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[redacted]

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

NUS CORPORATION
SUPERFUND DIVISION

ORIGINAL
(Red)

R-585-3-0-16

SITE INSPECTION USING AVAILABLE INFORMATION
OF
FMC CORPORATION
PREPARED UNDER

TDD NO. F3-8908-15
EPA NO. MD-017
CONTRACT NO. 68-01-7346

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JUNE 4, 1990

NUS CORPORATION
SUPERFUND DIVISION

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SECTION 1

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1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-7346. This specific report was prepared in accordance with Technical Directive Document No. F3-8908-15 for the FMC Corporation site, located in Curtis Bay, Baltimore County, Maryland.

1.2 Scope of Work

NUS FIT 3 was tasked to conduct a site inspection using available information of the subject site.

1.3 Summary

The 67.5-acre subject site is located in Curtis Bay, Baltimore County, Maryland. The site was owned and operated by the United States Industrial Alcohol Company from approximately 1915 until 1954. The company produced acetone and ethanol from the fermentation of molasses. The molasses was stored in an unlined pond of an unknown size before fermentation in fermentation buildings. The processes conducted in the fermentation building are not known. After 1930, acetone and ethanol were no longer produced by the fermentation of molasses; the pond remained unused from 1930 until 1940 and was allowed to dry up. The products manufactured by the company from 1930 until 1954 are not known. In 1940, Industrial Alcohol used the pond (disposal area) to dispose its production wastes (of unknown content). FMC Corporation, the current owner and operator of the site, purchased the site in 1954 and continued to use the unpermitted disposal area to dispose manufacturing and general wastes. FMC's wastes included acetoacetarylides dryer scrap, pilot plant wastes, 7-hydroxy tar, carbamate residues, pyrethrum flower residues, 7-nitro centrifuge bottoms, general trash and debris, butacide tar, dapon gel and polymerized monomers, and ethion filter aids and filter tubes.

The disposal area was closed by FMC Corporation in 1975 because the area was no longer needed. Closure was performed solely by FMC Corporation. At a later date, as directed by the Maryland Department of Health and Mental Hygiene (MD DHMH), a french drain system was installed under the disposal area to collect leachate and direct it to an on-site wastewater treatment system. No permit information or details related to the wastewater treatment plant system are available.

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FMC Corporation produced agricultural and industrial organics and intermediates. The full-scale production of tetradifon (FMC's product, tedion) began in 1957. An unlined waste pond was constructed in 1960 to store wastewater containing hydrochloric acid from the production of tedion in building 52. In 1970, production of tedion ceased, and the pond was excavated and filled. This action was performed solely by FMC Corporation; no samples were obtained from this area during closure. Manufacturing plants currently occupy this area. From 1970 until 1979, building 52 was utilized for the production of organic compounds and insecticides and flame retardants.

In 1977, the production of pounce (a pesticide) began at the subject site. A 38,500-gallon clay-lined surface impoundment (pounce surge pond) received wastewater runoff and washdown from the pounce manufacturing area from 1977 until 1984. The pond was closed, as approved by MD DHMH, in 1984 and replaced with a 40,000-gallon steel above-ground tank. Samples were obtained from this area to determine the effectiveness of the remedial activities. The sample results are unavailable.

A storm water retention basin was constructed in 1976 and 1977 to collect surface water runoff from the 7-OH plant area. A sample of the basin's influent detected pH in the range of greater than 12.5 and less than 2.0 in 1985. The basin was therefore considered to be a hazardous waste storage surface impoundment. Because the basin did not meet the state requirements for a hazardous waste storage surface impoundment, a closure plan for the basin was developed. The plan was approved by MD WMA, and the contents of the basin were removed. The samples collected in the basin area indicated that all hazardous material had been removed. The basin was replaced with a tank system (neutralization system) in 1988.

An area used for research and development was located on site from an unknown date until 1972. The research and development buildings were demolished in 1972, and the demolition material was removed from the site to an unknown landfill. The area was equipped with a subsurface tank of an unknown size that stored waste solvents from the research and development area until removal to an approved facility. The tank was removed in 1970. It is not known how or why the tank was removed. No samples were obtained during the removal.

