	34.1	-	24 066	8 488	24 066	456	155	451	1 251	388	[illegible]
Bogota borough	8 344	3 979	4 366	2 159	966	31.4	11	8 094	2 784	8 094	51	18	41	527	186	1 [illegible]
Carlstadt borough	6 166	2 973	3 166	1 399	805	33.7	-	6 661	2 283	6 086	10	5	...	153	43	[illegible]
Cliffside Park borough	21 444	10 216	11 266	3 806	3 406	39.6	33	20 518	8 709	20 566	215	93	202	939	07	[illegible]
Closter borough	8 166	4 012	4 152	2 145	813	35.5	-	7 654	2 454	7 466	81	26	73	205	43	[illegible]
Cresskill borough	7 609	3 609	3 920	1 966	1 014	37.6	93	7 251	2 263	7 170	50	17	42	194	51	[illegible]
Demarest borough	4 966	2 466	2 517	1 390	473	36.2	28	4 640	1 449	4 629	37	5	18	133	33	[illegible]
Dumont borough	18 334	8 766	9 570	4 593	2 296	34.1	-	17 752	5 966	17 769	87	24	79	704	178	[illegible]
East Rutherford borough	7 846	3 715	4 134	1 523	1 183	34.5	161	7 529	3 016	7 399	166	42	166	191	86	[illegible]
Edgewater borough	4 833	2 325	2 303	849	503	32.3	-	4 337	1 983	4 379	66	26	42	218	74	[illegible]
Elmwood Park borough	18 377	8 709	9 666	3 889	2 670	37.2	-	17 812	6 566	17 802	75	25	76	788	350	[illegible]
Emerson borough	7 298	3 743	4 066	2 066	890	39.4	290	7 476	2 153	7 223	34	5	19	133	38	[illegible]
Englewood city	23 701	10 997	12 704	5 770	3 334	39.7	190	12 661	5 016	12 911	9 629	3 201	9 588	2 074	350	2 [illegible]
Englewood Cliffs borough	5 698	2 757	2 941	1 423	433	66.9	81	5 066	1 597	5 021	86	10	20	230	54	[illegible]
Fair Lawn borough	32 239	15 566	16 633	6 790	4 609	40.6	17	31 787	11 454	31 797	85	19	51	540	180	[illegible]
Fairview borough	10 519	5 099	5 466	2 088	1 666	36.3	9	10 181	4 120	10 166	14	4	...	418	184	[illegible]
Fort Lee borough	32 449	15 410	17 039	5 360	5 470	40.1	10	28 599	13 538	33 659	991	288	520	1 342	488	1 [illegible]
Franklin Lakes borough	8 769	4 470	4 299	2 901	570	34.3	-	8 588	2 466	8 612	13	-	...	74	11	[illegible]
Garfield city	26 803	12 699	14 104	5 541	4 177	34.2	29	26 214	10 553	26 196	288	107	301	953	66	[illegible]
Glen Rock borough	11 497	5 533	5 966	3 010	1 342	36.1	14	10 866	3 559	10 869	337	104	315	142	42	[illegible]
Hackensack city	34 039	17 257	13 732	6 766	4 939	33.9	740	26 730	12 501	26 177	7 497	2 711	7 306	3 741	1 175	3 [illegible]
Harrington Park borough	4 532	2 225	2 307	1 399	350	33.4	-	4 293	1 290	4 290	34	9	42	75	13	[illegible]
Hasbrouck Heights borough	12 166	5 807	6 359	2 524	1 849	37.7	-	11 987	4 397	12 011	11	3	...	261	72	[illegible]
Haworth borough	3 509	1 708	1 801	966	389	36.8	-	3 304	1 041	3 322	62	14	...	41	19	[illegible]
Hillsdale borough	10 495	5 135	9 366	2 927	868	33.9	-	10 236	3 157	10 252	43	13	41	185	44	[illegible]
Ho-Ho-Kus borough	4 139	1 973	2 196	1 076	477	37.8	-	4 097	1 362	4 066	6	-	...	43	8	[illegible]
Leonia borough	8 027	3 766	4 260	1 825	1 236	37.3	-	7 433	2 919	7 510	188	73	188	348	105	[illegible]
Little Ferry borough	9 399	4 621	4 773	2 051	954	33.7	-	8 966	3 550	8 966	117	76	124	411	148	[illegible]
Lodi borough	23 994	11 366	12 610	5 233	2 766	31.9	166	33 954	8 973	33 836	394	136	337	1 083	846	1 [illegible]
Lyndhurst township	20 326	9 608	10 730	4 324	2 823	39.3	11	20 016	7 309	20 022	8	4	...	482	153	[illegible]
Maywah township	12 127	6 053	6 074	3 266	988	31.3	478	11 277	3 536	10 779	661	88	221	208	88	[illegible]
Maywood borough	9 888	4 715	9 180	2 137	1 506	37.3	-	9 666	3 570	9 701	21	4	17	318	99	[illegible]
Midland Park borough	7 331	3 553	3 828	1 850	924	32.9	-	7 288	2 539	7 314	3	3	...	47	28	[illegible]
Montvale borough	7 313	3 619	3 298	2 227	499	32.7	18	7 204	2 266	7 188	15	4	13	113	73	[illegible]
Moonachie borough	2 706	1 333	1 373	552	256	35.1	-	2 666	996	2 442	3	2	...	47	14	[illegible]
New Milford borough	16 876	7 937	8 939	3 590	2 440	37.0	226	16 266	6 030	16 066	115	43	111	421	128	[illegible]
North Arlington borough	16 537	7 596	8 991	3 119	2 766	66.3	22	16 315	4 399	16 306	7	2	...	557	174	[illegible]
Northvale borough	5 066	2 459	2 987	1 473	420	33.4	-	4 988	1 466	4 888	3	1	...	251	44	[illegible]
Norwood borough	4 413	2 200	2 213	1 291	379	33.9	-	4 239	1 256	4 293	8	2	...	92	38	[illegible]
Oakland borough	13 443	6 493	6 730	4 003	789	31.3	166	13 166	3 809	12 966	94	26	99	209	53	[illegible]
Old Tappan borough	4 166	2 033	2 123	1 341	331	33.5	42	4 069	1 154	4 066	16	4	11	54	14	[illegible]
Oradell borough	8 653	4 221	4 437	2 296	1 010	37.6	22	8 393	2 707	8 374	12	2	...	38	28	[illegible]
Palisades Park borough	13 732	6 661	7 291	2 819	1 976	34.5	-	12 790	5 237	13 815	35	18	33	418	139	[illegible]
Paramus borough	26 474	12 774	13 700	6 473	2 907	37.3	1 166	25 366	7 399	24 269	112	13	47	404	166	[illegible]
Park Ridge borough	8 515	4 168	4 347	2 376	719	32.9	10	8 283	2 697	8 266	47	9	38	124	0	[illegible]
Ramsey borough	12 839	6 316	6 933	3 806	1 074	33.0	28	12 600	4 054	13 576	66	23	49	137	41	[illegible]
Ridgefield borough	10 294	4 875	9 419	2 066	1 666	39.7	-	10 095	3 839	10 088	13	5	...	399	111	[illegible]
Ridgefield Park village	12 738	5 953	6 788	2 795	1 666	33.0	27	12 439	4 770	12 403	59	23	53	574	181	[illegible]
Ridgewood village	25 203	11 900	13 303	7 204	3 033	39.6	194	24 101	8 015	33 976	502	163	473	434	109	[illegible]
River Edge borough	11 111	5 294	5 837	3 417	1 735	38.9	-	10 819	4 036	10 833	6	1	...	254	77	[illegible]
River Vale township	9 489	4 990	4 093	2 753	593	33.8	72	9 170	2 778	9 123	66	11	23	152	33	[illegible]
Rochelle Park township	5 603	2 616	2 987	1 169	973	39.9	-	5 533	2 040	5 566	-	-	-	111	30	[illegible]
Rockleigh borough	192	106	66	72	23	31.0	66	188	56	166	3	-	...	3	1	[illegible]
Rutherford borough	19 066	8 975	10 093	4 116	2 790	34.6	404	17 966	6 537	17 519	473	133	222	640	147	[illegible]
Saddle Brook township	14 004	6 769	7 315	3 104	1 413	34.6	97	13 898	4 730	13 298	41	15	39	242	73	[illegible]
Saddle River borough	2 763	1 366	1 390	666	356	40.9	14	2 740	873	2 716	13	-	...	29	4	[illegible]
South Hackensack township	2 229	1 088	1 166	507	250	33.8	-	2 188	721	2 166	23	11	25	177	31	1 [illegible]
Teaneck township	39 007	18 622	20 335	9 388	4 933	39.1	1 570	27 826	9 766	26 595	9 166	2 666	8 970	1 888	498	[illegible]
Tenafly borough	13 553	6 439	7 113	3 514	1 973	39.4	127	12 777	4 466	12 719	83	10	34	404	108	[illegible]

[1]Persons of Spanish origin may be of any race.

Table 44. General Characteristics for Counties and County Subdivisions: 1980—Con.

[For meaning of symbols, see introduction. For definitions of terms, see explanations A and B]

Counties / County Subdivisions	Race: Total persons: Total	Total persons: Male	Total persons: Female	Total persons: Under 18 years	Total persons: 45 years and over	Total persons: median age	Total persons: In group quarters	White: Persons	White: Households: Total	White: Households: Persons	Black: Persons	Black: Households: Total	Black: Households: Persons	Spanish origin[1]: Persons	Spanish origin[1]: Households: Total	Spanish origin[1]: Households: Persons
Sussex County—Con.																
Tranquillity borough	19	10	9	1	3	50.5	-	19	10	19	-	-	-	-	-	-
Upper Saddle River borough	7 958	3 947	3 991	2 456	437	35.1	-	7 734	2 227	7 745	71	13	59	94	18	9
Waldwick borough	10 802	5 314	5 488	2 968	771	31.6	16	10 552	3 223	10 545	41	10	33	204	52	17
Wallington borough	10 741	5 125	5 416	2 003	1 154	34.0	8	10 380	4 429	10 384	148	79	149	240	84	21
Washington township	9 550	4 483	4 687	2 453	414	33.7	10	9 284	2 744	9 294	83	9	27	142	35	12
Westwood borough	10 714	5 007	5 707	2 591	1 559	34.4	109	9 819	3 532	9 737	423	199	426	209	55	18
Woodcliff Lake borough	5 444	2 790	2 654	1 768	419	35.0	103	5 494	1 581	5 409	18	3	14	45	10	7
Wood-Ridge borough	7 929	3 794	4 133	1 771	1 080	36.1	-	7 815	2 777	7 823	23	4	17	124	11	9
Wyckoff township	15 500	7 523	7 978	4 494	1 573	36.3	289	15 174	4 681	14 935	59	12	44	171	28	14
Burlington County	362 542	181 436	180 906	107 342	23 483	29.2	16 216	306 987	100 159	296 811	45 471	12 583	42 232	3 458	1 997	1 357
Bass River township	1 344	450	494	398	194	23.1	-	1 342	487	1 341	1	1	...	3	4	...
Beverly city	2 919	1 440	1 479	848	325	28.7	-	2 228	784	2 259	548	170	558	104	23	111
Bordentown city	4 441	2 043	2 399	1 034	436	32.5	34	3 768	1 504	3 732	617	236	417	45	14	42
Bordentown township	7 170	3 409	3 565	1 749	578	31.4	293	4 491	2 348	6 528	280	92	223	113	35	97
Burlington city	10 268	4 811	5 435	2 575	1 443	33.7	54	7 883	2 968	7 828	2 231	786	2 309	137	44	137
Burlington township	11 527	5 489	4 042	3 318	1 031	29.4	223	9 068	3 028	8 768	2 170	741	2 226	233	68	204
Chesterfield township	3 837	2 495	1 172	834	198	25.1	1 528	2 778	712	2 233	913	17	58	183	5	17
Cinnaminson township	16 072	7 891	8 181	4 780	1 200	23.6	131	14 931	4 254	14 880	834	285	893	34	19	77
Delanco township	3 730	1 830	1 900	1 009	488	23.3	31	3 705	1 277	3 679	13	3	...	19	5	21
Delran township	14 811	7 374	7 435	4 752	814	29.7	8	13 658	4 335	13 662	859	349	657	139	42	119
Eastampton township	3 814	1 879	1 935	1 057	236	29.3	4	3 480	1 323	3 380	236	116	231	68	31	88
Edgewater Park township	9 273	4 489	4 784	2 691	581	23.4	-	7 879	2 915	7 912	1 219	411	1 228	170	51	150
Evesham township	21 508	10 530	10 988	7 168	1 125	29.3	101	23 681	4 512	23 578	437	123	413	205	43	145
Fieldsboro borough	597	302	295	175	42	31.7	-	424	183	418	168	47	...	8	3	...
Florence township	9 084	4 311	4 773	2 372	1 020	32.4	15	8 328	3 036	8 378	623	231	685	58	23	53
Hainesport township	3 236	1 403	1 833	863	353	31.9	-	3 161	1 109	3 171	23	9	23	31	10	29
Lumberton township	5 236	2 493	2 744	1 231	444	31.4	123	4 880	1 327	4 699	278	123	283	132	45	127
Mansfield township	2 528	1 231	1 292	715	273	33.7	-	2 487	319	2 489	8	2	...	29	5	18
Maple Shade township	20 525	9 849	10 676	4 228	2 356	33.1	289	19 339	3 043	19 113	791	373	751	240	87	213
Medford township	17 622	8 404	9 018	5 980	1 257	31.2	112	17 380	5 449	17 291	67	26	47	35	19	32
Medford Lakes borough	4 958	2 877	2 681	1 613	378	23.0	-	4 917	1 423	4 923	-	-	-	17	5	14
Moorestown township	15 596	7 301	8 295	4 099	2 299	48.0	451	14 474	4 283	14 043	919	323	924	31	25	74
Mount Holly township	10 818	5 168	5 634	3 139	1 065	28.0	123	8 739	3 092	8 648	1 728	501	1 716	523	168	509
Mount Laurel township	17 614	8 718	8 880	5 628	1 071	31.2	336	16 428	5 168	16 185	806	234	778	156	43	133
New Hanover township	14 298	10 710	3 588	2 334	41	28.7	10 550	9 021	747	2 543	3 969	238	949	1 376	98	287
North Hanover township	9 050	4 536	4 514	3 449	278	24.8	-	7 263	2 307	7 348	1 283	379	1 328	386	92	323
Palmyra borough	7 035	3 369	3 716	1 659	831	32.8	-	6 223	2 421	6 210	816	262	818	45	15	36
Pemberton borough	1 198	568	630	342	119	27.8	-	1 036	394	1 039	85	23	92	44	13	41
Pemberton township	29 720	14 580	15 140	10 769	1 399	26.0	851	21 715	4 769	21 523	5 934	1 754	6 325	1 444	423	1 402
Riverside township	7 941	3 816	4 125	1 961	1 068	28.4	11	7 665	2 791	7 659	223	67	228	146	45	145
Riverton borough	3 068	1 494	1 574	788	428	23.6	64	2 977	1 059	2 917	78	26	23	5	2	...
Shamong township	4 537	2 304	2 233	1 635	238	29.3	47	4 424	1 323	4 404	91	15	28	29	5	16
Southampton township	8 800	4 168	4 462	1 891	2 377	44.4	5	8 693	3 468	8 713	51	17	48	52	17	47
Springfield township	2 691	1 323	1 369	818	216	31.2	23	2 668	834	2 613	23	14	23	45	12	44
Tabernacle township	6 236	3 183	3 071	3 328	325	28.6	3	6 076	1 767	6 091	113	34	115	47	12	41
Washington township	878	406	402	212	121	35.1	16	771	263	755	2	1	...	75	14	71
Westampton township	3 353	1 637	1 768	900	211	31.1	18	2 568	849	2 488	712	223	775	159	41	141
Willingboro township	39 912	19 558	20 354	14 411	1 318	27.0	23	23 400	6 623	23 319	15 128	3 967	15 478	1 321	287	1 191
Woodland township	2 285	1 730	555	417	167	23.8	1 147	2 099	363	1 118	168	11	14	32	4	11
Wrightstown borough	3 031	1 510	1 531	1 177	48	28.4	-	1 921	657	1 948	797	244	834	337	93	323
Camden County	471 650	233 309	248 448	137 437	49 233	23.4	4 194	383 248	128 412	379 878	67 278	21 667	68 747	20 426	5 198	23 009
Audubon borough	9 533	4 466	5 067	2 228	1 563	34.5	-	9 423	3 573	9 428	2	1	...	79	19	49
Audubon Park borough	1 274	581	693	237	348	41.4	-	1 269	493	1 268	-	-	-	3	3	...
Barrington borough	7 418	3 571	3 847	1 895	480	31.1	-	7 115	2 623	7 134	223	95	230	58	15	53
Bellmawr borough	13 781	4 719	7 003	3 763	1 168	31.5	23	13 559	4 411	13 554	62	68	28	104	23	88
Berlin borough	5 786	2 783	3 004	1 739	504	31.4	-	5 668	1 813	5 468	63	23	62	53	7	25
Berlin township	5 368	2 405	2 743	1 793	437	28.2	4	4 653	1 451	4 627	653	123	474	53	28	68
Brooklawn borough	2 128	1 023	1 095	543	297	34.8	-	2 128	775	2 123	1	-	...	23	4	19
Camden city	84 910	39 218	45 693	31 531	8 603	25.0	869	25 739	10 528	23 165	48 068	14 123	44 797	14 368	4 000	14 144
Cherry Hill township	68 785	33 433	33 353	19 773	5 777	34.3	659	68 530	28 681	68 917	1 649	545	1 640	880	217	758
Chesilhurst borough	1 590	777	313	555	154	28.4	68	448	153	413	1 056	299	1 068	23	4	26
Clementon borough	5 748	2 753	3 011	1 606	635	28.3	-	5 453	3 079	5 468	241	106	249	36	9	85
Collingswood borough	15 836	7 277	8 681	3 639	2 731	28.1	81	15 404	4 234	15 284	178	95	191	174	55	144
Gibbsboro borough	2 510	1 247	1 263	768	178	29.5	23	2 447	768	2 423	68	15	54	28	5	14
Gloucester township	45 156	21 968	23 188	13 827	3 007	28.2	523	42 478	14 141	42 801	1 968	728	1 980	433	121	356
Gloucester City city	13 121	6 398	6 723	3 578	1 800	23.5	107	13 021	4 585	12 968	23	2	9	104	29	91
Haddon township	15 278	7 423	8 437	3 480	2 810	23.9	-	15 480	4 168	15 231	77	23	73	112	39	99
Haddonfield borough	12 337	5 736	6 681	3 131	1 931	37.5	223	12 049	4 397	11 523	231	67	196	49	19	43
Haddon Heights borough	8 361	3 568	4 473	1 939	1 384	36.9	9	8 315	3 028	8 311	5	2	...	27	3	18
Hi-Nella borough	1 250	567	428	361	87	25.3	-	1 111	428	1 110	119	47	118	23	7	23
Lawnside borough	2 249	1 082	1 167	404	228	31.1	-	2 228	768	2 239	1	1	...	3	1	...
Lawnside borough	3 043	1 412	1 623	868	367	34.1	-	41	16	31	2 967	1 013	2 907	23	4	15
Lindenwold borough	18 196	8 724	9 473	4 528	1 068	27.2	19	15 570	6 478	15 554	2 248	978	2 275	248	85	219
Magnolia borough	4 681	2 393	2 529	1 523	428	29.6	-	4 240	1 405	4 268	593	238	580	46	13	28
Merchantville borough	3 972	1 783	2 209	911	778	48.6	21	3 923	1 553	3 399	81	8	21	24	9	25
Mount Ephraim borough	4 848	2 328	2 540	1 068	755	23.7	9	4 823	1 853	4 883	10	8	...	24	7	17
Oaklyn borough	4 223	1 989	2 234	896	795	23.5	-	4 193	1 754	4 194	3	3	...	80	5	23
Pennsauken township	33 278	16 159	17 616	8 509	4 519	23.9	187	23 619	10 537	23 428	3 680	796	2 610	499	126	500
Merchantville borough	8 484	4 168	4 518	2 491	788	27.5	-	8 017	3 054	8 014	568	216	568	78	23	32
Pine Valley borough	23	13	10	4	4	49.5	-	23	11	23	-	-	-	-	-	-
Runnemede borough	9 681	4 668	4 313	2 393	781	31.7	-	9 237	3 193	9 235	144	69	149	94	27	75
Somerdale borough	5 900	2 899	3 001	1 587	913	31.3	-	5 034	1 744	5 048	748	227	776	180	27	87
Stratford borough	8 005	3 890	4 155	3 228	685	23.9	104	7 528	2 453	7 684	231	123	231	87	72	78
Tavistock borough	9	...	...	...	...	...	...	9	4	...	-	-	-	-	-	-
Voorhees township	12 919	6 330	4 509	3 768	778	29.9	23	11 584	4 157	11 537	771	228	763	133	68	119

[1]Persons of Spanish origin may be of any race.

REFERENCE NO. 20

R-584-10-87-02

FINAL
EXPANDED SITE INSPECTION REPORT
INDUSTRIAL LATEX SITE
WALLINGTON, NEW JERSEY

PREPARED UNDER
TECHNICAL DIRECTIVE DOCUMENT NO. 02-8703-76
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JANUARY 21, 1988

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

Vance M Matthews

VANCE M. MATTHEWS
PROJECT MANAGER

REVIEWED/APPROVED BY:

Ronald M. Naman

RONALD M. NAMAN
FIT OFFICE MANAGER

2.2.4 Geology

Regional Setting

Figure 2-8 depicts the physiographic provinces of New Jersey. Figure 2-9 presents a geologic cross-section of New Jersey. The Industrial Latex property lies within the Triassic Lowlands subdivision of the Piedmont Province. The area is underiain by the Triassic-age Brunswick Formation of the Newark group. Regionally, the Triassic Lowlands are characterized by an underlying bedrock of northwestward-sloping sedimentary deposits, occasionally interrupted by basaltic lava flows and diabase intrusions. The sedimentary bedrock deposits of shale, siltstone, and sandstone are expressed at the surface by gently rolling lowlands. The basalts and diabase form highly resistant ridges, known as the Watchung Mountains. The Industrial Latex Site is approximately 4.5 miles southeast of the First Watchung Mountain.