FMC Corporation has operated an incinerator on site since 1981 for the incineration of controlled hazardous substances. The incinerator is regulated and permitted under the corporation's state-designated Hazardous Substances Facility Permit No. A-023.

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In compliance with special conditions outlined in Permit No. A-023, FMC Corporation obtained the services of Geraghty and Miller, Incorporated to install monitoring wells. Quarterly groundwater data reports have been submitted to MD DHMH, as required in the permit, since 1982. High levels of total organic halogens and chemicals, which are indicative of the acetoacetarylide dryer scrap disposed in the disposal area (the former unlined molasses-storage pond), were detected in on-site monitoring wells.

A Consent Order was issued to FMC Corporation on January 13, 1986 by MD WMA. The Consent Order outlined a program of action to be performed by FMC Corporation in order to characterize the site contamination. The company was required to prepare a groundwater report, including a hydrogeological investigation and a summary of analytical results from groundwater samples. Subsequent to the review of the report by the company and MD WMA, FMC Corporation was required to develop a remedial action report, including the actions to be taken to remediate on site contamination. The groundwater report was submitted to EPA and MD WMA in December 1988. The remedial action report is in preparation, with collaboration between FMC Corporation and MD WMA.

On March 16, 1989, EPA issued a draft permit of corrective action for FMC Corporation. The draft permit established a plan of corrective action for the subject site.

On June 21, 1983, NUS FIT 3 conducted a site inspection at the subject site and collected 12 split-spoon samples. The samples were analyzed for dioxins and priority pollutants; no dioxins were detected. Significant levels of DDT (up to 2,200 ug/kg), DDE (up to 950 ug/kg), and DDD (up to 2,000 ug/kg) were detected. Three non-target tentatively identified pesticides were detected in soil samples. Tetradifon (FMC's tedion) up to 3,300 mg/kg, ethion (an FMC product) up to 12 mg/kg, and dinoseb (FMC's permerge) up to 220,000 mg/kg were detected.

No potable supply wells are located within the study area. All residents in Baltimore City and Baltimore County (population 1,100,000) obtain their supplies from the Baltimore Municipal Water Authority (BMWA). BMWA obtains its supplies from surface water reservoirs located upstream and outside the study area. The residents of Anne Arundel County (population 120,830) obtain their water supplies from the Anne Arundel County Water Authority (AACWA). AACWA obtains its supplies from groundwater wells located outside the four-mile radius of the site.

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SECTION 2

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2.0 THE SITE

2.1 Location

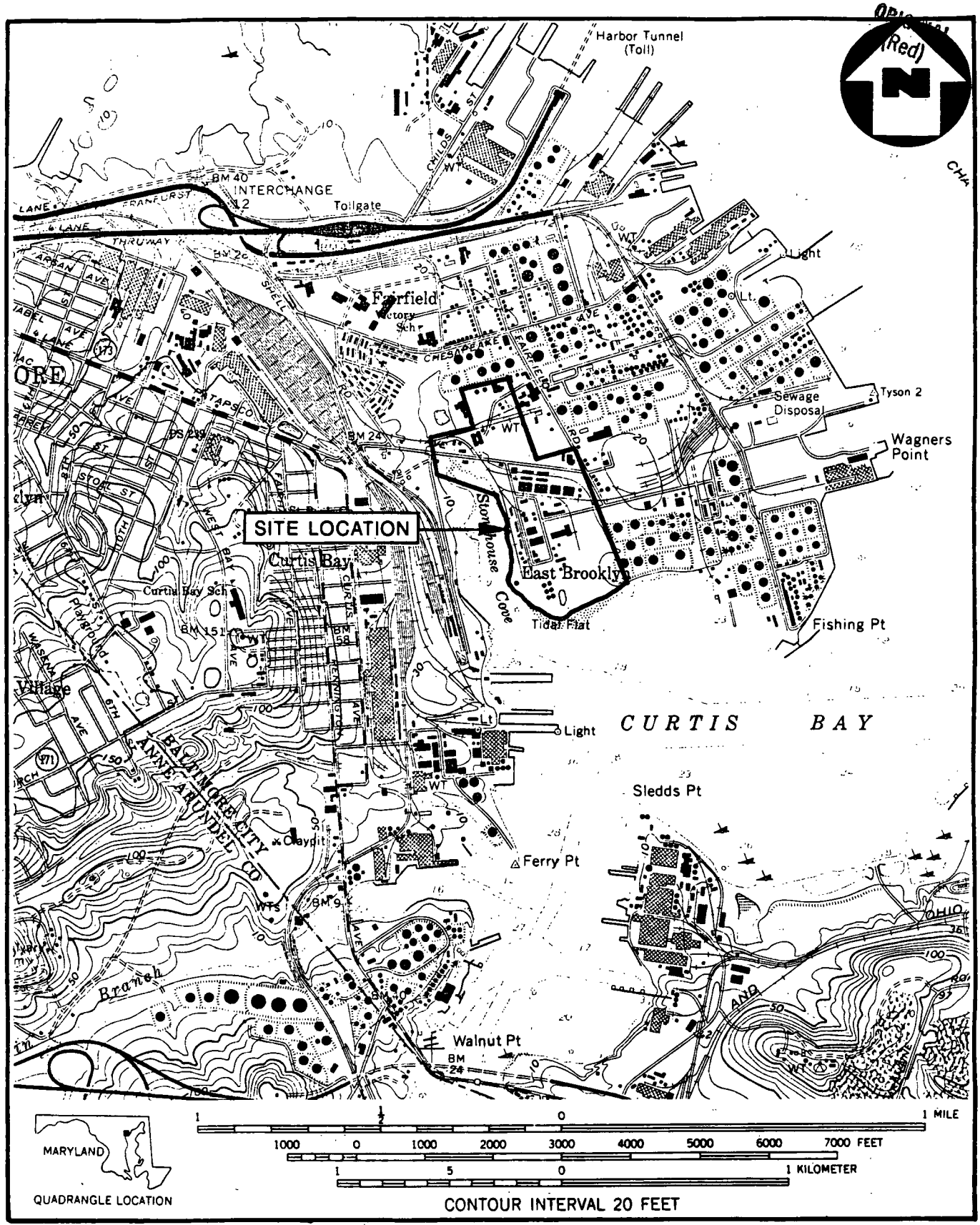
The subject site is located on Patapsco Avenue, outside the southern border of Baltimore in Baltimore County, Curtis Bay, Maryland (see figure 2.1, page 2-2). The site and surrounding vicinity within a three-mile radius of the site can be located on the United States Geological Survey (U.S.G.S.) Curtis Bay, Baltimore East, Baltimore West, and Relay, Maryland 7.5 minute series topographic maps. The center of the property lies at north 39° 16′ 9″ latitude and west 76° 34′ 17″ longitude or 6-13/16 inches east of the western border and 3-1/2 inches south of the northern border of the U.S.G.S. Curtis Bay, Maryland topographic map.[1]

2.2 Site Layout

The FMC Corporation site is approximately 67.5 acres in size and is located in the heavy industrial area of Curtis Bay, Baltimore, Maryland. The site is located in the Patapsco River drainage basin.[2] The access roads to the site are located adjacent to and on the northern and southern sides of Patapsco Avenue, approximately two miles west of the intersection of Fairfield Road. The site is surrounded by a chain-link fence of an unknown height.[3] Adjacent to and north of the site is an oil company, and to the east are an oil company, a tire company, and a chemical company. To the south is Curtis Bay, and to the west are Stonehouse Cove and an unidentified manufacturing plant (see figure 2.2, page 2-3).[1,3]

Available information indicates that the site is divided into two principal manufacturing areas: the northern and southern plant areas on the northern and southern sides of Patapsco Avenue.[3]

The northern plant area is approximately 20 acres in size.[1] The access road is located on the northern side of Patapsco Avenue and proceeds 250 feet west-northwest to a parking area approximately 1.4 acres in size. The access road proceeds from the northern end of the parking area approximately 600 feet to a manufacturing plant (building 91) located on the eastern side of the access road. Building 91 is approximately 5,000 square feet in size and is utilized for the production of permethrin 3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane carboxylic acid (FMC's product, pounce).[3]



SOURCE: (7.5 MINUTE SERIES) U.S.G.S. CURTIS BAY, MD., QUAD.