The Industrial Latex Site and surrounding areas have been affected by the most recent glaciation. The terminal moraine of the Wisconsin Stage glaciation is approximately 14 miles southwest of the site. The effect of glaciation was to scrape elevated areas, exposing bedrock on ridges, and to deposit till ih low-lying areas. Elsewhere, the upper surface of the Brunswick is usually weathered to a clayey regolith. However, in this area the glaciation removed almost all of the regolith and soils before till was deposited. Some of the glacial materials along valleys have since been reworked and stratified by surface waters. Till deposited at higher elevations is generally not sorted and consists of mixed clays, sands, and gravels.

Site Geology

The Industrial Latex property is situated on the western slope of a northeast-southwest trending ridge. Bedrock was encountered at approximately 40 ft below ground surface during the installation of on-site monitoring wells. Further down in the valley 0.50 mile west of Industrial Latex, stratified drift is 118 feet thick over bedrock (NJDEP well permit records). At least 12 feet of saturated clay was noted in the easternmost portion of the site between Building No. 1 and the Conrail/New Jersey Transit railroad tracks. Along the access road at the western side of the site, silt and clay was noted to a depth of 7 feet and clay to 12 feet (USGS, 1986).

2.2.5 Hydrogeology

The Brunswick Shale Aquifer is the primary source of groundwater in the area. The formation is up to 6000 feet thick, with the upper 300-500 feet most often utilized for water supply. This is due to the fact that groundwater flow in the Brunswick Shale is mostly dependent on fracturing in the rock, and only to a small degree on the bedding characteristics. Generally, the shale is more fractured toward the top of the formation. Fracturing is less frequent and less developed with depth (Herpers and Barksdale, 1951). However, there may be large variations both horizontally and vertically, and assumptions cannot be made on the nature of the fracture systems without site-specific studies. Within the Brunswick Shale, wells may be located near each other and still be hydraulically unconnected. Conversely, more-distant wells may be hydraulically connected.

The Brunswick Formation dips 10-20 degrees toward the northwest. However, the major fracture systems in this formation run nearly vertical from northeast to southwest. As a result, groundwater contours in the shale typically appear elongated, with the long axis running northeast to southwest. This type of groundwater flow is difficult to characterize using formulae which have been developed assuming uniform conditions and isotropic flow. For this reason, site-specific work was necessary for an accurate assessment of groundwater flow. Factors which may influence flow locally in the bedrock include:

- Degree of fracturing in bedrock
- Hydraulic connections between fractures and/or fracture zones
- Weathering or filling of fractures
- Pumping wells in the area
- Groundwater recharge to the aquifer

Monitoring wells installed at the Curtiss-Wright facility, approximately 0.50 mile north of the site, show groundwater in bedrock to be flowing generally westward. Groundwater in the overburden (stratified drift) appeared to be flowing in a west to northwesterly direction (USGS, 1986).

The depth to water at Industrial Latex is greater than 14 feet below the ground surface at the southern end of the property where buried tanks were excavated (USGS, 1986). Near the railroad tracks, saturated clay indicates a possible perched condition.

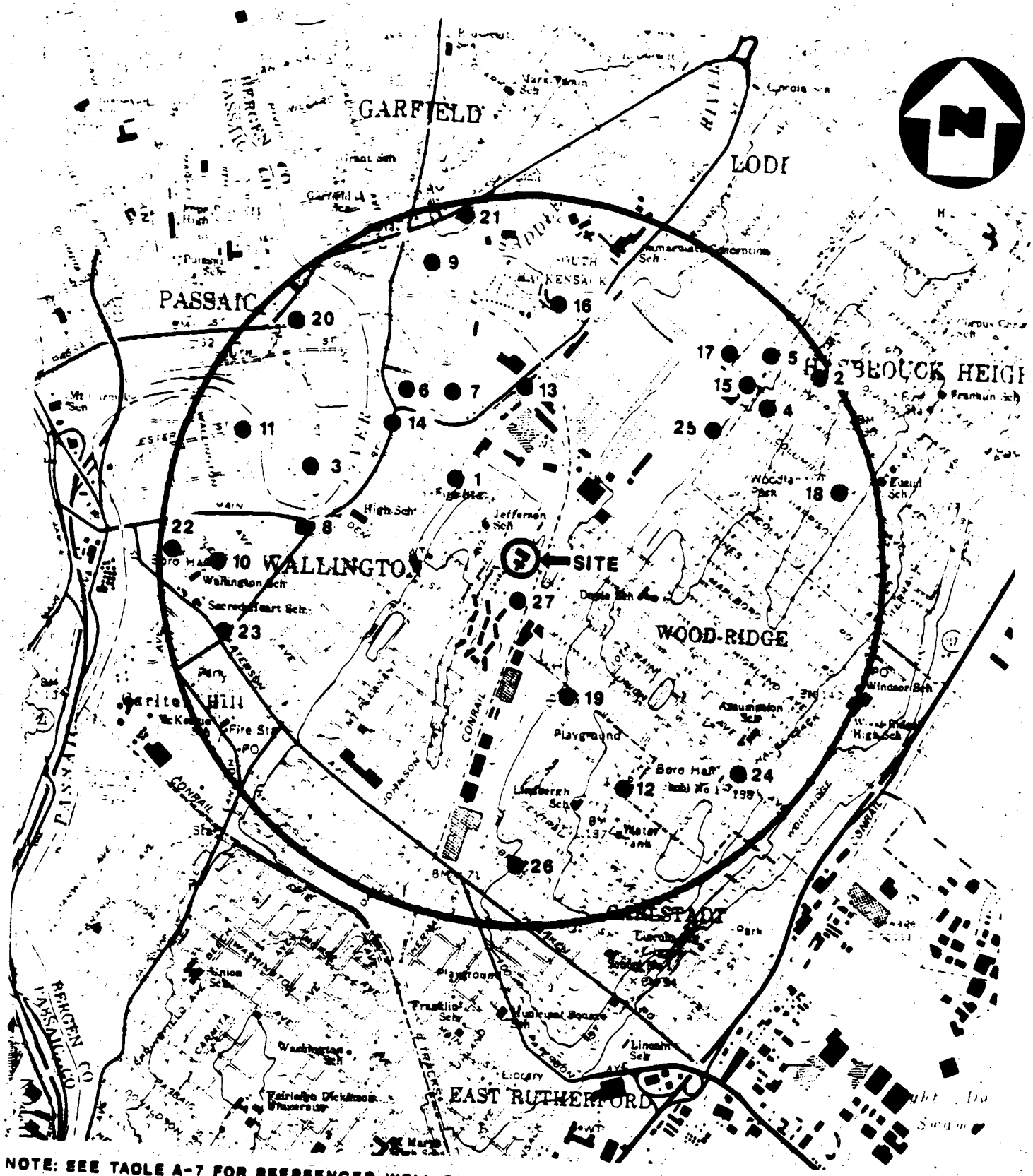
Locally, industrial or public supply wells are drilled to depths of up to 300 or 400 feet, and are cased only into the top of bedrock. These open bedrock wells provide an interconnection between fracture zones, and act as a potential conduit fpr contaminant migration. In addition, these wells can disrupt local groundwater flow patterns by connecting water-bearing zones with different hydraulic heads. The hydraulic heads observed ih these deep wells are a composite (Carswell and Rooney, 1976). The change in hydraulic head may encourage groundwater flow from zones of higher hydraulic head to zones of lower hydraulic head.

A caliper log of the Wallington Borough public supply well on Spring Street, just southeast of Industrial Latex, indicates major fracture zones at 36-40 feet deep and 53-66 feet deep. Smaller fractures were noted down the rest of the 392-foot-deep well (USGS, 1986).

Other local factors may affect groundwater flow and contaminant migration. Poorly sealed storm drains located along the eastern side of the railroad tracks may allow groundwater to move into the drainage system, or may leak stormwater into the groundwater. An historic stream, located east of the Industrial Latex Site along the present railroad right-of-way (refer to Figure 2-6), originally channeled drainage from the area into Saddle River. The stream passed through what is now the Curtiss-Wright facility. The more permeable stream deposits may provide an alternative route for shallow groundwater movement. Available information is not sufficient to determine effects of this stream upon groundwater flow.

Groundwater Use

Existing well records were compiled from NJDEP files. These records indicate that groundwater is a major source of domestic and industrial water within 3 miles of the site. The vast majority of the well logs indicate that the Brunswick Formation is the aquifer most often tapped for potable water supply. Further study will show which of these wells, particularly those listed for domestic or food-industry supply, are still in use. Public supply wells for the Borough of Wallington are located just southeast of the Industrial Latex property. Other public supply wells are nprthwest and west of the site, many of which are within I mile. All of these public supply wells have been closed due to groundwater contamination,



NOTE: SEE TABLE A-7 FOR REFERENCED WELL DATA

GROUNDWATER WELLS WITHIN
1-MILE RADIUS OF INDUSTRIAL LATEX
INDUSTRIAL LATEX, WALLINGTON, N.J.

SCALE: 1" = 2000'

FIGURE 4-10

NUS CORPORATION

TABLE 4-7

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
1	31 Kossuth St Wallington, N3	Mr. Kowalowitz	118	Brunswick	Domestic	Unable to contact
2	116 Prospect St Garfield, NJ (a)	Frank Felber	100	Brunswick	Domestic	
3	122 Prospect St Garfield, NJ (a)	Rose Tuminia	95	Brunswick	Domestic	
4	232 Springfield Ave Hasbrouck Heights, NJ	Mr. Amato	160	Brunswick	Domestic	Used for lawn watering only
5	138 Woodside Ave Hasbrouck Heights, NJ	Robert Daub	162	Brunswick	Domestic	
6	Main St/Midland Ave Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
7	Dull Field Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
8	Main Ave Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
9	Hobard St Garfield, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
10	Maple St/Union Blvd. Wallington, NJ	Boro of Wallington	300	Brunswick	Municipal	Used for testing only
11	Lester St Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
12	Jefferson Ave Carlstadt, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination

TABLE 4-7 (CONT'D)

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
18	Lot 4, Block 27 Hasbrouck Heights, NJ	Exxon	16	sand	Commercial	Observation
			15	sand	Commercial	Observation
			15	sand	Commercial	Observation
			15	sand	Commercial	Observation
			14	sand	Commercial	Observation
19	443 Garden St Carlstadt, NJ	A & M Electroplating Corp.	375	Brunswick	Industrial	
20	8th St Passaic, NJ	J.L. Prescott & Co.	500	Brunswick	Commercial	Used for air conditioning
21	113 Farnham Ave	Yoo-Hoo Beverage Co.	303	Brunswick	Industrial	
22	Main St/Paterson Ave Wallington, NJ	Amoco Oil Co.	16	sand	Industrial	Observation
			15	sand	Industrial	Observation
		15	sand	Industrial	Observation	
		15	sand	industrial	Observation	
		15	sand	Industrial	Observation	
		15	sand	Industrial	Observation	
		15	sand	Industrial	Observation	

TABLE 4-7 (CONT'D)

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
23	455 Paterson Ave Wallington, NJ	King Car Wash	200	Brunswick	Commercial	Used for washing cars
24	277 Hackensack St	Econo-o-Wash	302	Brunswick	Commercial	Owner was unaware of a well
25	Woodridge, NJ	Wright & Aeronautical Equip. Co.	447	Brunswick	Industrial	Used in processing
			445	Brunswick	Industrial	Used in processing
			430	Brunswick	Industrial	Used in processing
			403	Brunswick	Industrial	Used in processing
			340	Brunswick	Industrial	
			337	Brunswick	Industrial	
			312	Brunswick	Industrial	
26	Broad St/Union St Carlstadt, NJ	Record Electrical Plating Co.	200	Brunswick	Industrial	
27	Spring St Wallington, NJ	Boro of Wallington	392	Brunswick	Municipal	Not in use

Note to Table 4-7:

(a) Address indicated is the address of owner of the well. All wells are located within a 1-mile radius of the site as shown in Figure 4-10.

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EXPANDED SITE INSPECTION REPORT
INDUSTRIAL LATEX SITE
WALLINGTON, NEW JERSEY
VOLUME 2

APPENDIX A

APPENDIX A-3

N.J. DEPARTMENT OF HEALTH SAMPLING RESULTS FOR THE BOROUGH OF WALLINGTON MUNICIPAL WATER SUPPLY WELLS

APPENDIX A-3

NEW JERSEY STATE DEPARTMENT OF HEALTH SAMPLING RESULTS FOR THE BOROUGH OF WALLINGTON MUNICIPAL WATER SUPPLY WELLS, YEAR 1985.

VOLATILES

SAMPLE NUMBER	WELL No.8	WELL No.5	DULL WELL	LESTER WELL	WELL AT 24 UNION BLVD.	WELL No.5 AT HATHAWAY
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MATRIX	water	water	water	water	water	water
DATE	4/5/85	4/5/85	4/5/85	4/5/85	7/29/85	7/29/85
Bromoform	NA	NA	NA	NA	4.1	
chloroform	31				NA	NA
tetrachloroethene			37	14	17	
trichloroethene			33		29	89
1,1,1-trichloroethane			10			2.1
1,1-dichloroethane	2	12				12
1,1-dichloroethene		3				4.7
1,2-dichloroethane	NA	NA	NA	NA		4.7
1,2-dichloroethene					30	1148
1,2-dichloropropane		2	23		NA	NA

NOTE:
NA - NOT ANALYZED FOR

APPENDIX A-4

ANALYTICAL RESULTS FOR MONITORING WELL SAMPLING AT THE CURTISS-WRIGHT CORPORATION, WOOD-RIDGE N.J.

APPENDIX A-4
ANALYTICAL RESULTS FOR ROCK WELL (RW) SAMPLES
COLLECTED AT THE CURTISS-WRIGHT CORPORATION
WOOD-RIDGE, NEW JERSEY

VOLATILES						
SAMPLE NUMBER	RW-1	RW-2	RW-3	RW-4	RW-5	RW-6
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Chloromethane						
Bromomethane						
Vinyl Chloride						
Chloroethane						
Methylene Chloride	166	182				
Acetone						
Carbon Disulfide						
1,1-Dichloroethene					1220	143
1,1-Dichloroethane						
Trans-1,2-Dichloroethene	475	67	61	3500		64000
Chloroform						
1,2-Dichloroethane					2010	
2-Butanone						
1,1,1-Trichloroethane				162	2170	222
Carbon Tetrachloride						
Vinyl Acetate						
Bromodichloromethane						
1,1,2,2-Tetrachloroethane						
1,2-Dichloropropane						
Trans-1,3-Dichloropropene						
Trichloroethene	56		8	1400	300	20000
Dibromochloromethane						
1,1,2-Trichloroethane						
Benzene			8		240	
Cis-1,3-Dichloropropene						
2-Chloroethylvinylether						
Bromoform						
2-Hexanone						
4-Methyl-2-Pentanone						
Tetrachloroethene				1750	270	24000
Toluene					234	
Chlorobenzene						
Ethylbenzene				65	191	
Styrene						
Total Xylenes						

APPENDIX A-4

ANALYTICAL RESULTS FOR OVERBURDEN WELL (OW) SAMPLES
COLLECTED AT THE CURTISS-WRIGHT CORPORATION
WOOD-RIDGE, NEW JERSEY

VOLATILES								
SAMPLE NUMBER	OW-1	OW-2	OW-3	OW-4	OW-5(a)	OW-6(b)	OW-7	OW-8
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Chloroethane								
Bromoethane								
Vinyl Chloride								
Chloroethane								
Methylene Chloride			372					
Acetone								
Carbon Disulfide								
1,1-Dichloroethene						634		
1,1-Dichloroethane						203		
Trans-1,2-Dichloroethene	13		20200			10900		
Chloroform	13							
1,2-Dichloroethane								
2-Butanone								
1,1,1-Trichloroethane						674		
Carbon Tetrachloride								
Vinyl Acetate								
Bromodichloromethane								
1,1,2,2-Tetrachloroethane								
1,2-Dichlpropropane								
Trans-1,3-Dichloropropene								
Trichloroethene			22300			1910		26
Dibromochloromethane								
1,1,2-Trichloroethane								
Benzene	106			5290	1220	638		
Cis-1,3-Dichloropropene								
2-Chloroethylvinylether								
Bromoform								
2-Hexanone								
4-Methyl-2-Pentanone								
Tetrachloroethene			888			1270		
Toluene				3810	934	1240		
Chlorobenzene								
Ethylbenzene				1280		207		
Styrene								
Total Xylenes								

NOTES:

(a) Groundwater samples collected from well OW-5 contained Naphthalene (206 ug/l) and Phenanthrene (87 ug/l).

(b) Groundwater samples collected from well OW-6 contained Naphthalene (61 ug/l) and 1,2-Dichlorobenzene (73 ug/l).

APPENDIX A-5

STRATIGRAPHIC LOGS AND WELL CONSTRUCTION DIAGRAMS COMPLETED AS PART OF THE HYDROGEOLOGICAL INVESTIGATION AT THE INDUSTRIAL LATEX SITE

NUS CORPORATION

TDD NO.: 12-8703-15
PROJECT: Industrial Latex
BOREHOLE NO.: 3-3

BOREHOLE LOG

BOREHOLE LOCATION: +100 ft. North. 70 ft. West of Bldg #1. NW corner
CONTRACTOR: W.C. Services
DRILLER: Mike Kavlunas

GROUND SURFACE ELEV.(FROM MSL) +54.99 (FT)
COMPLETION DEPTH: 12.0 ft.
DATE STARTED 8-11-87 COMPLETED: 6-11-87
LOGGED BY: G. Pollack CHECKED BY: PVS

TYPE OF RIG: TRUCK ☐ TRAILER MOUNTED ☐ TRIPOD ☐ OTHER ☐ _____ MANUFACTURER CME750
CASING DIA. _____ INCHES FROM _____ TO _____ FEET
DRILLING METHOD: Hollow Stem Auger SIT TYPE _____ BIT DIA. 4 in. OD
SAMPLING EQUIP. (TYPE & SIZE) SPLIT SPOON 24 in. length DIA. 2 in. OD
TUBE _____ DIA. _____
CORE _____ DIA. _____
SAMPLER HAMMER WEIGHT (LBS) 140 AVERAGE FALL (INCHES) 30
CASING HAMMER WEIGHT (LBS) _____ AVERAGE FALL (INCHES) _____

GROUNDWATER	DEPTH	DATE	TIME
FIRST ENCOUNTERED	10.0 ft.	6-11-87	

DEPTH (FT)	SAMPLE TYPE & NO.	SAMPLE DEPTH (FT)	BLOWS/6"	REC. (FT)	RQD %	SAMPLE DESCRIPTION	STRATA	REMARKS
	SS-1	0-2	10	1.4		Med. dense brown f-m sand, some silt, trace gravel with roots.	SM (Fill)	SS-1 (surface) sent to lab as NJ07B-3S-1 for HSL analysis. Sample Moist.
			10					
1			6					
			4					
2	SS-2	2-4	6	1.0		Med.dense brown silty f-m sand, trace gravel.	(Fill)	
			5					
3			15					
			15					
4	SS-3	4-6	6	1.7		Med. dense brown silty f-m sand, trace gravel.		
			7					
5			7				SM	
			8					
6	SS-4	6-8	8	0.3		Med. dense brown silty sand, trace clay.		Sample moist. SS-4 sent to lab as NJ078-3S-2 for VOA only. Composite of 0-7 ft. sent to lab for remainder of HSL analysis.
			8					
7			8					
			11					
8	SS-5	8-10	6	0.8		Med. dense f-m sand, some silt, trace gravel, grading to sandy silt, some clay, some gravel.		
			6					
9			7				ML	
10			6				▼	Water table 10.0 ft.