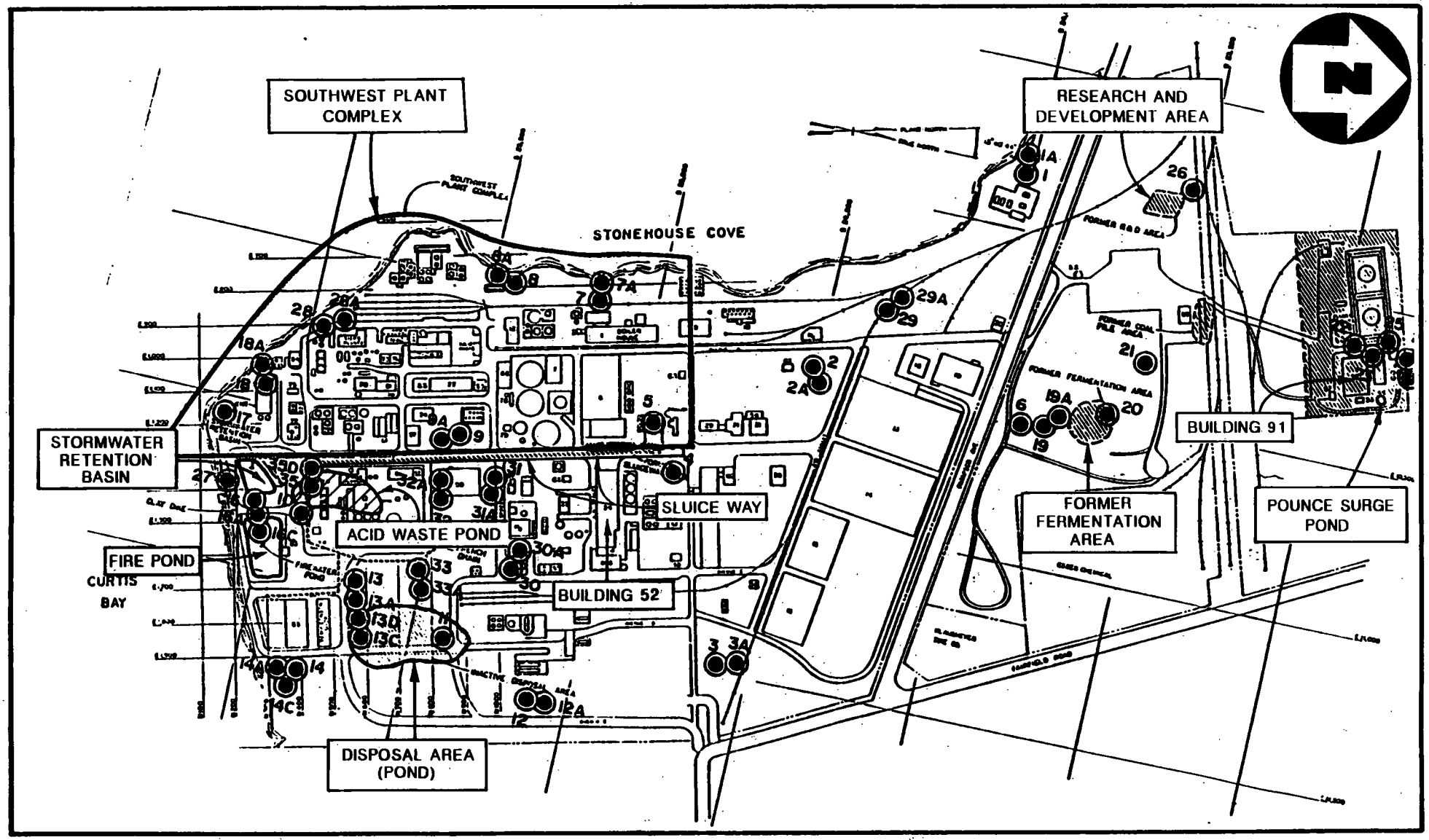
SITE LOCATION MAP

FMC CORPORATION, BALTIMORE, MD.