SIGNATURE: _____ DATE: _____

ID#	ADDRESS	DATE	DEPTH(FT)	DIAM(IN)	SCREEN	MAT'L	USE	OWNER	FORMATION	ACC?	USED?	YIELD	HRS	PUMPED DOWN	STORE	DRILL CONTRACTOR	A	DIST
26 6126	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Eason	sand	good					EAR	Diamond Drilli	0.97	0.5114 1.026
26 6127	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Eason	sand	good					EAR	Diamond Drilli	0.97	0.5114 1.096
26 3525	116 Prospect St., Garfield, NJ	26-03-821	100	6	unknown		DOM	Kasimiers Nawsa	BrunSH	poor		10		0	EAR	John Lacritson	0.582	0.2557 0.680
26 5727	Passaic St., Hasbrouck Hgts., NJ	26-03-829	202	6	unknown		DOM	William Pentson		no		22	2	23	0.86	E.S. Richardso	0.97	0.2557 1.003
26 4929	220 Boulevard., Hasbrouck Hgts., NJ	26-03-832	180	6	none		DOM	Nimer & Co.		no		25	2	31	0.81	E.S. Richardso	1.358	0.7671 1.559
26 680	462 Broadway, Paterson, NJ	26-03-835	150	6	unknown		IND	Gearinck Const. Co.		no		10	4		EAR	J. Faster	1.358	0.5114 1.451
26 1071	48A Terrace Ave., Hasbrouck Hgts., NJ	26-03-835	90	6	none		DOM	Paul Spinelle	BrunOl	poor		10	1	31	0.38	E.S. Richardso	1.585	0.5114 1.634
26 5123	106 Berkshire Rd., Hasbrouck Hgts., NJ	26-03-836	198	6	unknown		DOM	William Inhen		no		25	2	26	0.96	E.S. Richardso	1.902	0.5114 1.684
26 4705	553 Terrace Ave., Hasbrouck Hgts., NJ	26-03-839	203	6	unknown		INS	Elio M. Nuoni		no		20	2	60	0.83	E.S. Richardso	1.352	0.2557 1.572
26 4725	Airport Rd., Interboro, NJ	26-03-839	480	8	unknown			Cosbinaies Corp.		no		110	2	200	0.85	E.S. Richardso	1.582	0.2557 1.572
26 2172	Route 17, Hasbrouck Hgts., NJ	26-03-842	288	6	unknown		IND	Esso Standard Oil Co.	BrunSH	poor					EAR	Rinbrand Well	0	-0.511 0.511
26 4277	611-641 Broad St., Carlstadt, NJ	26-03-885	430	6	none		DOM	Gaur's Chemical Works, INC	BrunSH	poor		50	3	170	0.29	E.S. Richardso	0.194	-0.511 0.546
26 5156	277 Harkensack St., Wood Ridge, NJ	26-03-858	302	6	unknown		Laundry	Econ-o-Wash		no		65	3	90	0.72	E.S. Richardso	0.776	-0.511 0.929
26 547	Harkensack Ave., Wood Ridge, NJ	26-03-826	165	6	unknown		IND	Farmiani Const. Co.		no		120	4	60	2.00	John O. Brayno	0.97	-0.511 1.096
26 4722	Airport Rd., Interboro, NJ	26-03-863	480	8	none		DOM	Goabinaies Corp.		no		100	2	194	0.52	E.S. Richardso	1.552	0 1.382
26 5412	211 Route 17, Hasbrouck Hgts., NJ	26-03-888	167	6	unknown		Dinar	Casmos Diner, INC	BrunSH	poor		40	3	62	0.65	E.S. Richardso	1.164	-0.295 1.191
26 953	Washington Ave., Carlstadt, NJ	26-03-867	255	8	unknown		IND	Carlson-Cooke Corp.	BrunSH	poor		150	8	135	1.11	Peerless Well	1.164	-0.511 1.271
26 458	512 Springfield Ave., Hasbrouck Hgts., NJ	26-03-861	61	6	none		DOM	Thomas Bosco	BrunSH	poor		30	1	20	1.50	E.S. Richardso	1.164	-0.511 1.271
26 1041	Route 817, Wood Ridge, NJ	26-03-867	103	6	unknown		DOM	Angeal Ferretti	BrunOl	poor		15	1	11	1.07	E.S. Richardso	1.164	-0.511 1.271
26 4914	Union Ave. & Orlois St., E. Rutherford, NJ	26-03-867	145	8	none		COOL	DeBois Chemicals	BrunSH	poor		?	?	?	EAR	Rinbrand Well	1.164	-0.511 1.271
26 4698	443 Cardon St., Carlstadt, NJ	26-03-871	375	8	unknown		IND	A & H Electro Plating Corp.	BrunSH	poor		110	?	200	0.55	E.S. Richardso	0	-0.767 0.767
26 926	226 Paterson Ave., E. Rutherford, NJ	26-03-875	153	6	unknown		CORR	Mr. Wm Nuebauer	BrunRU	poor		30	3	20	1.50	Rinbrand Well	0.194	-1.022 1.041
26 7752	Paterson Plank Rd., Carlstadt, NJ	26-03-878	17	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					EAR	Empire Soils I	0.194	-1.278 1.293
26 7753	Paterson Plank RD., Carlstadt, NJ	26-03-878	14	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					EAR	Empire Soils I	0.194	-1.278 1.293
26 7754	Paterson Plank Rd., Carlstadt, NJ	26-03-878	20	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					EAR	Empire Soils I	0.194	-1.278 1.291
26 7482	Paterson Plank RD., Carlstadt, NJ	26-03-878	4	4	4" X 2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					EAR	Empire Soils I	0.194	-1.278 1.293
26 7481	Paterson Plank RD., Carlstadt, NJ	26-03-878	4	4	4" X 2'	RBC	OBS	Cosan Chemical Corp.	soil	poor					EAR	Empire Soils I	0.194	-1.278 1.291
26 7480	Paterson Plank RD., Carlstadt, NJ	26-03-878	4	4	4" X 2.5'	PVC	OBS	Cosan Chemical Corp.	soil	poor					EAR	Empire Soils I	0.194	-1.278 1.293
26 7479	Paterson Plank Rd., Carlstadt, NJ	26-03-878	3.7	4	4" X 2.2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					EAR	Empire Soils I	0.194	-1.278 1.291
26 7478	Paterson Plank Rd., Carlstadt, NJ	26-03-878	2.3	4	4" X 1.3'	RBC	OBS	Cosan Chemical Corp.	soil	poor					EAR	Empire Soils I	0.194	-1.278 1.291
26 4682	Ethel Blvd., Wood Ridge, NJ	26-03-882	24.5	4	4" X 10'	RBC	Test	Basic Const. Co.	Sand	poor					EAR	Rinbrand Well	0.775	-0.767 1.091
26 4833	Ethel Blvd., Wood Ridge, NJ	26-03-882	19	4	4" X 10'	PBC	Test	Basic Const. Co.	sand	poor					EAR	Rinbrand Well	0.776	-0.767 1.091
26 4884	Ethel Blvd., Wood Ridge, NJ	26-03-882	18.5	4	4" X 10'	PVC	Test	Basic Const. Co.	marl	poor					EAR	Rinbrand Well	0.776	-0.767 1.091
26 2992	Route 617, Carlstadt, NJ	26-03-885	205	6	unknown		IND	Bergen Iron & Engineering Co.	BrunSH	poor		18		17	0.76	Frank Bott, IN	0.776	-1.022 1.283
26 2986	590 Commercial Ave., Carlstadt, NJ	26-03-886	153	6	unknown		COOL	Benedict Packing Corp.	BrunSi	poor		50	?	65	0.77	Rinbrand Well	0.97	-1.022 1.409
26 4141	590 Commercial Ave., Carlstadt, NJ	26-03-886	330	6	none		IND	Bartdict Packing Corp.	BrunSH	poor		175	8	150	1.17	Rinbrand Well	0.97	-1.022 1.409
26 1384	Route 817, Carlstadt, NJ	26-03-886	250	6	unknown		A/C	Beff's Diner	BrunSH	poor		45	3	72	0.63	E.S. Richardso	0.97	-1.022 1.409
26 1031	Carlstadt Test Well #2, Carlstadt, NJ	26-03-888	263	6	unknown			Hackensack Water Co.	BrunSH	good					EAR	Artesian Well	0.776	-1.278 1.495
26 2824	Broad & 11th Sts., Carlstadt, NJ	26-03-888	400	8	none		IND	Lancaster Chemical Co.	IronSH	poor		55	8	128	0.43	Berrows Well B	0.776	-1.278 1.498
26 1075	Carlstadt Test Well 63, Carlstadt, NJ	26-03-888	86	8	none			Hackensack Water Co.	gravel	good		300	8	30	10.00	Artesian Well	0.776	-1.278 1.495
26 3021	Broad & Union Sts., Carlstadt, NJ	26-03-888	200	6	unknown		IND	Record Electrical Plating Co.	BrunSH	poor		90	8	70	1.29	Rinbrand Well	0.776	-1.278 1.495
26 1158	Hoonarbie Test Well #1, Hoonarbie, NJ	26-03-894	241	6	6" X 10'	Everdur		Hackensack Water Co.	BrunSH	good		60		177	0.88	Artesian Well	1.164	-1.022 1.549
26 487	Hoonachie, N.J.	26-03-895	160	6	unknown		IND	Frank A. Rily	BrunSH	poor		20	0.5	30	0.67	Peerless Well	1.358	-1.022 1.700
26 368	Little Ferry Irons & Allen Foundry, Hoonar	26-03-895	160	6	unknown		IND	Felix Cascello	BrunSH	poor		5	0.5	20	0.25	Arthur Hilhela	1.358	-1.022 1.700
26 4900	Grand & Starly Rd., Carlstadt, NJ	26-03-895	300	8	none		COOL	Manhattan Products Co.	BrunSH	poor		65	6	114	0.57	Rinbrand Well	1.358	-1.022 1.700
26 4987	670 Dell Rd., Carlstadt, NJ	26-03-895	300	8	none		CORR	Phemann, INC	BrunSH	poor		250	6	178	1.40	Rinbrand Well	1.358	-1.022 1.700
26 176	Hoonachie, NJ	26-03-896	160	6	unknown		IND	Atlantic Pipe Bending & Fabr. Co	BrunSH	poor		5	0.5	35	0.14	Arthur Hilhelm	1.552	-1.022 1.838
26 4979	55 Anderson Ave., Hoonarbie, NJ	26-03-897	202	6	unknown		COOL	Carter Manufacturing Co.	BrunSH	poor		45	3	178	0.25	E.S. Richardso	1.164	-1.278 1.729
26 3781	150 W. Commercial Ave., Hoonachie, NJ	26-03-899	200	8	unknown		IND	World Plastic Extruders, INC	BrunSH	poor		100	8	25	4.00	Algeier Bros.	1.552	-1.210 1.700

108	ADDRESS	IDNOS	DEPTH(FT)	DIAM(IN)	SCREEN	MATL	USE	OWNER	FORMATION	IOCT	USED?	YIELD	MES	PUMP	DRAW	S'CAP	DRILLER	DATE	A	DIST
26-4616	73 McArthur Dr., Clifton, NJ	26-02-677	185	6	unknown		DOM	Eugene Mahlberg	DrumGH	no		65		4	70	0.93	Engineering Dr	-3.492	1.0223	1.63
26-4342	165 Gould Street, Paterson, NJ	26-02-617	250	8	unknown		GROL	Scientific Electro Corp.		no		55		8	165	0.33	H.G. Beatty	-3.492	2.5510	4.32
26-2916	Hazel Ave., Clifton, NJ	26-02-614	132	6	unknown		GC	Mountainside Inn	DrumGH	poor		36		1	8	4.50	Barrows Well D	-3.492	2.8121	4.66
26-1096	30 Pearlbrook Dr., Clifton, NJ	26-02-615	95	6	unknown		DOM	Frank Ouart		no		15					Foster	-3.298	2.8121	4.33
26-399	Goulds Ave., Paterson, NJ	26-02-616	509	8	unknown		IND	Fairview Dairy	DrumGH	no		255		8	85	3.00	Rinbrand Well	-5.104	2.8127	4.18
26-2922	Hazel Avenue, Clifton, NJ	26-02-617	164	6	unknown		AC	Mountainside Inn	DrumGH	poor							Burrows Well D	-5.488	2.3570	4.121
26-887	Circle Ave., Clifton, NJ	26-02-618	400	10	unknown		COOL	BBSIS	DrumGH	poor		164		8	145	1.13	Rinbrand Well	-3.298	2.5570	4.61
26-7321	Paterson, NJ	26-42-618	12.1	3	10	PVC	IND	CEMAN	DrumGH	yes							Diamond Drill	-3.298	2.5570	4.17
26-1322	Paterson, NJ	26-42-618	3	3	10	PVC	SOB	EIMAN	DrumGH	yes							Diamond Drill	-3.298	2.5570	4.17
26-7353	Paterson, NJ	26-02-618	13	3	10	PVC	ABB	EIION	DrumGH	yes							Diamond Drill	-3.298	2.5510	4.17
26-7324	Paterson, NJ	26-02-618	11.8	3	10	PVC	OBS	EEMAN	DrumGH	yes							Diamond Drill	-3.298	2.5570	4.17
26-4026	Marbach and Illinois, Paterson, NJ	26-02-622	200	6	none			Green Ball Leaf INC	DrumGH	poor		80		4	100	0.80	Rinbrand Well	-2.716	3.0684	4.00
26-112	NW Corner IdealPatna, Paterson, NJ	26-02-623	447	10	unknown			Bagwe Elec. Co.				75		1	65	1.15	Henry A. Rieff	-2.522	3.0684	3.971
26-5239	165 Gould Ave., Paterson, NJ	26-02-624	800	8	none		Rotem	Augsburger Local 3 Bio Co.	DrumGH	yes		100		1.5	8	12.50	H. Bellows Well	-2.91	2.8127	4.047
26-5240	165 Gould Ave., Paterson, NJ	26-02-624	800	8	none		COOL	Augsburger Local 3 Bio Co.	DrumGH	yes		100		2	12	8.33	H. Bellows Well	-2.91	2.8127	4.047
26-3345	264 Mahesh Ave., Paterson, NJ	26-02-628	140	6	unknown		IND	Peter Barafone & Son, INC	DrumGH	poor		201		3		EBB	Barrows Well D	-2.91	2.8127	4.047
26-4244	87-89 Illinois Ave, Paterson, NJ	26-02-628	125	6	unknown		DOM	M & M Lumber Co.	DrumGH	OK		30					Jos C. Mantach	-2.716	2.8127	3.6m
26-5127	Route Hazel Road, Clifton, NJ	26-02-628	815	8	none		EBOL	A.G.I. Holding Supply Co.		no		65		6	80	0.51	Rinbrand Well	-2.522	2.8127	3.777
26-2057	130 Sheldon Ave, Paterson, NJ	26-02-627	800	8	unknown		OBBL	Manhattan Coating Co.	DrumGH	poor		150		8	75	2.00	Rinbrand Well	-2.91	2.5570	3.871
26-2077	85 Third St., Clifton, NJ	26-02-627	800	8	none		IND	Frito-Lay Southern	DrumGH	poor		210		8	175	1.20	Rinbrand Well	-2.91	2.3570	3.873
26-2116	50 California Ave., Paterson, NJ	26-02-628	800	8	unknown		COOL	Colorite Plastic of N.J. INC	DrumGH	poor		254		8	50	5.08	Rinbrand Well	-2.91	2.5570	3.873
26-4220	73-75 Colwell Ave, Paterson, NJ	26-02-628	180	6	none		IND	Henry Hill Ave Co.	DrumGH	poor		40				EBB	Jos C. Mantach	-2.716	2.5570	3.730
26-4960	Buffalo Ave., Paterson, NJ	26-02-632	150	6	none		Rot	Bon Bream Products Co.		OK		65		1	17	3.82	H. Bellows Well	-2.716	2.5570	3.730
26-755	107 Alabama Ave., Paterson, NJ	26-02-633	600	8	none			Industrial Mailing Co		no		230		8	45	5.11	Henry A. Rieff	-1.94	3.0684	3.630
26-4779	Mahesh & Illinois Ave., Paterson, NJ	26-02-634	200	6	none		GROL	Cream Melt Leaf INC	DrumGH	poor		75		4	100	0.75	Rinbrand Well	-2.328	2.8127	3.651
26-831	Rifle Camp Road, N. Paterson, NJ	26-42-645	150	6	none			Helen M. Sertich		no		3		1	142	0.02	Henry A. Rieff	-3.298	2.0456	3.010
26-902	244 Hazel RD. Clifton, NJ	26-42-645	307	8	unknown		IND	F.E.B. Reilly Co. INC	DrumGH	poor		300		8	70	4.29	Burrows Well D	-3.298	2.0456	3.008
26-216	Hazel Rd., Clifton, NJ	26-42-648	242	8	none		DRIBW	Smith's Dairy		no		60		5	13	4.62	Henry A. Rieff	-3.298	1.7899	3.752
26-3545	73 Rollins Ave., Clifton, NJ	26-02-648	144	6	unknown		IND	H. Blardone	DrumGH	poor		27		2	40	0.68	Henry H. Mineral	-3.298	1.7899	3.752
26-4584	35 Monigan St., Clifton, NJ	26-02-649	200	6	none		GROL	Eastor Creations INC	DrumGH	poor		24		4	96	0.25	Rinbrand Well	-3.104	1.7899	3.185
26-184	241 N. 2nd St., Clifton, NJ	26-42-651	115	6	unknown		Cooum	Nelsd Bon Brick Co.		no		32		1	6	5.33	Water Wells IN	-2.91	2.3013	3.710
26-4223	151 Crooks Ave, Paterson, NJ	26-42-652	120	6	none		IND	Superale Auxiliary Lend.	DrumGH	poor		75				EBB	Jos C. Mantach	-2.716	2.3013	3.588
26-3321	Getty Ave., Clifton, NJ	26-42-652	105	6	unknown		IND	Donald Pinkey	DrumGH	poor		20		1	61	0.33	Nabey Brothers	-2.716	2.3013	3.588
26-3764	265 Vernon Ave., Paterson, NJ	26-42-656	180	6	unknown			Mr. Salvatore De Bonis		no		10				EBB	Allen C. McCon	-2.522	2.0436	3.247
26-4290	S Nottingham St., Clifton, NJ	26-42-656	300	6	unknown		GROL	Alfred Muller Hand	DrumGH	poor		65		4	5	13.00	Algeier Mass.	-2.522	2.0456	3.241
26-7237	150 Paulanison St., Passaic City, NJ	26-42-656	500	6	unknown		POOB	Werth, Ralph	DrumGH	poor		30				EBB	William Slatho	-2.522	2.0456	3.247
26-3387	417 Grove St., Clifton, NJ	26-42-657	372	6	unknown		DOM	J. Bilbie	DrumGH	poor		35		1	230	0.15	Nabey Brothers	-2.91	1.7899	3.414
26-3479	47 Maple Ave., Clifton, NJ	26-02-657	150	6	unknown		DOM	George Von Ehrich	DrumGH	poor		40		4	20	2.00	Rinbrand Well	-2.91	1.7899	3.418
26-5103	521 Highland Ave., Clifton, NJ	26-42-693	115	6	none		DOM	Grenjactis		no		50		2	40	1.25	Slater Bros. N	-2.522	1.7893	1.037
26-3883	64 E. 8th St., Clifton, NJ	26-42-664	65	6	unknown		BBB	Nabey Alawai	green	poor	?			6	40	EBB	John Learrison	-1.94	2.3013	1.009
26-2678	101 Clifton Blvd., Clifton, NJ	26-42-665	173	6	unknown		IND	Billed Distilled Water		no						EBB	B.F. Well Drill	-2.184	2.0436	2.9m
26-1343	193 Washington Ave., Clifton, NJ	26-02-668	300	8	unknown		GROL	Johnson Laboratory	DrumGH	poor				8	110	0.00	Barrows Well D	-2.134	1.7899	2.788
26-8051	Hamilton Ave., Clifton, NJ	26-02-680	300	12	unknown		TEXT	Milan Chemical Co.	DrumGH	poor		214		71	125	1.71	Barrows Well D	-2.180	1.7899	2.185
26-4613	168 Arlington Ave., Clifton, NJ	26-42-668	402	12	none		IND	Milne Laboratories INC	Newark	poor		180		24	143	1.26	Rinbrand Well	-2.180	1.7894	2.185
26-3819	157 Reigan's Plaza, Clifton, NJ	26-42-669	120	6	unknown		DOM	Mr. Norman Hanson		no		20		10	100	0.20	John Learrison	-1.94	1.7894	2.019
26-3610	119 Malster Rd., Clifton, NJ	26-42-669	190	6	unknown		IND	Joseph Svoa		no		20		6	120	0.17	John Learrison	-1.94	1.7899	2.019
26-1065	697 Route 846, Clifton, NJ	26-02-671	300	10	unknown		IND	Shelton INC	DrumGH	poor		435		8	142	3.06	Ove Nicherson	-3.492	1.5342	1.814
26-5035	25 Styertown Rd., Clifton, NJ	26-42-671	285	10	unknown		IND	Inmat Products	DrumGH	poor		400		1	70	3.71	Samuel Slotkof	-3.492	1.5342	1.814
26-3782	35 Parkway Ave, Clifton, NJ	26-02-671	125	6	unknown		DOM	James Comisso	DrumGH	poor		20		1	42	0.48	Nabey Brothers	-3.492	1.5342	1.814
26-3386	27 Nottingham Terrace, Clifton, NJ	26-02-673	270	6	unknown		DOM	Harry Baron	DrumGH	poor		15		1	92	0.16	Nabey Brothers	-3.104	1.5342	1.182
26-9062A	Grove St., Clifton, NJ	26-02-673	200	6	unknown		DOM	Mr. Charles Horne		no		50		6	200	0.25	John Learrison	-3.104	1.5342	1.182
26-425	555 Redrick Ave., N. Paterson, NJ	26-02-675	60	6	unknown		IND	McBride Auto Body Service		no		5		2	47	0.11	John Learrison	-3.298	1.2785	1.531
26-2824	Route 146, Clifton, NJ	26-02-675	400	10	none		COOL	Shelton INC	DrumGH	poor		198		8	175	1.13	Rinbrand Well	-3.298	1.2785	1.511