SCALE 1: 24000

FIGURE 2.1

NUS CORPORATION



SOURCE: O'BRIEN AND GERE. GROUNDWATER REPORT FOR FMC CORPORATION, BALTIMORE, MARYLAND. JANUARY 1986.

FIGURE 2.2

SITE SKETCH

FMC CORPORATION, BALTIMORE, MD.

(NO SCALE)

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The former pounce surge pond, with a 38,500-gallon storage capacity and single clay lining, was located adjacent to and north of building 91. The surge pond received wastewater runoff and washdown from the manufacture of pounce. In 1984, the pond contents were removed, the clay lining was left in place, and the pond was filled in and covered. A 40,000-gallon vertical, cylindrical, open-topped, above-grade steel tank is currently located in the pond area.[4] Five monitoring wells have been installed around the surge pond area.[3]

A railroad spur enters the western border of the northern manufacturing area and splits into several branches that proceed approximately 1,100 feet to the east.[3]

The former research and development area was located approximately 450 feet east of the western border of the northern plant area, approximately 100 feet west of the parking lot and approximately 250 feet north of Patapsco Avenue.[3] The buildings have been demolished, and all demolition wastes have been removed from the site. A subsurface tank of an unknown size, utilized for the storage of waste solvents from the research and development area, was located in this area. The tank was removed in 1970.[4] A monitoring well is located in the research and development area.[3]

The former fermentation buildings, utilized by the United States Industrial Alcohol Company, were located approximately 350 feet east of the parking area and 300 feet north of Patapsco Avenue. Information regarding the buildings' sizes and the processes carried out in the buildings is unavailable. Five monitoring wells are located in this area.[3]

The access road to the approximately 47.5-acre southern plant area is located adjacent to and on the southern side of Patapsco Avenue. The access road proceeds to the south approximately 2,300 feet. Several branches of the access road proceed to the east and surround the manufacturing facilities. A railroad spur emerges from the northern border of the southern manufacturing area approximately 400 feet west of the intersection of the access road and Patapsco Avenue. The railroad spur splits into 2 branches; 1 branch proceeds approximately 1,650 feet to the south, along the western border, and one branch proceeds approximately 600 feet to the east, along the southern border.[3]

Several manufacturing plants and storage tanks of unknown contents are located throughout the southern manufacturing area.[1] The processes related to each building, plant, or tank are not known.[4] The facilities in this area are utilized for the production of (7-hydroxy)-2,3-dihydro-2,2-dimethyl-7-benzofuranol (7-OH), tetraethyl methylene diphosphorodithionate (FMC's product, ethion), methyl 3-(2,2-dichlorovinyl)-2,2-dimethyl cyclopropance carboxylate (FMC's product, D.V. ester), and trimethylathoacetate (TMA).[3]

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The areas of concern identified in the southern plant area include the sluiceway, the disposal area, the acid-waste pond, the stormwater-retention basin, the fire pond, and the southwestern plant complex. The sluiceway is located approximately 450 feet south of Patapsco Avenue, 550 feet east of the western border, and approximately 850 feet west of the eastern border of the southern plant area. The sluiceway proceeds from the north to the south approximately 1,150 feet. The sluiceway diverted wastewater of an unknown content and source to Curtis Bay. Ten monitoring wells have been installed along the sluiceway.[3]

The storm water retention basin and a fire pond are located along the southern border of the site, approximately 550 and 300 feet west of the eastern border, respectively. Six monitoring wells are located in this area.[3] An unlined acid-waste pond was located 200 feet north of the southern border and 750 feet east of the western border of the southern plant area. The acid-waste pond was approximately 2.87 acres in size. In 1970, the pond was excavated and the contents were removed. The pond was filled and covered.[5] Currently, this area houses manufacturing facilities and plants and a portion of the storm water retention basin. A disposal area, of an unknown size (the former location of the molasses-storage pond), is located approximately 350 feet west of the eastern border and approximately 500 feet north of the southern border of the northern manufacturing area. Twelve monitoring wells have been installed upgradient and downgradient of this area.[3]