LORDS	DEPTH(FT)	DIAM(")	S[redacted]	MAT[redacted]	O[redacted]	[redacted]	[redacted]	[redacted]	LOG?	USES?	YIELD	34S	PUMPED	ON	STOP	34ILLE[redacted]ENTI		Y	DISI
[redacted] Clifton, [redacted]	26-02[redacted]	307	12	unknown		IMe	Athenia Steel Co.	DrunGH	GM		330	11	56		5.89	Wm. Stothoff	-3.104	1.2785	3.396
26-29[redacted] Route 046, Clifton, NJ	26-02-676	300	10	none		GUOL	Swelton WC	DrunGH	poor		322	8	180		1.79	Binbrand Well	-3.104	1.2785	3.356
26 3848 67 Marconi St., Clifton, NJ	26-02-677	105	6	unknown		DOM	Mrs. Barbara Nater	DrunGH	poor		10	1	36		0.28	Mabey Brothers	-3.492	1.4225	3.635
26 3218 10 Pilgrim Dr., Clifton, NJ	26-02-677	100	6	unknown		DOM	Charine Lay	DrunGH	poor		60	1	22		1.14	Mabey Brothers	-3.492	1.0818	3.638
26 6282 Clifton, NJ	26-02-679	450	12	none		IMe	Nat'l. Std. Co., Athenia Steel	DrunGH	GM		209	8	130		1.38	Wm. Stothoff	-3.104	1.0822	3.218
26 4285 67 Maple Pl., Clifton, NJ	26-02-683	120	6	none		NOM	Mr. Hamilton S. Brash	DrunGH	poor		20	3	85		0.24	Mirkerman Well	-2.522	1.3342	2.951
26 1951 791 Paulson Ave, Clifton, NJ	26-02-687	60	12	IS		IMe	Eureka Printing Co.	DrunGH	poor		282	8	36		7.83	Burrows Well D	-2.91	1.0220	3.084
26 110 Highland Ave., Clifton, NJ	26-02-688	400	10	none		IMe	Federal Sweets and Biscuit Co.	DrunGH	poor		280	8	105		2.67	Bilbrand Well	-2.716	1.0220	2.902
26 834 Clifton, NJ	26-02-693	250	8	unknown		134	Cveley and Co.	DrunGH	poor		105				IRR	Binbrand Well	-1.94	1.3342	2.473
26 4819 165 Knapp Ave., Clifton, NJ	26-02-693	68	6	unknown		DOM	Mr. Walter Paluniak		no		10	24	20		0.50	Soran Nelson J	-1.94	1.3342	2.473
26 5301 761 Bloomfield Ave., Clifton, NJ	26-02-695	22.5	4	20	PVC	OBS	EEXON	DrunGH	good						tNR	Mandeve Corp.	-2.134	1.2785	2.687
26 5342 761 Bloomfield Ave., Clifton, NJ	26-02-695	22.3	4	20	PVC	OBS	EEXON	DrunGH	good						iNR	Mandeve Corp.	-2.134	1.2785	2.487
26 5303 761 Bloomfield Ave., Clifton, NJ	26-02-695	23	4	20	PVC	OBS	EEXON	DrunGH	good						tNR	Mandeve Corp.	-2.134	1.2789	2.487
26 3195 625 Main Ave., Passaic, NJ	26-02-9??	205	8	none		GUOL	North Jersey Savings and Loan	DrunGH	poor		50	8	55		V 91	Binbrand Well	-3.492	-1.278	3.718
26 3707 327 High St., Passaic, NJ	26-02-9??	75	6	unknown		DOM	Martha Comet. Co.	DrunGH	poor		10	3	5		2.00	Bilbrand Well	-3.492	-1.278	3.718
26 3467 110 Washington Ave., Clifton, NJ	26-02-9??	170	6	unknown		DOM	Dr. L.P. Baca	DrunGH	poor		30	3	15		2.00	Bilbrand Well	-3.492	-1.278	3.718
26 1808 Maboro St. Clifton, NJ	26-02-919	338	8	unknown		COOL	Slopro Realty Co., INC	DrunGH	poor		92	8	122		0.75	Bilbrand Well	-3.104	0.2957	3.114
26 3809 12 Mamen St., Clifton, NJ	26-02-921	150	6	unknown		DOM	MaMoess Schalski	DrunGH	poor		20	2	35		0.51	Harry Ramsraal	-2.91	0.7671	3.009
26 421 225 Clifton Blvd., Clifton, NJ	26-02-922	605	10	unknown		IMe	Lumetyla Corp.	DrunGH	poor		250				ERR	BinBrand Well	-2.716	0.7671	2.022
26 1059 Lot 152A, Sargent Ave?, Clifton, NJ	26-02-925	440	10	unknown		IMe	Standard Packaging Corp.	DrunGH	poor		190	8	230		0.83	Bilbrand Well	-2.716	0.3114	2.748
26 1060 Sargent Ave., Clifton, NJ	26-02-925	400	10	unknown			Standard Packaging Corp.	DrunGH	poor		190	8	233		0.75	Binbrand Well	-2.716	0.5114	2.763
26 172 823, Clifton, NJ	26-02-926	200	8	unknown		A/C	Dunida Paper Products, INC	DrunGH	poor		100	8	57		1.73	Wm. J. Sikkema	-2.522	0.5114	2.573
26 3411 425 Grove St., Clifton, NJ	26-02-927	250	6	unknown		DOM	Dr. J. Sicilicin	DrunGH	poor		50	1	82		0.61	Mabey Brothers	-2.91	0.2957	2.921
26 3384 4 Spear Ave., Passaic, NJ	26-02-929	108	6	unknown		134	Arthur Werkiveveg	DrunGH	poor		20	2	32		0.63	Frank Bolt, IN	-2.322	0.2957	2.534
26 6106 710 Van Houten Ave., Clifton, NJ	26-02-929	265	6	none		IMD	Mario's Friendly Restaurant		no		50	4	35		1.43	Slater Bros. M	-2.522	0.2357	2.534
26 602 338 Chestnut Ave., Passaic, NJ	26-02-933	200	6	unknown		A/C	Binn's tracking Co.	DrunGH	poor		10	4	41		0.24	Barrows Well B	-1.94	0.3671	2.006
26 5011 1 Clifton Blvd., Clifton, NJ	26-02-934	300	8	unknown		IMe	Sliprv Tube Corp.	DrunGH	poor		200	1	145		1.55	Samuel Stothof	-2.328	0.9114	2.183
26 3941 Van Houten Ave., Passaic, NJ	26-02-937	242	8	unknown			Rayhanbon Manhattan, INC	DrunGH	poor		7.5		32		0.12	Frank Bolt, IN	-2.328	0.2587	2.342
26 2812 85 third St., Clifton, NJ	26-02-937	600	8	none		IMe	Fritscha Brothers	DrunGH	poor		210	8	175		1.20	Binbrand Well	-2.358	0.2987	2.342
26 6142 307 Broadway, Pvesaic, NJ	26-02-939	26.5	7	15' x 4"	PVC	OBS	Swell Oil Co.	DrunGH	good						EMR	Mandve Corp.	-1.94	0.2357	1.996
26 6147 307 Broadway, Passaic, NJ	26-02-939	28	8	22' x 4"	PVC	OBS	Siell Oil Co.	DrunGH	good						6MR	Mandve Corp.	-1.94	0.2957	1.936
26 6148 307 Broadway, Passaic, NJ	26-02-939	39	8	none		OBS	Shell Oil Co.	DrunGH	good						EMR	Mandve Corp.	-1.94	0.2957	1.996
26 6149 307 Broadway, Passaic, NJ	26-02-939	29	8	12" x 4"	PVC	OBS	Shell Oil Co.	DrunGH	good						8MR	Mandeve Corp.	-1.94	0.2957	1.996
26 6204 307 Broadway, Passaic, NJ	26-02-939	29.5	7	20" x 4"	PVC	OBS	Shell Oil Co.	DrunGH	good						EMR	Mandeve Corp.	-1.94	0.2957	1.996
26 3671 391 Main Ave., Clifton, NJ	26-02-942	135	6	unknown			Mr. Sal Calderaro		no		35				EMR	Allan C. McCon	-3.298	0	3.298
26 448 Minnisink Road, Totowa, NJ	26-02-953	32	6	unknown		DOM	Sisco INC		no		9	2	15		0.60	[redacted] Laaritsen	-2.522	0	2.522
26 3811 95 Menard Ave., Clifton, NJ	26-02-953	210	6	unknown		DOM	Michael Malinesak	DrunGH	poor		90	1	64		0.78	Mabey Brothers	-2.522	0	2.522
26 3390 19 Orth Ave., Passaic, NJ	26-02-935	120	6	unknown			Leroy Leger		no		30				6MR	Allan C. McCon	-2.716	-0.253	2.728
26 3195 625 Main Ave., Passaic, NJ	26-02-957	205	8	none		GUOL	North Jersey Savings and Loan	DrunGH	poor		50	8	35		0.91	Binbrand Well	-2.91	-0.511	2.954
26 3589 482 Passaic Ave., Passaic, NJ	26 02-957	125	6	unknown			Mr. N. Martini		no		80				EMR	Aaron Slater,	-2.91	-0.511	2.954
26 2231 443 Van Houten Ave., Passaic, NJ	26-02-961	300	8	unknown		IMe	Speedway Car Wash Co.	DrunGH	poor		30		288		0.28	Binbrand Well	-2.358	0	2.328
26 3323 16 Garfield St., Passaic, NJ	26-02-962	186	6	unknown		DOM	William Toth	DrunGH	poor		40	1	112		0.36	Mabey Brothers	-2.134	0	2.134
26 328 Van Houten & Broadway, Passaic, NJ	26-02-966	292	8	unknown		A/C	Bauranlee Food Market	DrunGH	poor		60	8	50		1.20	Binbrand Well	-1.34	-0.295	1.956
26 3096 199 N. Saddle Brook Rd., Ridgewood, NJ	26-02-968	135	6	none		DOM	Mr. William Jrowell	DrunGH	poor		30	4	15		2.00	Binbrand Well	-2.134	-0.511	2.194
26 3614 350 Blvd., Pvesaic, NJ	26-02-968	300	6	none		DOM	Pvesaic General Hospital	DrunGH	poor		15	8	273		0.05	Binbrand Well	-2.134	-0.511	2.196
26 3589 482 Passaic Ave., Pvesaic, NJ	26-02-972	123	6	unknown			Mr. N. Martini		no		80				ERR	Aaron Slater,	-3.298	-0.167	3.386
26 3935 600 Route 46, Clifton, NJ	26-02-972	185	6	unknown			Famelon Properties		no		50				ERR	Allve C. McCon	-3.293	-0.467	3.386
26 2407 750 Bloomfield Ave., Clifton, NJ	26-02-973	305	10	unknown		IMe	Allen B. Dumont Laboratorive	DrunGH	poor		33		104		0.32	BilBrand Well	-3.104	-0.167	3.197
26 1538 Allwood Rd., Clifton, NJ	26-02-973	860	10	unknown		IMe	Albert A. Slier	DrunGH	poor		375		180		2.03	Bilbrand Well	-3.104	-0.767	3.197
26 2567 Bloomfield Ave., Clifton, NJ	26-02-973	301	8	unknown		IMe	Brooklift Realty Co.	DrunGH	poor		190	6	54		3.52	Frank J. Bolt	-3.104	-0.767	3.197
26 2247 451 Ninth Ave., Clifton, NJ	26-02-975	190	6	unknown		DOM	Lara and Mcleland		no				1		0.00	M. Jmcey Acte	-3.293	-1.022	3.452
26 268 100 Bloomfield Ave., Clifton, NJ	26-02-976	150	10	unknown		COOL	Albert A. Slier, INC	DrunGH	poor		400	8	63		6.15	BilBrand Well	-3.108	-1.022	3.268
26 3371 86 Beech St., Bloomfield, NJ	26-02-978	150	6	unknown		DOM	Mr. Eugene Ishrhof	DrunGH	poor		20		130		0.15	John Laaritsen	-3.298	-1.278	3.537
[redacted] Midland Ave, Garfield, NJ	26-03-930	900	10	none			Public Lity of Garfield	DrunGH	poor		328	36	83		3.95	Binbrand Well	-0.776	2.0436	2.187

104	WaORI SS	LORDS	DEPTH(FI	DiOMi"I	SCREEN	MRI'L	USE	OWxII	FOOMRiiOM	I067	WSED?	YiGD	OMS	RUPPEDNGW	S'CAP	RRILLERCONCAUI	Y	DIST
26 4017	Outwater La. at Railroad, Garfield, NJ	26-03-456	710	10	none		Public	City of Garfield		no		30	?	290	0.10	Rinbrand Well	-0.776	2.0496 2.187
26 1314	1 Wakerman Ave. IEhlorine Bldgl, Clifton,	26-03-457	250	8	none		DOM	Wayppeny Paper RR. Co.		no		312	8	89	3.51	Henry A. Kiefl	-1.164	1.7099 2.135
26 3721	J11 Passair St., Garfield, NJ	26-03-461	63	6	unknown		DOM	Ion Brisco		no		15	8	20	0.75	John Lauritsen	-0.582	2.3011 2.171
26 J611	2 Bank St., Paterson, NJ	26-03-464	100	6	unknown		DOM	Joseph Bosonkno	BrunGN	poor		20	5	50	0.40	John Lauritsen	-0.582	2.0456 2.126
26 3776	6 Oak St., E. Paterson, NJ	26-03-464	100	6	unknown'		DOM	Mr. Pat Paglica		no		?	?	?	ERR	John Lauritsen	-0.582	2.0456 2.126
26 600	541 Midland Ave., Garfield, NJ	26-03-466	275	8	unknown		IMe	Joseph Weig	BrunGN	poor		50	6	133	0.32	Rinbrand Well	-0.194	2.0456 2.094
26 1646	55 Clifton Ave., Clifton, NJ	26-03-472	120	6	unknown		A/C	New Ipostolic Church	BrunGN	poor		25		0	ERR	Burrows Well	0-1.532	1.3142 2.182
26 4009	Fischer's Break - Botany Rd., Garfield,	26-03-483	400	10	unknown		IESI	City of Garfield	BrunGN	OK		25	2	95	0.26	Bunnem Well	0-0.716	1.9342 1.719
26 J609	600 Midland Ave., Garfield, NJ	26-03-486	110	6	unknown		DOM	Dr. Daniel Conte	BrunGN	poor		10	6	13	2.00	John Lauritsen	-0.776	1.2785 1.495
26 14	15 Mattlaore St., Passair, NJ	26-03-488	501	8	none		COOL	Hreem Plastics Corp.	grawt	poor		50	16	110	0.45	Rinbrand Well	-0.97	1.4228 1.409
26 5149	Grand & Cambridge St., Garfield, NJ	26-03-489	21	26	26" X 17'	steel	Gasoline	Mobil IEP-Div Mobar0. Subst.	band	poor					ERR	Mandau Corp.	-0.776	1.4228 1.283
26 4010	Grand St., Garfield, NJ	26-03-489	276	10	none			City of Garfield	BrunGN	OK					ERR	Burrows Well	0-0.776	1.4228 1.281
26 6602	125 Clark St., Garfield, NJ	26-03-494	19.5	4	4" X 19.5'	PVC	OBS	E.C. Electroplating	BrunGN	good					ERR	A.C. Schultes	-0.582	1.2785 1.404
26 6544	125 Clark St., Garfield, NJ	26-03-495	19	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunGN	good					ERR	Mandau Corp.	-0.388	1.2785 1.336
26 6545	125 Clark St., Garfield, NJ	26-03-495	19	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunGN	good					ERR	Mathews Corp.	-0.388	1.2785 1.336
26 6546	125 Clark St., Garfield, NJ	26-03-495	17	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunGN	good					ERR	Mathew Corp.	-0.388	1.2785 1.336
26 6547	125 Clark St., Garfield, NJ	26-03-495	17	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunGN	good					ERR	Mathew Corp.	-0.388	1.2785 1.336
26 6548	125 Clark St., Garfield, NJ	26-03-495	18	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunGN	good					ERR	Mandau Corp.	-0.388	1.2713 1.336
26 3577	44 Pellport Pl., Garfield, NJ	26-03-497	100	6	unknown		DOM	Mr. Carmine X. Parrapalo		no		?	6	15	ERR	John Lauritsen	-0.582	1.0228 1.176
26 6184	100 W. Hunter Ave., Maywood, NJ	26 03-5??	16	6	6' X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0225 1.022
26 6185	100 W. Hunter Ave., Maywood, NJ	26-03-5??	20	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.4220 1.422
26 6186	100 W. Hunter Ave., Maywood, NJ	26-03-5??	14	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228 1.022
26 6187	100 W. Hunter Ave., Maywood, NJ	26-03-5??	17.5	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.4228 1.022
26 6188	100 W. Hunter Ave., Maywood, NJ	26-03-5??	11	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228 1.022
26 6189	100 W. Hunter Ave., Maywood, NJ	26-03-5??	9	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0628 1.022
26 6190	100 W. Hunter Ave., Maywood, NJ	26-03-5??	8.5	4	4" X 10'	unknown		Stepan Chemical Co.	band	OK					ERR	Warren George,	0	1.0226 1.022
26 6191	100 W. Hunter Ave., Maywood, NJ	26-03-5??	8	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228 1.022
26 6192	100 W. Hunter Ave., Maywood, NJ	26-03-5??	4	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228 1.022
26 610	169 Millbank St., Lodi, NJ	26-03-5??	150	6	unknown			Metha Chemical		no		70	8	8	8.75	Foster Well Dr	0	1.0228 1.422
26 4003	400 Denry Ave., Saddle Brook, NJ	26-03-511	100	6	unknown		DOM	Stephen J. Hrubec	BrunGN	poor		35	2	13	2.69	Frank Bett, IN	0	3.0684 3.068
26 3855	9th St., Saddle Brook, NJ	26-03-517	91	6	unknown		DOM	Dr. Stephen Thompson		no		7	?	?	ERR	John Lauritsen	0	2.5970 2.517
26 4494	81 5th St., Saddle Brook, NJ	26-03-517	250	6	none		IMe	Pinette Toys, IMe	BrunGN	poor		75			ERR	Jos. C. Hearts	0	2.9970 2.957
26 294	126, Rochelle Park, NJ	26-03-517	80	6	unknown		DOM	Colon Const. Co.	BrunGN	poor		30	2	0	ERR	Mr. Sikkema	0	2.5370 2.397
26 4905	Smith Elem. Sch., Cambidge Ave., Saddle Br	26-03-518	200	6	none		Public	Board of Educ., Tap. of Saddle B	BrunGN	OK		33.5	4	29.4	1.14	New Jersey Dri	0.194	2.9970 2.964
26 6967	660 Main St., Lodi, NJ	26-03-523	18	4	4" X 15'	PVC	OBS	Solar Oil	BrunGN	good					ERR	Mandau Corp.	-0.97	3.0684 3.218
26 6968	660 Main St., Lodi, NJ	26-03-523	14	4	4" X 10'	PVC	OBS	Solar Oil	BrunGN	good					ERR	Mandau Corp.	0.97	3.0684 3.218
26 6969	660 Main St., Lodi, NJ	26-03-523	17	4	4" X 14'	PVC	OBS	Solar Oil	BrunGN	good					ERR	Mandau Corp.	0.97	3.0684 3.218
26 6970	660 Main St., Lodi, NJ	26-03-523	12	4	4" X 10'	PVC	OBS	Solar Oil	BrunGN	good					ERR	Mandau Corp.	0.97	3.4684 3.218
26 5888	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunGN	good					ERR	Mathews Corp.	0.97	2.8127 2.975
26 5889	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunGN	good					ERR	Mandau Corp.	0.97	2.8127 2.975
26 5890	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunGN	good					ERR	Mandau Corp.	0.97	2.8127 2.975
26 5891	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunGN	good					ERR	Mandau Corp.	0.97	2.8127 2.975
26 5523	460 N. Main St., Lodi, NJ	26-03-529	15	4	4" X 10'	PVC	OBS	EXXON USA	BrunGN	good					ERR	Mandau Corp.	0.97	2.5970 2.734
26 5524	460 N. Main St., Lodi, NJ	26-03-529	15	4	4" X 10'	PVC	OBS	EXXON USA	BrunGN	good					ERR	Mandau Corp.	0.97	2.9570 2.734
26 359	Woodland Ave. & Rt. 17, Rochelle Park, NJ	26-03-331	101	6	unknown		DOM	Metalfab	BrunGN	poor		40	2	2.5	16.00	Bunrpi Brother	1.164	3.0684 3.281
26 4949	Rt. 17 N., Maywood, NJ	26-03-531	19.5	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunGN	good					ERR	Mandau Corp.	1.164	3.4684 3.281
26 4964	Rt. 17 N., Maywood, NJ	26-03-531	18	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunGN	good					ERR	Mandau Corp.	1.164	3.0684 3.281
26 4965	Rt. 17 N., Maywood, NJ	26-03-531	17	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunGN	good					ERR	Mandau Corp.	1.164	3.0684 3.281
26 4966	Rt. 17 N., Maywood, NJ	26-03-531	17	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunGN	good					ERR	Mandau Corp.	1.164	3.0684 3.281
26 4967	Rt. 17 N., Maywood, NJ	26-03-531	20	4	4" X 13'	PVC	OBS	Gulf Oil Co.	BrunGN	good					ERR	Mandau Corp.	1.164	3.0684 3.281
26 3936	101 Essex St., Maywood, NJ	26-03-532	196	6	unknown			Snappy Car Wash T/A Jax Car Wash	BrunGN	poor		20	2	31	0.63	O.F. Well Drill	1.388	3.0684 3.355
26 1925	48 Woodland Ave., Rochelle Park, NJ	26-03-535	100	6	unknown			Joseph Brizak	BrunMe	poor		10	2	15	0.67	Rinbrand Well	1.358	2.8127 3.123
26 2271	87 Rt. 17, Maywood, NJ	26-03-535	300	8	unknown		IND	Aquarius, INC	BrunGN	poor		172	8	43.5	3.95	Burrows Well 0	1.338	2.8127 3.123

104	PCDRESS	LORDS	DCPINIFI)	DiDN(")	SCREEN	Mo?'L	USE	ONICB	FORMATiON	LOE?	DBEO?	YIELD	MoS	PUMeEDMBi	S'CAP	MRILLERCOMICN/B		V	BIS7
26 4050	446 Saddle River Rd., Saddle Brook, NJ	26-03-537	67	6	unknown		NJN	Alexander Buday	BrunSN	poor		30	3	15	2.00	Pine Brook Wel	1.164	2.9370	2.809
26 1620	Lodi, NJ	26-03-538	403	12	unknown		???	Borough of Lodi	BrunSN	poor		600	24	110.9	5.41	Artesian Well	1.398	2.9370	2.895
26 5245	318 Seventh St., Saddle Brook, NJ	26-03.541	73	6	unknown		DON	John Nurdock	BrunSN	poor		35	2	10	3.50	E.S. Richardso	0	2.3013	2.301
26 5621	283 Dulaster In., Saddle Brook, NJ	26-03-541	108	6	unknown		DON	Ronaldo Clapping	BrunSN	poor		40	2	16	2.30	E.S. Richardso	0	2.3013	2.301
26 4064	Dolphin (Pulaski Ph.), Garfield, NJ	26-03-542	405	10	none		Public	City of Garfield	BrunSN	poor		445	72	199	2.04	Rinbrand Well	0.194	2.3013	2.309
26 640	249 St. Hy. 6, Saddle River, NJ	26-03-542	90	6	unknown		NJN	Paul Bianco		no		25	4	20	1.25	J. Foster	0.194	2.3013	2.309
26 3557	177 Market St., Garfield, NJ	26-03-542	95	6	unknown		DON	Stanley Kostylara		no		?	?	?	EAR	John Lauritsen	0.194	2.3013	2.309
26 628	Rt. 6, Saddle River Lap.	26-03-885	90	8	unknown		DON	Ian Otko (Rodlaurant)	BrunSN	poor		60	4	2	30.00	J. Foster, Jr.	0.194	2.0456	2.494
26 7043	650 California St., Lodi, NJ	26-03-549	12		unknown		OBS	Mascal Corp.	sand	No					EAR	Warren George,	0.388	1.7899	1.881
26 5217	200 Gregg St., Lodi, NJ	26-03-549	15	2	unknown		OBS	Insom6 Corp.	gravel	good					EAR	Warren George,	0.388	1.7039	1.331
26 5218	200 Gregg St., Lodi, NJ	26-03-549	16	2	unknown		OBS	Insmat Corp.	gravel	good					EAR	Warren George,	0.388	1.7899	1.831
26 5219	200 Gregg St., Lodi, NJ	26-03-549	18	2	unknown		OBS	Insomt Corp.	gravel	good					EAR	Warren George,	0.388	1.3099	1.831
26 5220	200 Gregg St., Lodi, NJ	26-03-549	15	2	unknown		OBS	Insom6 Corp.	BrunSN	good					EAR	Warren George,	0.388	1.8799	1.831
26 5221	200 Gregg St., Lodi, NJ	26-03-349	104	4	unknown		OBS	Isomb Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7899	1.831
26 5222	200 Gregg St., Lodi, NJ	26-03-549	80	4	unknown		OBS	Insom6 Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7899	1.831
26 5223	200 Gregg St., Lodi, NJ	26-03-349	95	4	unknown		OBS	Insmat Corp.	MonnSN	good					EAR	Warren George,	0.388	1.7899	1.881
26 5224	200 Gregg St., Lodi, NJ	26-03-549	102	4	unknown		OBS	Insom6 Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7899	1.831
26 5225	200 Gregg St., Lodi, NJ	26-03-549	71	4	unknown		OBS	Insomt Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7899	1.831
26 5226	200 Gregg St., Lodi, NJ	26-03-549	46	4	unknown		OBS	Insomt Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7899	1.831
26 5227	200 Gregg St., Lodi, NJ	26-03-549	102	4	unknown		OBS	Insom6 Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7099	1.831
26 5228	200 Gregg St., Lodi, NJ	26-03-549	70	4	unknown		OBS	Insmat Corp.	BrunSN	good					EAR	Warren George,	0.388	1.1099	1.831
26 5229	200 Gregg St., Lodi, NJ	26-03-549	45	4	unknown		OBS	Insomt Corp.	BrunSN	good					EAR	Warren George,	0.388	1.7899	1.831
26 5230	200 Gregg St., Lodi, NJ	26 03-549	103	4	unknown		OBS	Insomt Corp.	BrunSN	good					CAR	Warren George,	0.388	1.7899	1.831
26 5231	200 Gregg St., Lodi, NJ	26-03-549	71	4	unknown		OBS	Insmat Corp.	BrunON	good					EAR	Warren George,	0.388	1.7893	1.831
26 5232	200 Gregg St., Lodi, NJ	26-03-549	40	4	unknown		OBS	Insmat Corp.	BrunSt	good					EAR	Warren George,	0.388	1.7039	1.831
26 5233	200 Gregg St., Lodi, NJ	26-03-549	17	2	unknown		OBS	Insmat Corp.	Gill	good					EAR	Warren George,	0.358	1.7899	1.831
26 3184	Columbia Ave., Lodi, NJ	26-03-554	510	10	none		pohlic	Lodi Dept. of Public Works	BrunSN	poor		100	24	182	0.99	Rinbrand Well	0.982	2.0496	2.186
26 3526	381 Samuel Ave., Garfield, NJ	26-03-557	115	6	unknown		NJN	Andrew Zientek		no		20	6	?	EAR	John Lauritsen	0.582	1.7099	1.882
26 3529	Samuel Ave., Garfield, NJ	26-03-556	140	6	unknown		DON	Steve Novace, Sr.		no		20	8	50	0.40	John Lauritsen	0.97	2.0496	2.263
26 3527	212 Market St., Garfield, NJ	26-03-356	90	6	unknown		NJN	James V. Faille		no		23	8	50	0.90	John Lauritsen	0.57	2.0496	2.283
26 3579	165 Main St., Lodi, NJ	26-03-397	440	6	none		Ind	Nadbiem Chemical Co.	BrunSN	poor		100	1	399	0.23	Wm. Stathoff C	0.382	1.7898	1.882
26 32	Rt. 6, Lodi, NJ	26-03-359	36	6	none		DON	Mr. M. Stholtam	BrunSN	poor		23	2	14	1.79		0.97	1.7099	2.035
26 2891	Rt. 46, Saddle Brook, NJ	26-03-559	81	6	unknown		Outlaw	Lelle Bloulopaus		no		30	3	25	1.20	Pine Brook Wel	0.97	1.7899	2.035
26 3528	Samuel Ave., Garfield, NJ	26-03-559	100	6	unknown		DON	William Bigosa		no		20	?	30	0.40	John Lauritsen	4.97	1.7899	2.035
26 825	165 Main St., Lodi, NJ	26-03-562	105	6	none		Ind	Lodi Realty Corp.	BrunSN	poor		90	1	14	3.57	Ernest S. Bich	1.358	2.3013	2.612
26 787	Route 17, Lodi, NJ	26-03-563	36	6	none		?	Tracking 3 Trans. Co. INC	BrunSN	poor		90	1	?	EAR	Ernest S. Bich	1.992	2.3013	2.773
26 1355	Essex St. & Rt. 17, Lodi, NJ	26-03-363	301	8	unknown		A/C	Lodi Shopping Center, INC	BrunSN	poor		330	8	73	4.67	Burrows Well B	1.992	2.3013	2.779
26 2171	Ardell's Shoppers World, Rt. 17, Lodi, NJ	26-03-363	300	8	unknown		Biffen	Lodi Shopping Center, INC	BrunSN	poor		250	24	54	3.37	Burrows Well B	1.992	2.3013	2.775
26 3572	113 Essex St., Maywood, NJ	26-03-563	400	10	none		COOL	Jos. S. Mascavella, INC	BrunSN	poor		199	8	175	0.91	Rinbrand Well	0.552	2.3013	2.775
26 213	Route 17, Lodi, NJ	26-03-566	200	8	unknown		Ind	Frank Bini Co.	BrunSN	poor		95	8	15	3.67	Rinbrand Well	1.992	2.0496	2.967
26 130	Lodi, NJ	26-03-566	435	10	unknown		IRN	The Interchemical Corp.	BrunSN	poor		187	12	178	1.05	Wm. Stathoff C	1.992	2.0496	2.967
26 4240	?????--Unreadable copy	26-03-366	300	12	none		Test		BrunSN	poor		237	24	30	7.90	Burrows Well B	1.535	2.0496	2.367
26 2901	199 Garibaldi Ave., Lodi, NJ	26-03-367	400	10	none		IRR	Charles F. Fields	BrunSN	poor		110	8	170	0.62	Rinbrand Well	1.164	1.7899	2.135
26 650	26 Passaic St., Rochelle Park, NJ	26-03-367	75	6	unknown		NJN	Ben Wolbeson	BrunSN	poor		90	3	0	EAR	John H. Sibson	1.184	1.7039	2.135
26 3034	60 Industrial RR., Lodi, NJ	26-03-367	400	8	none		COOL	Master Edding Corp.	BrunSN	poor		103	8	167	0.83	Rinbrand Well	1.164	1.7899	2.135
26 1010	Garfield Ave., Lodi, NJ	26-03-577	459	12	unknown			Borough of Lodi	BrunSN	ON		137		85	1.85	Botanian Well	0	1.4228	1.422
26 2067	113 Fairview Ave., Garfield, NJ	26-03-577	303	6	unknown		Ind	RMI-RRB Beverage Co.	BrunSN	poor		95	8	138	0.69	Frank J. Butl	0	1.0228	1.022
26 3155	Boys Club, Main St., Lodi, NJ	26-08-582	450	10	none		Test	Lodi Dept. of Public Works	BrunSN	poor		175	28	249	0.70	Richmond Well	0.776	1.9342	1.719
26 4079	Westervelt Pl., Lodi, NJ	26-03-384	70	6	unknown		NJN	Mr. Orasso	BrunSN	poor					EAR	John Lauritsen	0.582	1.2789	1.404
26 3183	Cora Bella Ave., Lodi, NJ	26-03-591	470	10	none		Public	Borough of Lodi	BrunSN	poor		285	40	137	2.88	Rinbrand Well	1.164	1.9342	1.925
26 7169	Rt. 46 Westbound B Savoie St., Lodi, NJ	26-03-593	23	4	4" I 20'	PVC	OBS	Mobco Oil Co.	BrunSN	good					EAR	Nowlan Corp.	1.992	1.5342	2.182
26 7170	Rt. 46 Westbound B Savoie St., Lodi, NJ	26-03-593	21.5	4	4" I 20'	PVC	OBS	Mobco Oil Co.	BrunSN	good					EAR	Nowlan Corp.	1.992	1.5342	2.182
26 7371	Rt. 46 Westbound I Savoie St., Lodi, NJ	26-03-593	21.5	4	4" I 20'	PVC	OBS	Mobco Oil Co.	BrunSN	good					EAR	Nowlan Corp.	1.392	1.5342	2.182

HUI	ADDRESS	LORDS	DEPINIFII	DIAHI"I	SCREEN	ONT'i	USE	OWNER	FOUNDTION	LOE?	USED?	YIELD	HRS	PUMPEDMin	S'CRP	ROILLCACIRRCNTD	Y	DISI
26 7172	Rt. 46 Westbound 3 Savoie St., Lodi, NJ	26-03-593	21.5	4	4" 3 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					EBR	Mandev Corp. 1.352	1.5342	2.182
26 7373	Rt. 46 westbound 3 Savoie St., Lodi, NJ	26-03-593	21.5	4	4" 3 20'	PMe	OBS	Oaoco Oil Co.	BrunSH	good					EBR	Hawlex Corp. 1.552	1.3342	2.182
26 7174	Rt. 46 Westbound t Savoie St., Lodi, NJ	26-0J-593	21.3	4	4" I 2N'	PVC	OBS	Aaoco Oil Co.	BrunSH	good					EBR	Hendex Corp. 1.592	3.3342	2.182
26 7375	Rt. 46 westbound 3 Savoie St., Lodi, NJ	26-03-593	21.5	4	4" B 20'	PMe	OBS	Mooco Oil Co.	BrunSH	good					EBR	Hanlex Corp. 1.592	1.9342	2.182
26 7376	Rt. 46 Westbound 3 Savoie St., Lodi, NJ	26-03-593	21.5	4	4" I 20'	PVC	OBS	Mooco Oil Co.	BrunSH	good					EBR	Handex Corp. 1.992	1.3342	2.182
26 1216	3 Madison Ave., Hasbrouck Hts., NJ	26-03-597	112	6	unknoan		ODN	Emnaet S. Richardson	BrunMe	poor		15	1	13	1.15	Ernnel S. Bich 1.164	1.4223	1.549
26 N556	51 Union St., Lodi, NJ	26-03-597	60	6	unknoan		ODN	Joseph Nonaline	BrunSH	poor		25	0	24	1.04	John LauriBaem 1.164	1.0228	1.949
26 5557	454 Blvd, Hasbrouck Hts., NJ	26-03-598	230	6	unknoan		Laundry	J. Torre	BrunDH	poor		65	2	76	0.86	Ernnel S. Bich 1.358	1.0228	1.700
26 J650	339 bell Ave., Hayaood, NJ	26-03-611	170	5	none		ODN	Wanry Wanger		poor		29	4	97	0.30	Onight H. Hard 1.746	3.0684	3.588
26 5847	121 E. Hunter Ove., Hayaood, NJ	26-03-615	315	8	none			Wait Prodacts Corp.	BrunSH	poor		800	0.5	110	2.73	SikMaea Well 6 1.94	2.8127	3.416
26 5039	40 Polifly Rd., Hackensack, NJ	26-03-619	305	6	none		MJN	Players Club	BrnMN	poor		30	6	144	0.21	Binhrand Well 2.188	2.5970	3.330
26 3952	435 Sumit Ave., Hackensack, NJ	26-03-621	150	6	none		ODN	Hmnard Hack	BrnrdN	poor		35	3	11	3.18	?? 2.328	3.0684	3.881
26 9J6	River St., Hackensack, NJ	26-03-623	189	6	6" 3 10'	evardur		Hackensack Water Co.	BrnSBI	good		215		81	2.63	Artesian Well 2.736	3.0684	4.097
26 882	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-638	194	8	8" B 25'	everdur		Hackensack Water Co.	BrunSH	good		670	24	64	10.47	Artesian Well 3.104	3.4684	4.364
26 914	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-638	168	20	20" 3 20'	everdurPublic		Hackensack Water Co.	BrunSH	good		1700	24	83	20.48	Artesian Well 3.104	3.0604	4.364
26 1034	Pipe Yard, Harhensack Ave., Hackensack, NJ	26-03-632	190	20	20" B 20'	everdur		Hackaneack Water Co.	BrunSH	good		1420	75	100	14.20	Artesian Well 3.104	3.4684	4.364
26 641	Euclid Ave. 3 Main St., Hackensack, NJ	26-03-638	241	6	10" 3 15'	everdurA/C		Red Lion Inn	SrardN	poor		400	8	82	4.88	Barrows Well D 3.104	2.0127	4.188
26 6748	160 Passaic St., Hackensack, NJ	26-03-635	32	4	4" I 10'	PVC	OBS	Shell Oil Co.	sand	good					EBR	Haadee Corp. 3.103	2.8127	4.188
26 4404	146 Midland Ave., E. Paterson, NJ	26-03-638	95	6	unknown		MJN	John Rossell	BrunSH	poor		35	3	40	0.88	Pine Brook Wel 3.104	2.8127	4.188
26 2626	Coaklin Pl., Hackensack, NJ	26-03-637	189	6	unknoan		A/C	First Baptist Church Assoc.		poor		200	8	0	EBR	Barrows Well D 2.91	2.9970	3.873
26 6139	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" 3 10'	PVC	OBS	Shell Oil Co.	sand	good					EBR	Handen Corp. 3.104	2.3510	4.421
26 6140	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" B 10'	PMe	OBS	Shall Oil Co.	aand	good					EBR	Hanlex Corp. 3.108	2.9570	4.021
26 6141	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" I 10'	PVC	OBS	Shell Oil Co.	sand	good					EBR	Handex Corp. 3.304	2.9570	4.021
26 5511	700 Pamander Walk, Teaneck, NJ	26-03-638	218	6	unknoan		MJN	Iaanark Boto Club	BrunSH	poor		60	2	66	0.91	E. S. Richards 3.104	2.9570	4.021
26 4762	174 Daniel St., Hackensack, NJ	26-03-645	186	6	none		COOL	Kings Centre Holding INC		no		30	2	80	0.63	E. S. Richards 1.94	2.0456	2.819
26 J655	5 Fairway Ave., Haywood, NJ	26-03-646	100	6	none		ODN	Mr. Arthar Abraaa	BrspBI	poor		20	4	10	2.00	RiMarand Well 2.188	2.0456	2.956
26 1030	301 S. Suanit Ave., Hackensack, NJ	26-03-648	150	6	unknoan			Lang Design Service	BrnrdN	poor		10	2	5	2.00	Biabrand Well 1.94	1.7899	2.639
26 1489	Wauaan St., Hackensack, NJ	26-03-6??	390	8	none		INe	Collar Saven-Up Bottling Co.	MawaBH	poor		253	5	62	4.08	Artesian Well 1.746	1.0228	2.423
26 1642	Central Ave., Rochelle Park, NJ	26-03-652	100	6	unknnnn		ODN	Frank Ioriello and Bove	MawaBH	poor		20	J	12	1.67	Biabrand Well 2.522	2.3013	3.414
26 2061	Huyler St., S. Hackensack, NJ	26-03-652	228	6	unknown			Spinnarin Yarn Co. INC	MawaBH	good		17.3	6	71.5	0.24	Artesiee Well 2.922	2.3013	3.414
26 1257	First St., Hackensack, NJ	26-03-655	200	8	unknoan		ODN	Hackanaack Board of Education	MawaDOL	poor		?	?	?	EBR	Binbrand Well 2.322	2.0496	3.247
26 1776	100 Orrbartl St., Hackensack, NJ	26-03-655	120	10	8" B 15'	neardneCOOL		Mackanaack Cahla Co.	BrunBH	poor		171	8	72	2.38	Biabrand Well 2.922	2.0496	3.247
26 2059	Huyler St., S. Hackensack, NJ	26-03-635	110	6	unknoee			Spinnaria Yarn Co. INC	BeuMe	good					EBR	Hatesian Well 2.922	2.0496	3.247
26 1990	Garaboldi Ave., Lodi, NJ	26-03-636	310	10	unknoan		INe	Charles S. Fialdb	BraaBH	poor		200	?	?	EBR	Binhrand Well 2.716	2.0496	3.400
26 2650	130 S. Wawnan St., Hackensack, NJ	26-03-676	220	6	none		COOL	Ceeb Optics Corp.	BrunSH	poor		60	4	28	2.14	Binhrand Well 2.188	1.2785	2.487
26 2629	125 Wawnan St., Hackensack, NJ	26-03-657	200	6	none		BOOL	Cast Hatire Corp.		no		60	4	28	2.14	Binbrani Well 2.323	1.7899	2.936
26 5083	92 Meyer St., Hackensack, NJ	26-03-657	225	6	unknoan		laundry	Vicbory on tha Sea Laundroeat	WawaBH	poor		52	2	82	0.61	E. S. Richards 2.328	3.3099	2.936
26 188.1	Middle loan Rd., Hackensack, NJ	26-03-659	400	8	unknoan		COOL	Bowler City	BrnrdN	poor		188	8	10	10.80	Binbrand Well 2.716	1.7899	3.285
26 4189	Sales 3 Moore St., Hackensack, NJ	26-03-665	660	6	none			Weoplee fraat Co.	BrunSH	poor		20	8		EBR	Biabrand Well 3.104	2.0496	3.717
26 28	Fox Theatre, 309 Main St., Hackensack, NJ	26-03-661	252.5	8	8" B 18.5'	EverBurA/C		Metropolitan Playhoases, INS	BrnMaN	good		150		116	1.29	B.N. Laaaan 3 2.91	2.3013	3.710
26 143	826, Hackensack, NJ	26-03-664	325	6	unknoan		carwash	Central Boto Laundry	BrnrMe	poee		90	8	58	0.88	J.W. Sikhama 2.91	2.0496	3.957
26 4693	Cedar Ln. at River, Teaneck, NJ	26-03-666	276	6	none		ODN	Teaneck Pool Mec. Facility	BrunSH	poor		65	8	85	0.73	Binhrand Well 3.298	2.0496	3.880
26 819	Morris aDN River Sts., Hackensack, NJ	26-03-667	525	9	unRaoww			FoodFair Stores INC	BrnSH	poor		55	3	200	0.28	Burrons Well 0 2.91	1.7899	3.416
26 248	River St., Hackensack, NJ	26-03-668	504	10	none		COOL	Bargen Evening Record	GraaBH	OK		140	8	157	0.89	Artesian Well 3.104	1.7899	3.983
26 4815	Daniel St., Hackensack, NJ	26-03-673	110	6	unknoan		aash	Frank Fawolini	BrunSH	poor		25	2	16	1.56	E.S. Richardoa 2.188	1.5342	2.628
26 1042	Pleasant Ave., Hackensack, NJ	26-03-674	93	6	unknoan		INe	Voter Cantelee	BrunBI	poor		20	1	12	1.67	E.S. Richardoa 1.746	1.2785	2.164
26 1851	125 Newman St., Hackensack, NJ	26-03-076	200	6	unknoan		COOL	Cast Optics Corp.	BrnMe	poor		100	4	45	2.22	Biabrand Well 2.188	1.2783	2.487
26 3856	125 Newaan St., Hackensack, NJ	26-03-676	288	6	unknoan		COOL	Cast Optics Corp.	WawaBH	poor		50	?	80	0.68	Binhrand Well 2.188	1.2783	2.487
26 385H	125 Newaan St., Hackensack, NJ	26-03-676	400	6	unknoan		COOL	Cast Optics Corp.	BrunDH	poor		60	4	245	0.24	Binhrand Well 2.184	1.2785	2.687
26 2081	Green 3 Wesly Sis., S. Hackensack, NJ	26-03-677	228	6	unknoan			Spinnerin Yarn Co.	BrunSH	good		17.5	6	71.5	0.24	Artesian Well 1.746	1.0228	2.023
26 7.H	Cities Ser. Gas Station, Boulevard, Hacken	26-03-678	88	6	unknoan		ODN	Harrison Imp. Co.		no		20	2	2	10.00	Habey Brothers 1.94	1.0228	2.193
26 2059	Green 3 Wesly Sis., S. Hackensack, NJ	26-03 677	140	6	unknown			Spinnerin Yarn Co.	BrunBH	good					EBR	Artesian Well 1.746	1.0228	2.023
26 1745	156 Hackensack Ave., Hackensack, NJ	26-0J-681	114	6	unknown		COOL	Selly Pressburger		poor		50			EBR	Sam Fama 2.328	1.5342	2.788

	IIM	ADDRFSS	LORDS	DEPIHIFTI	DIDNI'I	SCRECN	MAT'L	USE	OWNER	FOBMATION	LOG?	USED?	YIELD	HRS PUMP	DRAW	SCAP	DRILLCRCIDBEHTD		Y	DISI
	26 2045	32 Romanelli Ave., S. Hackensack, NJ	26-03-682	213	6	6" X 14'	Johnson	COOL	Superior Tape Co.	BrunSH	poor		50	8	150	0.33	Rinbrand Well	2.322	1.5342	2.933
	26 3018	30 Wesley St., S. Hackensack, NJ	26-03-687	300	12	none			Spinnarin Yann Co.	BrunSH	poor		55	8	155	0.35	Rinhrand Well	2.J20	1.0228	2.542
	26 4379	35 Enpire Blvd., S. Hackensack, NJ	26-03-687	400	8	none		Diffus	J. Rosephaon, INC	BrundH	poor		126	8	192	0.66	Binhrand Well	2.J20	1.0228	2.542
	26 4423	100 Wesley St., S. Hackensack, NJ	26-03-687	300	6	none		COOL	Straiawhan Foil Co.	BrundH	poor		100	8	25	4.00	Rinbrani Well	2.J00	1.0228	2.542
	26 1626	??? Hudson? St., Hackensack, NJ	26-03-?91	415	8	unknoan		IND	?? Bad Copy	BrunSH	poor		76	8	112	0.68	Artesian Well	-0.382	-0.767	0.962
	26 1583	396 Ierkunr Ave., Passaic, NJ	26-03-7??	180	6	unknoan		OBM	Joseph Filippene	BrunSH	poor		25	4	95	0.26	H.N. Weatby	-1.746	-1.278	2.164
	26 4169	Main St., Wallington, NJ	26-03-739	300	10	unknown			Farmland Dairy, INC	BrunSH	poor		240	8	110	2.18	Burrows Well B	-0.394	0.2957	0.J20
	26 4170	Main St., Wallington, NJ	26-03-739	400	12	unknoan			Faeutand Dairy, WE	BrunSH	poor		25	8	158	0.16	Burrows Well B	-0.194	0.2557	0.J20
	26 715	Main Ave., Passaic, NJ	26-03-715	500	8	unknoan		A/C	N.J. Bank aad Brest, Co.	BrunSH	poor		?	?	?	EAR	Diabrand Well	-1.992	0.3114	1.634
	26 185	Main 3 Passaic Ave., Passaic, NJ	26-03-716	222	6	ankncan		COOL	Bank of Peusaic 3 Brest Co.	BrunSH	poor		95	8	20	2.75	Dilbrand Well	-1.J98	0.3114	1.491
	26 4J50	Main St., Wallington, NJ	26-03-739	300	12	none		IND	Furnland Andry, INC	BrunSH	poor		204	2.3	103	1.98	Burmne Well B	-0.194	0.2957	0.J20
	26 1887	109 None St., Passaic, NJ	26-03-718	120	6	unknoan		OBM	Nr. Inteliaano	BrunSH	poor		20	6	30	0.67	John Laeritsen	-1.992	0.2997	3.972
	26 J214	Oak 3 Linden St., Passaic, NJ	26-03-719	200	8	none		INe	Eastern Can Co.	BrunSH	poor		65	3	65	1.00	Binbrand Well	-1.J98	0.2957	1.351
	26 3147	26 Jefferson St., Passaic, NJ	26-03-722	400	10	none		COOL	Bke Panbebote Co.	BrundH	poor		97	8	165	0.59	RidBraid Well	-0.97	0.7671	1.2J6
	26 2147	26 Jefferson St., Passaic, NJ	26-03-722	305	8	none		BNOL	Ihe Panlaaote Co.	BrunSH	poor		110	8	130	0.85	A.J. Connally,	-0.97	0.7671	1.235
	26 3148	26 Jefferson St., Passaic, NJ	26-03-722	500	8	none		BNOL	Ihe Panlaaote Co.	BrunSH	poor		110	8	150	0.73	Rinbrand Well	-0.97	0.7671	1.236
*	26 3087	Iester St., Wallington, NJ	26-03-727	400	12	none		Public	Boroagh of Wellington	BrunSH	poor		350	72	52	6.73	Diabrand Well	-1.164	0.2937	1.191
*	26 2953	Maple 3 Union Blvd., Wallington, NJ	26-03-728	300	8	unknoan		Test	Bbroagh of Wellington	BrunSH	poor		90	24	211	0.43	Burrows Well D	-0.97	0.2997	3.003
	26 2602	8th St., Passaic, NJ	26-03-731	500	8	unknoan		BNOL	J.L. Arescott 3 Co.	BrunSH	poor		28	8	220	0.11	Binhrand Well	-0.982	0.7671	0.932
	26 205	176 Saddle River Ave., Garfield, NJ	26-03-731	230	8	unknoan		COOL	fee Brands Frozen Foods	BrunSH	poor		?	?	60	EAR	Binhrand Well	-0.982	0.7671	0.962
*	26 3933	Dull Field, Wellington, NJ	26-03-735	400	10	unknoan		Public	Bonnagh of Wellington	BrunSH	poor		350	72	144	2.64	Barrows Well D	-0.J08	0.9114	0.641
*	26 J551	122 Prospect St., Garfield, NJ	26-03-737	95	6	unknown		OBM	Ween Beeinie	BrunSH	poor		20	8	35	0.57	John Leneitsen	-0.382	0.2957	0.635
*	26 5331	Hobart St., Garfield, NB	26-03-733	400	12	none		Pablic	Boraagh of Wellington	BraaSH	SH		302	74	78	3.87	Binhrand Well	-0.194	0.7671	0.791
	26 4782	Main St., Wallington, NJ	26-03-739	500	8	none			Farelaad Dairy	BrunSH	puor		225	8	170	1.68	Binhrand Well	-0.194	0.2337	0.320
*	26 3608	Main St. 3 Midland Ave., Wallington, NJ	26-03-739	400	8	none			Berdagh of Wellington	BrunSH	poor		217	48	188	1.13	Binhrand Well	-0.194	0.2997	0.J20
	26 1494	147 Fatslrom Ct., Passaic, NJ	26-03-749	J00	8	unknoan		INe	Fatstrem Co.	BraaSH	poor		143		149	0.97	Binhrand Well	-1.358	-0.911	1.451
	26 2013	River Rd., Carlton Mill, E. Rutherford, NJ	26-03-7??	J78	8	unknoan		INe	Boyce Qumical Co.	BrundH	poor		40	8	150	0.27	Binhrand Well	-1.746	-1.278	2.164
	26 201?	River Rd., Carlton Mill, E. Rutherford, NJ	26-03-75?	455	8	none		And	Boyce Qumical Co.	BrunMe	poor		97	8	170	0.57	Binhrand Well	-1.164	-0.511	1.271
	26 1142	28 Paulison Ave., Passaic, NJ	26-03-746	54	8	8" X 20'	R.B.	INe	Sreary Nuhine	sand	poor		200		4	50.00	North Jersey A	-1.J98	-0.255	1.351
	26 1341	2A Paulison Ave., Passaic, NJ	26-03-746	78	8	8" 3 21'	R.B.	IND	Brawry Nadiine	sand	poor		200	4	2	100.00	North Jersey A	-1.358	-0.255	1.381
	26 772J	11 37 Delaware Ave., Passaic, NJ	26-03-747	500	6	unknoan		INe	Ihea Engraving	BrunSH	poor		60			EAR	Wm. Stolbaff C	-1.746	-0.511	1.819
	26 1593	28 Paulison Aus., Passaic, NJ	26-03-751	300	8	unknoan		A/C	Braory NachinB		ao		300	5	24	12.30	North Jersey A	-1.164	0	1.164
	26 7420	Main 3 Paterson Aves., Wellington, NJ	26-03-752	15	4	4" t 10'	PWe	OBS	Mnoco Oil Co.	sand	good					EAR	ManMex Corp.	-0.97	0	0.97
	26 7421	Main 1 Paterson Oves., Wallington, NJ	26-03-752	16	4	4" B 10'	PWe	OBS	Mnoco Oil Co.	sand	good					EAR	ManMea Corp.	-0.97	0	0.97
	26 7422	Main 3 Paterson Avee., Wellington, NJ	26-03-752	15	4	4" 3 10'	PWe	OBS	Mnoee Oil Co.	sand	good					EAR	ManMea Corp.	-0.97	0	0.97
	26 7423	Main 3 Paterson Avcs., Wallington, NJ	26-03-752	15	4	4" 3 10'	PWe	OBS	Mnuco Oil Co.	sand	good					EAR	MenMea Corp.	-0.97	0	0.97
	26 7473	Main 3 Paterson Aves., Wallington, NJ	26-03-752	15	4	4" 3 10'	PWe	OBS	Amoco Oil Co.	sand	good					EAR	ManMex Corp.	-0.97	0	0.97
	26 597	148 River St., Passaic, NJ	26-03-754	200	6	unknoan		COOL	Bay's Bieer	BrunSH	poor		35		60	0.58	Rinbrand Well	-1.164	-0.255	1.191
	26 3705	Carlton Mill, E. Rutherford, NJ	26-03-757	370	8	none		BNOL	Royce Chemical Co.	BrunSH	poor		60	8	172	0.35	Binhrand Well	-1.164	-0.511	1.271
	26 3706	Carlton Mill, E. Rutherford, NJ	26-03-757	370	8	none		COOL	Bayce Qumical Co.	IrunSH	poor		60	8	115	0.32	Rinbrand Well	-1.164	-0.511	1.271
	26 4469	17 Carlton Aee., E. Rutherford, NJ	26-03-757	468	8	none		OOOL	Royce Chemical Co.	BruaSH	poor		35	8	174	0.20	Rinbrand Well	-1.164	-0.511	1.271
	26 1161	2 Paulison Aee., Passaic, NJ	26-03-7??	300	8	unknoan			Tasony Fabrics INS	BraiSH	poor		J29	8	90	3.66	Riahrani Well	-1.746	-1.278	2.164
	26 7584	Main Aee. 3 Paterson Rd., Wellington, NJ	26-03-755	15	4	4" B 10'	PWe	OBS	Amoco Oil Co.	sand	good					EAR	MenMea Corp.	-0.97	-0.295	1.003
	26 7585	Main Aee. 3 Paterson Md., Wellington, NJ	26-03-755	15	4	4" 3 10'	PVC	ARS	Mnaco Oil Co.	sand	good					EAR	MenMex Corp.	-0.97	-0.295	1.003
	26 7586	Main Ave. 3 Paterson Md., Wellington, NJ	26-03-755	15	4	4" 3 10'	PWe	OBS	Mnoco Oil Co.	sand	good					EAR	ManMea Corp.	-0.97	-0.295	1.003
	26 7587	Main Ave. 3 Paterson Rd., Wellington, NJ	26-03-755	15	4	4" B 10'	PWe	OBS	Amdco Oil Co.	sand	good					EAR	Mendua Corp.	-0.97	-0.235	1.003
	26 7713	Main Ave. 3 Paterson Rd., Wallington, NJ	26-03-755	15	4	4" B 10'	PWe	OBS	Mnoco Oil Co.	sand	good					EAR	ManMea Corp.	-0.97	-0.255	1.003
*	26 2953	Maple 3 Rose, Wallington, NJ	26-03-756	300	8	unknoan		test	Borough of Wellington	BrunSH	poor		J0	3	280	0.11	Barrows Well 0	-0.776	-0.255	0.817
	26 4341	164 Madison St., C. Rutherford, NJ	26-03-757	300	8	unknoan		INe	Iester Entin Associates	BrunSH	poor		450	8	100	4.30	Somerville Wel	-1.164	-0.511	1.271
	26 4312	164 Madison St., E. Rutherford, NJ	26-03-757	580	6	unknown			Iosler Entin Asaociates		ne		150	24	238	0.63	Somerville Wel	-1.164	-0.511	1.271
	26 4382	164 Madison St., E. Rutherford, NJ	26-03-757	470	10	none		COOL	Loslcr Enbin Associates	BrunSH	poor		430	8	112	3.84	Rinbrand Well	-1.164	-0.511	1.271
*	26 4103	Lizette St. 3 Fleishers Brook, Garfield, N	26-03-758	300	10	none			City of Garfield	BrunSH	SH		69	27	138	0.44	Burrows Well B	-0.97	-0.311	1.036
*	26 1934	Main Ave., Wallington, NJ	26-03-761	400	12	none		Public	Borough of Wellington	BrunSH	SH		278	46.5	97	2.87	Burrows Well 0	-0.382	0	0.582

IPI	ODDRESS	LOMBS	DCPIH(FT)	DIAMI"I	SCREEN	MAT'L	USE	OBOB	FORBMiiBM	LOG'	USED'	YIELD	HRS	PUMPEDRMa	S'CUP	MRILLERCOMMENTI	Y	DISI
26 5136	31 Kossuth St., Wallington, NJ	26-03-762	118	6	unknowi		BBM	Mr. Kowalowitz	BrunSH	poor		20	4	54	0.37	Pive Brook Wal	-0.000 0	0.000
26 3423	Jefferson Ave., Wallington, NI	26-03-768	400	8	none		Public	Borough of Wallington	BrunSH	poor		217	24	65	3.00	Binhrand Wall	-0.300 -0.511	0.641
26 4525	41 River St., E. Rutherford, NJ	26-03-773	20	6	7.5° I 10'	Drive		Nobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.592 -1.022	1.838
26 4532	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5° 3 10'	Set in		Wobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.992 -1.273	2.010
26 4524	41 River St., E. Rutherford, NI	26-03-778	52	6	7.5° I 10'	Drive		Nobil Oil Corp.	sanl	poor					EMM	Rinbrani Wall	-1.982 -1.278	2.010
26 4530	41 River St., E. Rutherford, NI	26-03-778	25	6	3.5° I 10'	Drive		Nobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.992 -1.278	2.010
26 4528	41 River St., E. Rutherford, NI	26-03-778	26	6	6° I 10'	Drive		Nobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.952 -1.278	2.010
26 4526	41 River St., E. Rutherford, NJ	26-03-778	20	6	7.5° I 7.3	Drive		Wobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.992 -1.278	2.010
26 4529	41 River St., E. Rutherford, NI	26-03-778	25	6	7.5° I 10'	Drive		Wobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.992 -1.278	2.010
26 4527	41 River St., E. Rutherford, NJ	26-03-778	20	6	6° I 7.5'	Drive		Nobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.992 -1.278	2.010
26 4531	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5° I 10'	Drive		Nobil Oil Corp.	sand	poor					EMM	Rinbrand Wall	-1.952 -1.278	2.010
26 6606	Erie I Jackson, Rutherford, NI	26-03-783	24	4	4° I 15'	PMm		Mmoco Oil Co.	sand	good					EMM	MmMmm Corp.	-0.773 -0.767	1.091
26 6607	Erie I Jackson, Rutherford, NI	26-03-783	22	4	4° I 15'	PMm		Mmoco Oil Co.	sand	good					EMM	Mmmdm Corp.	-0.776 -0.767	1.091
26 6608	Erie I Jackson, Rutherlord, NJ	26-03-783	18	4	4° I 12'	PMm		Mmoco Oil Co.	sand	good					EMM	Mmmdm Corp.	-0.735 -0.767	1.091
26 6609	Crip I Jackson, Rutherford, NJ	26-03-783	18	4	4° I 12'	PMm		Mmoco Oil Co.	sand	good					EMM	MmMmm Corp.	-0.736 -0.767	1.091
26 5289	455 Paterson Ave., Wallington, NI	26-03-792	200	6	unknoan		Car MathRing	Car Nath	BrunSH	poor		55	2	77	0.71	E.S. RicharMmo	-0.300 -0.767	0.899
26 5	411 Broad St., Carlsladt, NI	26-03-793	526	8	unknoan		IMM	Canms Chmmical Works	BrunSH	poor		185	8	156	1.19	PartMhursl Wall	-0.194 -0.767	0.791
26 1413	Paterson Ave., Carlstadt, NI	26-03-796	240	8	anhnoan		A/C	Brand Mlive Food Stores		no		150	8	40	3.73	Barrows Wall B	-0.194 -1.022	1.041
26 3021	Broad I Union Sts., Carlttadl, NI	26-03-8??	200	6	anknoan		IBM	Racord Electrical Plating Co.	BrunSH	poor		90	8	70	1.29	Bihhraad Wall	0 -1.278	1.278
26 4391	192 Paterson Plank Rd., Carlstadt, NJ	26-03-8??	171	6	none		OBM	Mmoplve Bank of S. Bergen Co.	BrunSH	poor		25	4		EMM	BinArani Wall	0 -1.278	1.278
26 7635	1 Passaic St., Nasbrouck Mmights, NI	26-03-815	24.8	4	4° I 15'	PMm	OBS	Curti6s Mright Corp.	sand	good		3	0.3	23	0.13	MP Drilling, I	0.194 0.3114	0.946
26 7636	1 Passaic St., Nasbroack Mmights, NI	26-03-815	27	4	4° I 13'	PMm	OBS	CmRi66 Mright Corp.	sand	good		2	0.3	10	0.20	MP Drilling, I	0.194 0.3114	0.946
26 7637	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	25.3	4	4° I 15'	PMm	OBS	Curlisa Mrigit Corp.	sand	good		1	0.3	5.5	0.18	MP Drilling, I	0.194 0.3114	0.946
26 7638	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	27	4	4° I 15'	PMm	OBS	Curtiss Mright Corp.	sand	good		4	1	77.9	0.00	MP Drilling, I	0.194 0.3114	0.946
26 7639	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	25	4	4° I 15'	PMm	OBS	Curtiss Mright Corp.	sand	good		1.5	0.3	8.5	0.18	MP Drilling, I	0.194 0.5114	0.546
26 7640	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	24.9	4	4° I 15'	PMm	OBS	Curti6s Mright Corp.	sand	good				7.4	EMM	Mm Drilling, I	0.194 0.5114	0.516
26 7641	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	24.8	4	4° I 15°	PMm	OBS	Cartisa Mright Corp.	sand	good		2	1	5.2	0.08	MP Drilling, I	0.194 0.5114	0.546
26 7642	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	24	4	4° I 15'	PMm	OBS	Curtiss Mmight Corp.	sand	g0el		2		7.6	0.26	MP Drilling, I	0.194 0.5114	0.316
26 7643	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	82	4	3.75° I 21	Bmt.	OBS	Cartive Mright Corp.	BrunSH	good		1	1		EMM	MP Drilling, I	0.194 0.5114	0.346
26 7644	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	81	4	3.75° I 20	Rhat.	OBS	Cartiss Mright Corp.	BrunSH	good		1	1	43.5	0.02	MP Drilling, I	0.194 0.5114	0.346
26 7645	1 Passaic St., Nasbrouck Mmights, NI	26-03-815	81	4	4.75° I 20	Rhml.	OBS	Curtiss Mright Corp.	BrunSH	poor		3	1	52.4	0.06	MP Drilling, I	0.194 0.5114	0.346
26 7646	1 Passaic SI., Nasbrouck Mmights, NI	26-03-815	61.5	4	3.75° I 20	Rhml.	OBS	Curtiss Mmight Corp.	BrunSH	good		10	1	22.6	0.44	MP Drilling, I	0.194 0.5114	0.346
26 7647	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	81	4	none		OBS	Curti6s Mright Corp.	BrunSH	good		3	1	41.1	0.07	MP Drilling, I	0.194 0.5114	0.346
26 7648	1 Passaic St., Nasbrouck Mmights, NJ	26-03-815	82	4	3.75° I 20	Rhml.	OBS	Curtiss Mright Corp.	BrunSH	good			1	29.4	EMM	MP Drilltag, I	0.194 0.5114	0.346
	Nood Ridge, NJ	26-03-816	340	10	unknown		IMM	Mright Aveonnetical Egaip. Co.		no		405		93	4.35	Artveian Wall	0.300 0.5114	0.641
	Nood Ridge, NJ	26-03-816	337	10	unknoim		IMm	Mkight Mmronautical Egaip. Co.		so		264	8	135	1.96	Rolveium Wall	0.300 0.5114	0.641
	Wood Ridge, IM	26-03-816	312	10	unknown		IMM	Mright Amronwtical Egaip. Co.		so		350		98	3.37	Rolveive Wall	0.300 0.5114	0.641
26 3914	232 Springfield Ave, Nasbrouck Mgts., NJ	26-03-816	160	6	unknown		NMM	Mr. Mmalo	BrunSH	poor		50	4	100	0.30	John Lauritsan	0.300 0.5114	4.641
26 4250	Main St., Wallington, NI	26-03-817	300	12	none		IMm	Farmland Dairy	BrunSH	poor		284	8.3	103	2.76	Burrows Wall B	0 0.2957	0.295
26 811	520 Main Ave., Wallington, NJ	26-03-817	397	8	unknown		Archg.	Labo Mmdacing Corp.	BrunSH	poor		90	4	150	0.60	Burrows Wall B	0 0.2957	0.255
26 812	520 Main Ave., Wallington, NJ	26-03-817	265	8	unknown		IMm	Tabo Mmdveing Corp.	BrunSH	poor		770	4	150	0.73	Burrows Wall B	0 0.2957	0.255
26 812A	520 Main Ove., Wallington, NJ	26-03-817	392	8	unknown		MMchg.	Tabo Mmbuting Corp.	BrunSH	poor		20	4	150	0.13	Burrows Wall B	0 0.2957	0.255
26 420	Main St., Waltinglon, NJ	26-0J-817	650	12	none		Dairy	Farmland Dairy	BrunSH	poor		157		279	0.96	Binhrand Wall	0 0.2557	0.295
26 4169	Main St., Wattinglon, NI	26-03-817	650	8	none		Dairy	Farmland Bairy	BrunSH	poor		39		240	0.25	Binhrand Wall	0 0.2957	0.255
26 5848	138 Woodside Ave., Nasbroack Mgts., NJ	26-03-822	162	6	unknoan		DOM	Robart Daab		no		35	2	54	0.99	E.B. Richardso	0.776 0.7671	1.091
26 4953	Ottoma Ave., Nasbrouck Mgts, NI	26-03-822	98	6	unknoan		DOM	Gary Van Mook		no		28	2	14	2.00	E.S. Richardme	0.776 0.7671	1.091
26 5023	22 Ottoma Ave., Nasbrouck Mgts., NJ	26-03-823	112	6	none		NMM	Mathemy Jenkive		ne		35	2	51	0.69	E.S. Richardsb	0.97 0.7671	1.236
26 5013	117 Paterson Ave., Nasbrouck Mgts., NJ	26-03-823	118	6	none		OBM	Bobert P. Mitchell	BrunSH	pmer		30	2	16	1.00	E.S. Richardso	0.97 0.7671	1.236
26 592	Wright Village, Jerhume Ave., Iodi, NJ	26-03-824	309	8	unknoan		A/C	Food Fair Stores, IBS	BrunSH	poor		150	24	160	0.94	Burrove Watt D	0.582 0.5114	0.774
26 5307	165 Bell Ave., Nasbrouck Mgts., NJ	26-03-826	150	6	unknoan		NMM	Stephen Kriso		no		30	2	24	1.25	E.S. Richardao	0.97 0.5114	L 096
26 6123	Lot 4, Block 27, Nasbrouck Mgts., NJ	26-03-826	15	3	3° I 15'	PVC	OBS	Exxon	sand	good					EMM	Diaresd Drilli	0.97 0.5114	1.096
26 6124	Lot 4, Block 27, Nasbrouck Mgts., NJ	26-03-826	14	3	3° I 14'	PVC	OBS	Exxon	sand	good					EMM	Diamond Drilli	0.97 0.3114	1.096
26 6125	Lot 4, Block 27, Nasbrouck Mgts., NJ	26-03-826	16	3	3° I 16'	PVC	OBS	Exxon	sand	good					EMM	Diamond Drilli	0.97 0.5114	1.096

REFERENCE NO. 21

THE LATEST TRIASSIC AND EARLY JURASSIC FORMATIONS OF THE NEWARK BASIN (EASTERN NORTH AMERICA, NEWARK SUPERGROUP): STRATIGRAPHY, STRUCTURE, AND CORRELATION

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ABSTRACT. *Newark Supergroup deposits of the Newark Basin (New York, New Jersey, and Pennsylvania) are here divided into nine formations called (from the bottom up): Stockton Formation (maximum 1800 m); Lockatong Formation (maximum 1150 m); Passaic Formation (maximum 6000 m); Orange Mountain Basalt (maximum 200 m); Feltville Formation (maximum 600 m); Preakness Basalt (maximum +300 m); Towaco Formation (maximum 340 m); Hook Mountain Basalt (maximum 110 m); and Boonton Formation (maximum +500 m). The latter seven formations are new and result from subdividing the Brunswick Formation and Watchung Basalt of Kümmel and Darton. Each formation is characterized by its own suite of lithologies, the differences being especially obvious in the number, thickness, and nature of their gray and black sedimentary cycles (or lack thereof).*

Newark Basin structure still escapes comprehensive understanding, although it is clear that faults (predominantly normal) and onlaps bound both the eastern and western edges of the basin. The cumulative thickness of formations and the apparent movement of the faults is greater on the western than the eastern side, however.

Fossils are abundant in the sedimentary formations of the Newark Basin and provide a means of correlating the sequence with other early Mesozoic areas. The Stockton, Lockatong, and most of the Passaic Formation are Late Triassic (?Middle and Late Carnian — Rhaetic) while the uppermost Passaic Formation (at least locally) and younger beds appear to be Early Jurassic (Hettangian and Sinemurian) in age. The distribution of kinds of fossils is intimately related to sequences of lithologies in sedimentary cycles.

Manuscript received 2 Jan 1980.
Manuscript accepted 14 Jan 1980
Revised manuscript received 16 Sep 1980.

INTRODUCTION

Despite well over a century of interest in the early Mesozoic Newark Supergroup of eastern North America, many fundamental aspects of its historical and structural geology remain unexplored. In part, this is due to the complexity of stratigraphic and structural relations in the individual basins, coupled with the rarity of continuous exposures. As a result, much of our accepted understanding of the Newark Supergroup has been based on incomplete observations and opinion. The purpose of this paper is to provide a more thorough observational foundation against which past hypotheses may be assessed and on which future work may be based. Emphasis is placed on the younger beds of the Newark Basin, for they have never been examined in detail, and a new stratigraphic framework is proposed. These younger Newark Basin beds provide us with a key to understanding the entire basin column, which in turn is crucial to the context in which early Mesozoic organic evolution, continental sedimentation, and tectonic development are to be studied.

REGIONAL SETTING

Triassic and Jurassic Newark Supergroup rocks (Figure 1) (Olsen, 1978; Van Houten, 1977) occupy numerous elongate basins in eastern North America and consist of predominantly detrital fill locally more than 10,000 m thick. In most

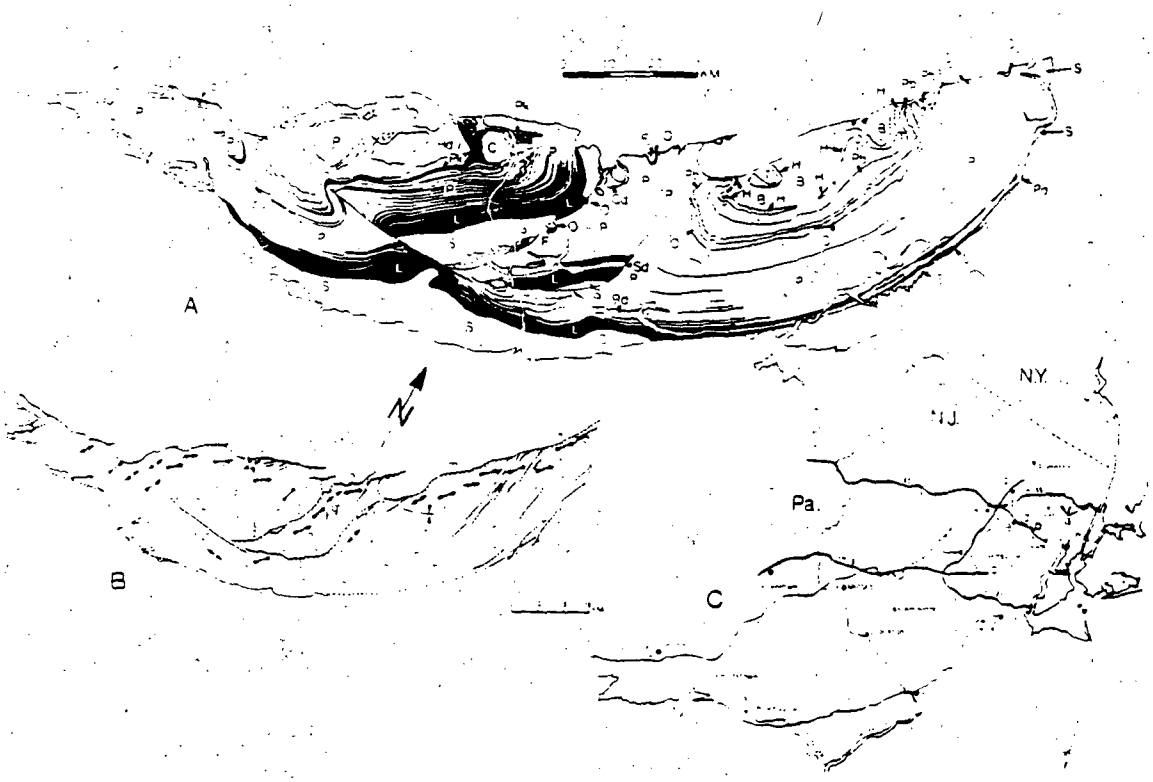

FIG. 2. The Newark Basin. A. geologic map showing distribution of formations, conglomerate facies (irregular stipple), and major clusters of detrital cycles in Passaic Formation (black lines). Abbreviations of formations and intrusive bodies as follows: B. Boonton Formation; C. Coffman Hill Diabase; Cd. Cushetunk Mountain Diabase; F. Feltville Formation; H. Hook Mountain Basalt; Hd. Haycock Mountain Diabase; Jb. Jacksonwald Basalt; L. Lockatong Formation; O. Orange Mountain Basalt; P. Passaic Formation; Pb. Preakness Basalt; Pd. Palisade Diabase; Pk. Perkasie Member of Passaic Formation; Rd. Rocky Hill Diabase; S. Stockton Formation; Sd. Sourland Mountain Diabase; T. Towaco Formation.

B. Structural diagram of Newark Basin (note — parts of basin margin not mapped as faults should be regarded as onlaps, faults with teeth on downthrown side): a. Jacksonwald Syncline; b. Chalfont Fault; c. Hopewell Fault; d. Flemington Fault; e. Sand Brook Syncline; f. Flemington Syncline; g. Cushetunk Mountain Anticline; h. New Germantown Syncline; i. Somerville Anticline; j. New Vernon Anticline; K. Ladentown Syncline; l. Watchung Syncline; m. Ramapo Fault.

C. Geographic map of Newark Basin showing locations of type sections of formations proposed in this paper: a. type section of Passaic Formation; b. type section of Orange Mountain Basalt; c. type section of Feltville Formation; d. type section of Preakness Basalt; e. type section of Towaco Formation in Roseland, New Jersey; f. type section of Hook Mountain Basalt in Pine Brook, New Jersey; g. type section of Boonton Formation in Boonton, New Jersey; h. Lincoln Tunnel, Weehawken, New Jersey.

Data for A, B, and C from original observation and Kümmel, 1897, 1898; Lewis and Kümmel, 1910-1912; Darton, 1890, 1902; Darton *et al.*, 1908; Glaeser, 1963; Sanders, 1962; Van Houten, 1969; McLaughlin, 1941, 1943, 1944, 1945, 1946a, 1946b; Bascom *et al.*, 1909a, 1909b; Bailey *et al.*, 1914; Willard *et al.*, 1959; Manspeizer, pers. comm.

mation consists of a heterogenous mix of major units of differing and distinctive lithology, each as distinct and perhaps originally as widespread as the Stockton or Lockatong; further, each "Watchung Basalt" and the interbedded and overlying sedimentary beds are lithologically distinct from the lower Brunswick. In addition, Cornet, McDonald, and Traverse (1973), Cornet and Traverse (1975), Cornet (1977), and Olsen and Galton (1977) have shown that much of the

Guide. In this way, nominal status is given to beds critical to the overall pattern of Newark Basin historical geology.

DESCRIPTIVE STRATIGRAPHY OF THE POST-LOCKATONG FORMATIONS

The Passaic Formation

The name Passaic Formation is proposed for the predominantly red siltstone, sandstone, and conglomerate which conformably overlie the Lockatong Formation and which underlie the Orange Mountain and Jacksonwald basalts. It is equivalent to the pre-basalt part of Kümmel's Brunswick Formation (Table 1). The type section (Figure 4) consists of intermittent exposures of red siltstone and sandstone along interstate Route 80 near Passaic, New Jersey (Figure 2 and Appendix).

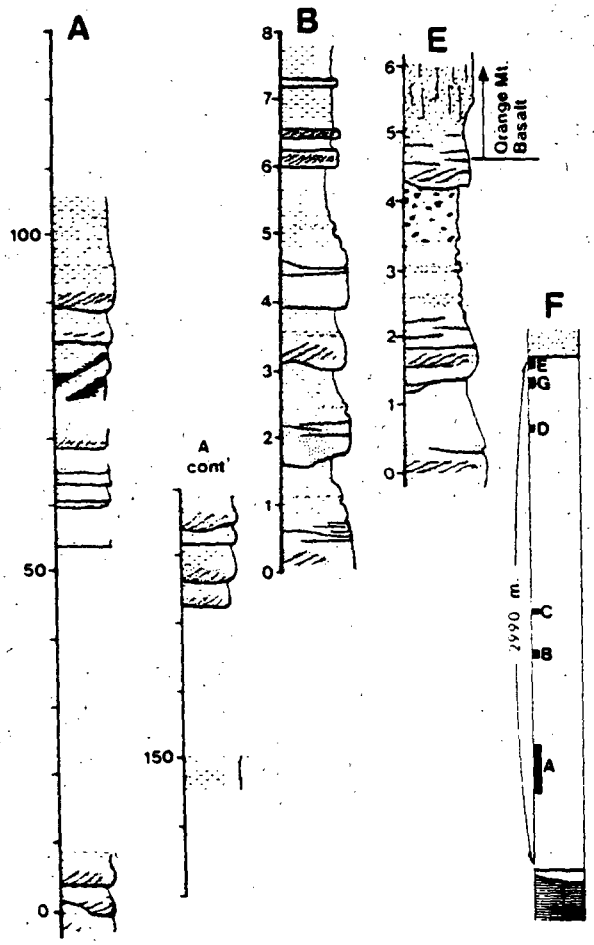

FIG. 4. A - E. type section of Passaic Formation (see Appendix for description); F. diagram showing positions of sections A - E in Passaic Formation.

As is the case for all Newark formations, the estimation of stratigraphic thicknesses in the Passaic Formation is hampered by the presence of a series of faults with variable amounts of dip-slip displacement cutting much of the Newark Basin. The exact distribution of these faults is poorly known and thus many trigonometrically computed thicknesses in the Passaic Formation are probably overestimations. This is especially true in the northern and southern portions of the Newark Basin. The field relationship of mapped gray siltstones in the central Newark Basin, however, shows that in broad areas these smaller faults are missing and the calculated stratigraphic thickness is probably correct (McLaughlin, 1943). Instead of a large number of small faults, the central Newark Basin is cut by several very large faults (Figure 2).

In spite of these mensuration problems, it is clear that the Passaic Formation is the thickest, coherent lithologic unit in the Newark Basin, reaching a maximum calculated stratigraphic thickness of over 6,000 m (Jacksonwald Syncline). The formation outcrops throughout the Newark Basin although its upper beds are preserved only in the Watchung Syncline (Figure 2), in the smaller synclines preserved along the eastern side of the Flemington Fault, and in the Jacksonwald Syncline. In all other areas, the upper Passaic Formation has been removed by post-Newark erosion.

While in most areas the Passaic Formation rests conformably on Lockatong Formation, in several areas on the western margin of the Newark Basin, the Passaic directly onlaps the step-faulted basement without any intervening Stockton or Lockatong. In these areas (see Figure 5), the thickness of upper Passaic Formation present below the Orange Mountain Basalt is comparatively slight. One area where these relationships can be clearly seen is near Cushetunk Mountain (Figure 5) in central New Jersey. In the New Germantown Syncline, the stratigraphic distance from the Palaeozoic basement to the Orange Mountain Basalt is about 800 m. Less than 30 km to the southwest, over 1,000 m of Passaic is

present above 2,000 m of Stockton plus Lockatong, and in the latter area the top of the Passaic Formation is not preserved. In less well exposed areas, or where the strike parallels the basin margin, such oniap and step-faulted relationships cannot be observed without geophysical techniques or analysis of well records (McLaughlin, 1943, 1944; Dunleavy, 1975).

Facies patterns of the Passaic Formation are a modified continuation of those of the Lockatong, and different from all younger Newark Basin deposits. Laterally persistent and periodically spaced clusters of gray and black siltstone cycles characterize both formations, the Lockatong being composed almost entirely of such repetitive units (see Figure 3). According to Van Houten (1962, 1964, 1965, 1969), the great majority of the Lockatong cycles fall into two broad classes which he terms chemical and detrital (Figure 3). The most laterally continuous are detrital and these generally occur in bundles. Each bundle is separated from the next (in vertical succession) by a series of chemical cycles; the distance from the center of one detrital cycle bundle to the next being about 110-125 m in the central Newark Basin (Van Houten, 1969). This figure decreases to the basin margins. Chemical cycles are characterized by the presence of abundant analcime and are for the most part restricted to the center of the basin, giving way in all directions to red elastics. The lateral edges of the Lockatong thus consist of bundles of detrital cycles separated by red siltstone and sandstone. It follows that the boundary between the Passaic Formation and the Lockatong can be operationally defined (both horizontally and vertically) as where the thicknesses of beds of red elastics dominate gray and black. It further follows that where gray and black detrital cycle clusters do not occur, as in Rockland County, New York, the Passaic Formation rests directly on the Stockton.

Bundles of detrital cycles occur through most of the thickness of the Passaic Formation, periodically spaced, as in the Lockatong. The great majority of these cyclic non-red units, however, are not as laterally continuous as those of at least the lower Lockatong, and generally the number of cycles involved in these clusters decrease in frequency through the Passaic Formation. For the lower and middle Passaic, McLaughlin (1933, 1943, 1945, 1946, 1948) has succeeded in mapping out the distribution of these non-red units over most of the central Newark Basin. A detailed stratigraphic framework has developed around these beds, each detrital cycle bundle being designated by a letter (A, B, C, ...). The extension of McLaughlin's units outside of the areas he mapped is a principle aim of ongoing research (Figure 2).

The highest of McLaughlin's mapped units (134 m above members L and M) join with other cycles to the southwest to form a large body of gray and black siltstone called the Perkasie Member (McLaughlin, 1946). Unlike the Lockatong Formation, however, the thickest section of the Perkasie Member is in the southwestern portion of the Newark Basin rather than near its geographic center. Due to repetition by major faults (Figure 2) and changes in strike along folds, the broader aspects of the three-dimensional relationships of most Passaic dark clastic units can be observed. Looking over the bulk of the Passaic Formation (Figure 2), there is no evidence that the rest of the detrital cycle clusters of the Passaic (i.e., other than lateral equivalents of the Lockatong Formation or Perkasie Member) represent the remnants of a large, now eroded, gray and black siltstone body as Glaeser (1963) has suggested.

There are major masses of red-matrix conglomerate at both the northern and southern ends of the Newark Basin (Figure 2). These grade nearly imperceptively into the red elastics of the Passaic Formation and are here considered facies of it. Other much smaller areas of conglomerate occur along the western border of the Newark Basin; these are especially prevalent where Passaic

Diabase: Jd, Jurassic diabase dikes: Jo, Jurassic Orange Mountain Basalt: Jpr, Jurassic Preakness Mountain Basalt: Ju, Jurassic basalt, undefined: E, geographic position and quadrangle maps of Cushetunk Mountain area (a, High Bridge Quadrangle; b, Califon Quadrangle; c, Gladstone Quadrangle; d, Pittstown Quadrangle; e, Flemington Quadrangle; f, Raritan Quadrangle).

Early Jurassic in age, and like other Jurassic beds in the Newark Basin, the main area in which the basalt is preserved is the Watchung Syncline (Figure 2). Smaller synclines preserve portions of the Orange Mountain in several other regions of the Newark Basin (Figure 2). In the New Germantown and Sand Brook synclines, the overlying Feltville Formation is preserved above the basalt; correlation by palynomorph assemblages and fossil fish (Comet, 1977; Olsen, McCune, and Thomson, in press) demonstrate the identity of the Feltville Formation and by implication the underlying basalt. Between these two synclines is a newly identified very small outlier of basalt, preserved in what can be called the Flemington Syncline (Figure 5). Unfortunately, the remnant is so small that no sedimentary rocks are preserved above it. The simplest hypothesis identifies this remnant as an additional portion of the Orange Mountain Basalt. What has been termed the Jacksonwald Basalt (Wherry, 1910) outcrops in a syncline near the southern terminus of the Newark Basin (Figure 2) over 100 km southwest of the Watchung Syncline. Palynomorph assemblages recovered from the overlying sediments indicate correlation with the Feltville Formation (Comet, 1977). There is no evidence to contradict the hypothesis that this outlier, too, represents the Orange Mountain Basalt. A possible remnant of Orange Mountain Basalt is present in the Ladentown Syncline in Rockland County, New York (Figure 2). Between this and the northern end of the Watchung Syncline is the Union Hill exposure of basalt. N. M. Ratcliff (pers. Comm.) has recently found exposures which show this unit to be extrusive, and, as such, it is most likely Orange Mountain Basalt. According to Geiger, Puffer, and Lechler (1980) and Geiger (personal communication), the Oldwick, Sand Brook, and Jacksonwald outliers are chemically identical to the Orange Mountain Basalt; while the Ladentown Outlier is chemically most similar to the Preakness Basalt (Second Watchung of Darton, 1890). Taken together, these remnants of Orange Mountain Basalt suggest that originally the basalt covered the almost entire Newark Basin, a minimum of over 7,000 km². This is comparable to the extent of the Holyoke Basalt over the Hartford Basin and the North Mountain Basalt over the Fundy Basin.

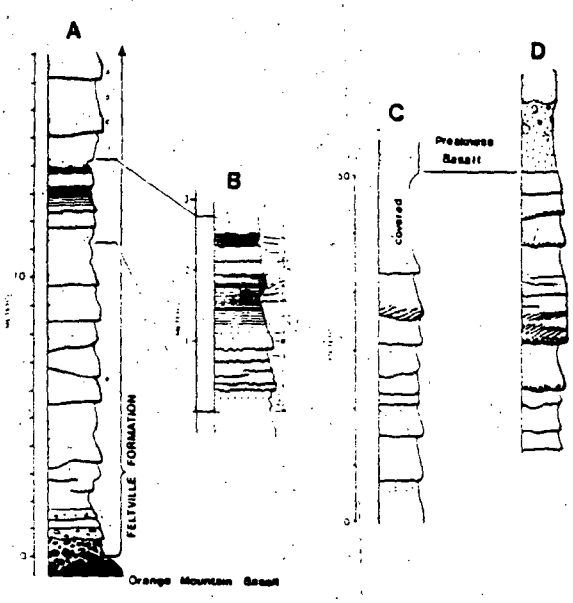

FIG. 7. Type section of the Feltville Formation and sections of the upper Feltville Formation.

A vand B, type section of the Feltville Formation; section exposed along ravine for Blue Brook about 1 km south of Lake Surprise in the Watchung Reservation. For key to individual units, see Appendix.

C and D, sections in the upper Feltville Formation. Dark stipple represents buff sandstone and feldspathic sandstone while ihe light stipple represents red sandstone and coarse siltstone. The light areas represent red siltstone and the black oblong dots, carbonate concretions. Section C is exposed along a tributary of East Branch, near Dock Watch Hollow, north of Martinsville, New Jersey. Section B is exposed in a cut in back of the Pleasant Valley Nursing Home in West Orange, New Jersey. C and D are 20 km from one another.

The Orange Mountain Basalt appears thickest in the Watchung Syncline, varying between 100 and 200 m. At least 130 and 120 m are present in the New Germantown and Sand Brook synclines, respectively, and greater than 100 m are present in the Jacksonwald Syncline. Existing exposures do not permit estimate of the thickness of the Flemington, or Union Hill.

Individual flows of the Orange Mountain Basalt (like other Newark Basin extrusives) are identified by recognition of the following criteria: glassy, dense, or discolored contacts at a flow boundary; thin volcanoclastic beds between flows; or a sequence of massive, columnar, and vesicular basalt identifying a single cooling unit as in a

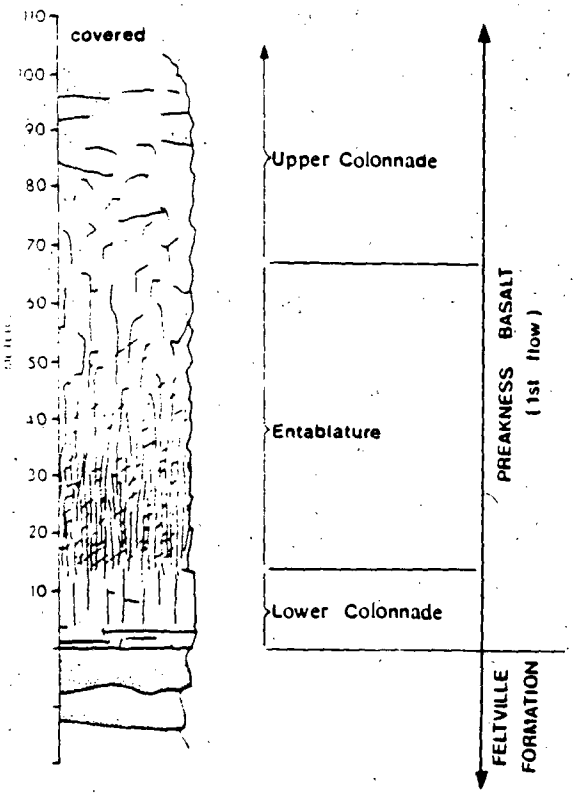

FIG. 8. Type section of the Preakness Basalt. Section located along Interstate Route 280, 2.25 km west of type section of the Orange Mountain Basalt. Symbols for Feltville Formation, as for Passaic Formation (Figure 6).

maximum figure is questionable since in the latter area the strike of the formation nearly parallels the trend of small faults cutting this region. That a figure of more than 300 m may be near the truth is suggested by the persistence of a large outcrop width around the southern curve of the Watchung Syncline. In contrast to the underlying units, the Preakness Basalt is not definitely preserved outside the Watchung Syncline. There are small masses of basalt at the northwestern edge of the New Germantown and Sand Brook synclines but the exposures are not good enough to tell whether these are beds lying stratigraphically above the Feltville or merely an upthrown fault slice of the Orange Mountain Basalt. However, on the basis of trace element geochemistry Geiger, Puffer, and Lechler (1980) have concluded that these small masses are Preakness Basalt. Likewise, according to the latter authors, the Ladentown flows are also Preakness Basalt.

At its base, the Preakness Basalt is much more variable than the Orange Mountain Basalt. Locally, there are thick (20 m, see Figure 9) sequences of multiple flows of highly vesicular basalt flows, possibly making up basalt forset beds (Manspiezer, pers. comm.) with intercaicated volcanoclastic beds; in other areas there are thick beds of angular, vesicular basalt breccia (aa). The latter tends to be very weathered and porous at the surface. In still other areas, the thick main basalt flow lies directly on unaltered (megasopically) sediments of the Feltville Formation.

At least two or perhaps three thick individual flows make up the bulk of the Preakness Basalt. The lowest flow is the thickest (about 100 m) and is exposed throughout the Watchung Syncline, usually showing a complete (although modified) Tomkeiff structural sequence. In most outcrops, the entabulature is coarse-grained and densely jointed, forming high, irregularly angular columns 0.1 m to 1.0 m in width, in marked contrast to those of the Orange Mountain Basalt. The first flow is separated from the second by a thin red siltstone, the distribution of which was mapped by Kiimmel (1897) and Lewis (1907b)

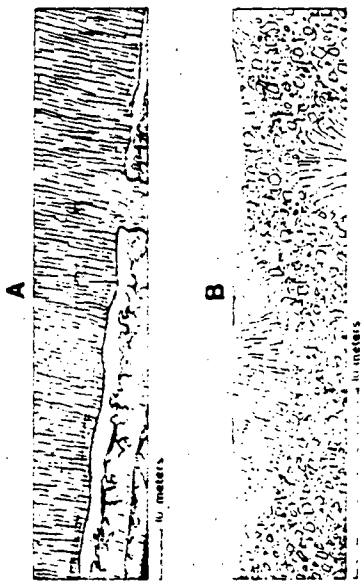

FIG. 9. Thin flow units at the base of the Preakness Basalt; A, thin pahoehoe flows and possible feeder dike along Interstate Route 78 in Pluckemin, New Jersey; B, possible aa flows exposed along the Passaic River at Little Falls, New Jersey (adapted from Darton, 1890).

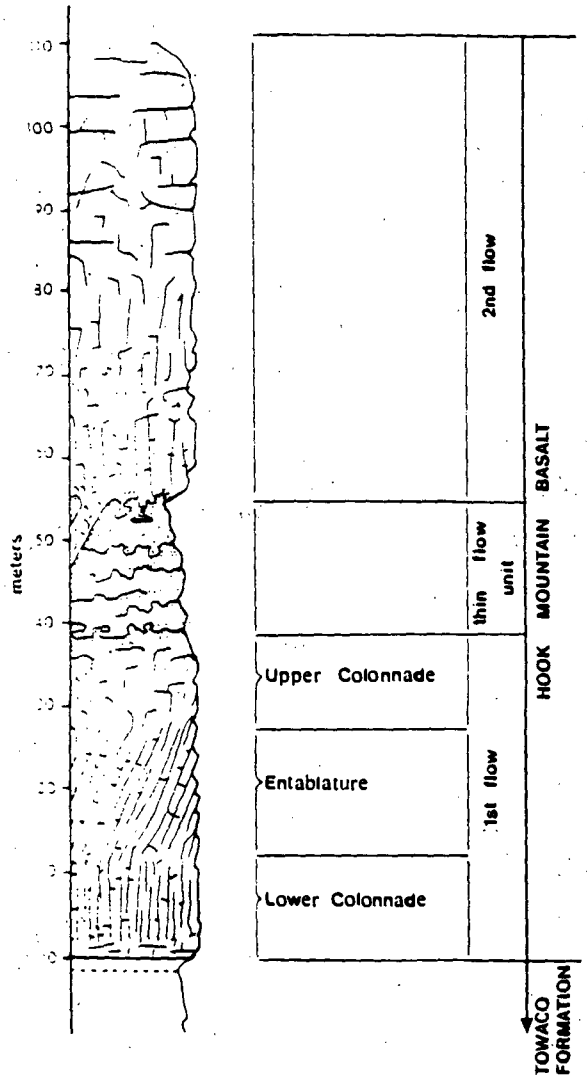

FIG. 11. Type section of the Hpok Mountain Basalt. Note two major flow units and interbedded thin pahoehoe flows and possible feeder dike. Section exposed along Interstate Route 80 near Pine Brook, New Jersey.

The uppermost cycle is well exposed in the Roseland Quarry. Formerly another cycle was exposed in an adjacent area (Olsen, 1975), and yet another was located in a nearby well boring. In total, six successive cycles have been identified in the upper half of the Towaco Formation, and most of these have been traced throughout the Watchung Syncline.

There is a thin brown volcanoclastic unit at the top of the Towaco Formation. It is about 1 m thick and occurs at most exposures of the upper Towaco Formation from at least Pompton to Roseland. It is especially well exposed at the Towaco type exposure. Lewis (1908) described unweathered samples of this unit and noted that it consists of altered volcanic glass with inclusions of feldspar and augite and pseudomorphs after olivine in a matrix of brown radial natrolite. Small blocks of vesicular basalt are occasionally present and at Pompton very thin vesicular "flow breccias" are included in the unit (Faust, 1978).

The Hook Mountain Basalt

The uppermost extrusive volcanic unit in the Watchung Syncline is here formally designated the Hook Mountain Basalt (Baird and Take,

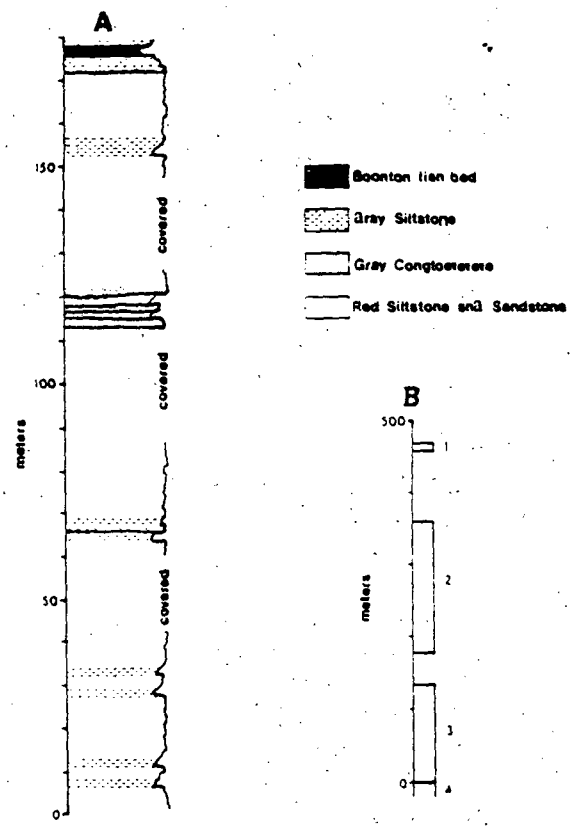

FIG. 12. Type section of the Boonton Formation: A, section exposed along Rockaway River in Boonton, New Jersey; B, composite section of entire preserved Boonton Formation — 1, red matrix conglomerate exposed at Chestnut Hill, Morristown, New Jersey, 2 beds making up the type section, 3, gray, black, brown and red siltstones exposed near Bernardsville, New Jersey, 4, Hook Mountain Basalt.

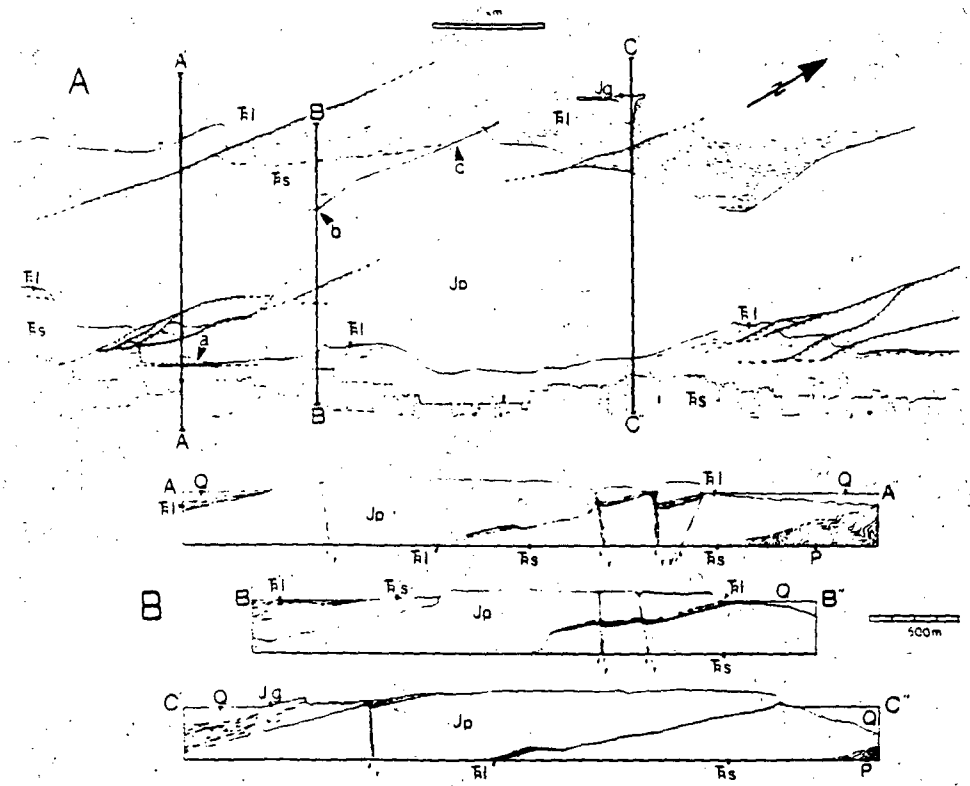

FIG. 13. Lincoln Tunnel area, Weehawken and Central Park Quadrangles. A, map of major lithologic units and structural features; B, sections through the Palisades Ridge. No vertical exaggeration. Abbreviations of lithologic units as follows: l, Triassic Lockatong Formation; s, Triassic Stockton Formation; Jp, Jurassic Palisade Sill; Jg, Jurassic Crantoii Sill; P, metamorphic basement rocks of the New York City Group. a, b, and c refer to areas discussed in text. Faults with teeth on down dropped side.

blocks: and 7, beds on the east side of the same blocks tend not to be folded. The relationships of Newark Basin sediments to basin margins (i.e., faults or onlaps), the thicknesses of Newark strata, the number, distribution, and direction of smaller faults, the sense of motion of the major and minor faults (normal or oblique or strike-slip), and the physical relationships of joints to faults and folds have never been satisfactorily resolved, although research toward this goal is underway (Ratchff, 1979). Obviously, all questions involving these features cannot be discussed in this paper, both because of lack of space and a lack of data. Enough observations have been made, however, to show some aspects of local structural style (Figures 5, 13, 14). There is no doubt, however, that Newark Basin structure is complex, and that further observation will change the results extracted even from the limited areas discussed here.

The Lincoln Tunnel area (Figure 13) of the Palisades Ridge forms part of the eastern edge of the Newark Basin and is cut by a series of putatively normal faults striking N 5-10° E, dipping vertically to 40° east, and with displacements of from 1 to 100 m (Fluur, 1941; Van Houten, 1969). Crush zones vary from a few centimeters to several meters (Fluur, 1941). There is also at least one major northwest-dipping normal fault on the east face of the Palisades (Kings Bluff) similar to those inferred to exist in the southern part of the Newark Basin by Sumner (1979) on the basis of geophysical data. This fault (a in Figure 14) was encountered during the construc-

will serve as a reference standard for comparison with other early Mesozoic areas.

The basic biostratigraphic framework for Newark Basin deposits has been outlined by Olsen and Galton (1977) and Cornet (1977) and the details of this correlation will be given elsewhere (Olsen, McCune, and Thomson, in press; Olsen, Baird, and Salvia, MS; and Colbert and Olsen, MS). At this time it is necessary to present the distribution of taxa within the Passaic through Boonton formations and tie these in with the regional correlation (Figure 15).

For regional correlation, relatively strong emphasis has been placed on the distribution of palynomorph taxa (Cornet, 1977, and pers. comm.). This reliance has been especially strong for correlation between the upper Newark and the European Early Jurassic (see Figure 15). Tetrapod data, both in the form of skeletal remains and footprints, parallel the palynomorph data, and have been essential in correlating regions from which floral data is not available (such as the upper Stormberg — J. M. Anderson, pers. comm.). For fine internal correlation of the Early Jurassic portions of the Newark, however, the biostratigraphic subdivisions based on pollen and spores have proved too broad (Cornet, 1977). In these areas, fossil fish have provided a means of correlation (Olsen, McCune, and Thomson, in press).

The broad aspects of this biostratigraphic correlation are in agreement with most geophysical data, significantly the paleomagnetic work of McIntosh (1976) and Reeve and Helsley (1972) on the Newark Basin section and the Chinle Formation (southwestern United States), as well as with the paleomagnetic work of DeBoer (1968). In addition, radiometric dates available for Newark Basin basalts are in agreement with a Jurassic age for these units (Armstrong and Besancon, 1970; Dallmeyer, 1975; Sutter and Smith, 1979; W. D. Masterson and K. K. Turekian, pers. comm.). It must be noted, however, that the geophysical techniques used to date may be too inconsistent for the data to be used in fine scale correlation among the various individual formations of the Newark Supergroup.

ACKNOWLEDGEMENTS

For the original impetus for this work I thank Donald Baird, Bruce Comet, Nicholas G. McDonald, John Rodgers, Bobb Schaeffer, Keith Thomson, Franklin Van Houten, and Karl Waage. In addition to these same people, I thank George Bain, John Hubert, Anthony Lessa, Amy Litt, Amy McCune, Warren Manspiezer, John Ostrom, Wallace Phelps, Stan Rachootin, William Sacco, Robert Salvia, and Peter Stringer. Field work for this study was supported by the Peabody Museum of Yale University and grants from the National Science Foundation (numbers BMS 75-17096, BMS 74-07759, GS-28823X, and DEB 77-08412 to Keith Thomson). Finally, I thank Donald Baird, Amy Litt, Amy McCune, Kevin Padian, Stan Rachootin, John Rodgers, Bruce H. Tiffany, and an anonymous reviewer for reading the manuscript and suggesting changes which substantially improved it. Naturally any opinions and errors of commission or omission are my own.

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Thickness (m)	Description
.9	red cross-bedded sandstone and siltstone, fining-upwards
.8	red planer, thin-bedded sandstone
4.0	covered
4.6	red interbedded siltstone and sandstone
2.0	covered
1.2	red burrowed sandstone and siltstone
48.0	covered
.8	red blocky siltstone
1.5	red feldspathic sandstone, strongly downcutting, fining-upwards
3.4	red blocky siltstone
.7	red feldspathic sandstone, fining-upwards, deeply downcutting
.3	red blocky siltstone, covered in places
+1	red fine feldspathic sandstone
Sectioa B	Base of exposure 488 m above and 3.4 km west of top of section A, along Rt. 80 (sectioa measured from top down).
.61	red fissile siltstone
.13	yellow-orange planer-bedded coarse siltstone
.91	red blocky siltstone
.15	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.20	red blocky siltstone
.30	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.90	red fissile siltstone
.93	red blocky siltstone, fining-upwards
.32	red fissile siltstone
.60	red siltstone
.76	red fissile siltstone
.60	red coarse feldspathic sandstone, fining-upwards
.30	red blocky siltstone
1.32	red very fine sandstone, fining-upwards
+1.52	red blocky siltstone
Section C	Base of exposure 244 m above and 1.8 km west of top of sectioa B, along Rt. 80 (sections measured from top down).
1.5	red, very irregular, trough cross-bedded sandstone grading upwards into siltstones, laminated carbonate-rich oblong chips and concentric accretions at base
1.5	same as above
Section D	Base of exposure 1320 m above and 6.9 km west of top of sectioa C (section measured from top down).
3.0	red massive, cross-bedded sandstone
Section E	Base of exposure 554 m above and 2.9 km west of top of sectioa D (section measured from top down).
+10.0	massive basalt — base of Orange Mountain Basalt
.9	brown massive sandstone welded to basalt
1.8	red siltstone with numerous small carbonate nodules
.93	red siltstone
1.5	red sandstone, fining-upwards

Type Section of the Towaco Formation
(measured from top down)
(see Figure 11)

Basal Hook Mountain Basalt and cycle A of Towaco Formation exposed in the "Dinosaur Tract" of the Essex County Park Commission adjacent to the "Nob Hill" condominium project, where cycle B and the upper part of cycle C were exposed prior to 1977 (Olsen, 1975). All these exposures were part of the Roseland Quarry, Roseland, New Jersey.

Unit letter from Figure 16	Thickness	Description
Hook Mountain Basalt, 1st flow	35.0	Tholeiitic Basalt. Massive at base, columnar jointed in middle, vesicular at top.
Towaco Formation Volcanoclastic bed		
a	.9	Brown, badly weathered palagonitic unit consisting of shards of altered glass in a matrix of brown ?radial natrolite when fresh.
Upper Cycle (A)		
b	.5	Light gray and lavender siltstone, locally laminated with small scale crossbedding. May contain volcanoclastic component.
c	L2	Dark lavender and maroon siltstone with small scale crossbedding. Small orange crystals (weathered) along fracture planes.
d	1.8	Deep red, hard siltstone grading into units above and below. Contains one fining-upwards cycle with reptile footprints common.
e	29.3	10 red fining-upwards cycles, each a mean of 2.9 m thick and composed of thick beds of red sandstone or coarse siltstone with prominent slip-off surfaces grading up into beds of ripple-bedded siltstone and blocky siltstone. Lowest cycle contains buff intraformational breccia with coprolites, reptile bone fragments, and fish scales. Lower cycles contain numerous calcareous lenticular concretions most common in coarse parts of cycles. Fine parts of middle cycles contain numerous small dolomitic concretions and deep mud cracks. Reptile footprints common in lower and upper cycles, as are root casts.
f	3.4	Gray and buff fining-upwards cycles consisting of a lower, cross-bedded sandstone grading up into lavender and gray siltstone. Reptile footprints and carbonized plants common.
g	1.1	Gray-green fine siltstone massive and indistinctly bedded. Small bits of carbonized stems and leafy twigs common. Palyniferous (Comet, 1977).
h	.6	Dark to light gray, very fine and fine siltstone with massive to fine bedding and local load casts and ?gypsum crystal impressions. Good plant fragments including several conifer species, Semionotus scales and bones, and a single beetle elytron.
I	.4	Black, slickensided very fine siltstone with common chert nodules with a globular fabric.
j	.2	Black laminate. Black carbonaceous siltstone and white carbonate couplets .42 mm thick. Upper part of unit has several 5 mm thick graded, black siltstone layers. Grades into unit i.
k	.3	Light gray clayey siltstone, soft with black laminae becoming common upwards. Grades into unit j.
l	2.5	Cray fining-upward cycle composed of a lower cross-bedded sandstone containing numerous tree limbs, branches and roots grading upwards into a fine, well-bedded siltstone, locally ripple-bedded with numerous reptile footprints. Uppermost portion contains gray-green massive siltstone.
m	.9	Gray-buff, well bedded siltstone with dinosaur footprints and plant roots preserved both as carbonized impressions and natural casts.
Cycle B		
a	4.2	Red, thick fining-upward cycle. Lower part consists of thick beds of red sandstone with slip-off surfaces, local intraformational conglomerates and natural casts of large tree limbs or roots and a possible large reptile jaw. Middle part composed of 5 cm ± fine graded beds with very rare bone fragments and ?dinosaur teeth and exceptionally good reptile footprints. Plant fragments common and preserved as impressions or natural casts. Upper part is fine siltstone and plant remains present either as natural casts or carbonized compressions surrounded by gray-green balos. Grades upward into unit m.

Thickness (m)	Description
+5	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common (mostly covered).
1.1	Gray fine sandstone tp fine conglomerate. Cross-bedded (tongue of Morristown facies).
2.6	Gray clayey siltstone with carbonized plant fragments.
1.4	Gray fine sandstone to conglomerate, cross-bedded with fine siltstone interbeds and carbonized plant fragments (tongue of Morristown facies).
1.6	Gray clayey siltstone with groove casts. Carbonized plant remains present.
+1.5	Gray sandstone and conglomerate, cross-bedded (tongue of Morristown facies).
ca.30	coyered
+17.0	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
.9	Red and gray fine siltstone.
.9	Gray fine siltstone.
1.4	Gray fine sandstone and coarse siltstone: small-scale cross-bedding and carbonized plaat fragments present.
+.9	Gray fine siltstone with carbonized plant fragments.
ca.20	covered
+7.9	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding commpn. Dolomitic concretions ahd reptile footprints present.
1.5	Gray fine siltstone with carbonized plant fragments.
3.1	Red siltstone with dolomitic concretions and small-scale cross-bedding.
ca.1	Gray fine siltstone (poorly exposed).
13.8	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions present.
ca.1	Gray fine siltstone (poorly exposed).
1.5	Red siltstone with small-scale cross-bedding.
.8	Gray coarsening upwards siltstone.
6.1	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding and dolomitic concretions common.