The southwestern plant complex, approximately 18 acres in size, is located in the southwestern corner of the southern plant area. This area is the former location of lagoons, water intakes and outfalls, and old process facilities. From 1970 until 1980, the lagoons were filled, the outfalls were decommissioned, the shoreline was recontoured, and the manufacturing facilities were rehabilitated. Information regarding the lagoon size, location, contents, and closure is unavailable. The area currently houses manufacturing facilities; the processes carried out in the facilities are not known. Eight monitoring wells have been installed along the western border of this area.[3]

2.3 Ownership History

The site was owned by the United States Industrial Alcohol Company, Incorporated from approximately 1915 until 1954, when FMC Corporation purchased the subject site. FMC Corporation currently owns the site. Ownership prior to the United States Industrial Alcohol Company is not known.[3]

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2.4 Site Use History

From approximately 1915 until 1930, the United States Industrial Alcohol Company produced acetone and ethanol from the fermentation of molasses at the subject site.[3,6] The molasses was stored in an earthen pit of unknown size before it was processed. Several fermentation buildings were utilized to process the molasses into a potash-type fertilizer and, finally, into acetone and ethanol. The exact processes carried out in the fermentation buildings are not known.[4,6] In 1930, ethanol and acetone were no longer produced by the fermentation of molasses; the pond was no longer used and was allowed to dry up.[3] In the 1940s, the United States Industrial Alcohol Company began to use the pond (disposal area) to dispose production wastes of an unknown content.[6] Manufacturing processes and products produced by the company from 1930 until 1954 are not known.[3,4,6]

FMC Corporation purchased the site in 1954 and constructed facilities for the manufacture of agricultural and industrial organic chemicals and intermediates. Construction activities, products, and processes at the FMC plant from 1954 until 1957 are unknown.[3] The former molasses-storage pond (disposal area) was utilized by FMC Corporation for the disposal of production and general wastes until 1975.[6]

On December 10, 1957, the production of tetradifon (FMC's product, tedion) began in the northern plant area in building 91. In 1959, the full-scale production of tedion was moved to building 52, located in the southern plant area. The production of tedion at the subject site was ceased in 1970.[4]

Wastewaters from the production of tedion at building 91 were pumped to storage tanks of an unknown size for alcohol recovery. The remaining liquids were pumped to the municipal sewers.[5] An unlined acid-waste pond of an unknown size, located in the southern plant area, received spent hydrochloric acid waste from the manufacture of tedion in plant 52. The pond was closed and excavated in 1970, when the production of tedion ceased.[4] The contents and residues were disposed at the Browning Ferris Industries (B.F.I.) Solley Road Landfill, in Anne Arundel, Maryland.[5]

Before 1959, plant 91 was utilized for the development of various organic chemicals and pesticides. In 1977, the plant began to manufacture pounce (a pesticide).[5] A 38,500-gallon clay-lined surface impoundment (pounce surge pond) stored wastewater runoff and washdown from the pounce manufacturing area from 1977 until 1984. A 40,000-gallon vertical cylindrical open-topped above-grade steel tank was installed to replace the pond in 1984.[4] Plant 91 currently produces pounce.[3]

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Building 52 was utilized from 1970 until 1979 for the production of organic chemicals and insecticides and flame retardant. The building caught fire in 1979; all demolition material from the fire was disposed at an unknown landfill.[4,5] The building is currently a RCRA hazardous waste storage facility surrounded by a fence and is paved and curbed. The exact size of this area is unavailable.[4]

A chemical manufacturing plant (for 7-OH) was constructed in the acid-waste pond area in 1975.[5] A storm water retention basin was constructed outside the 7-OH plant in 1976 and 1977 to collect surface water runoff from the area surrounding the plant. The basin had a single clay lining; it was approximately 2,200 square feet in size and had an undetermined depth. Surface water that collected in the basin was discharged to the plant's wastewater treatment system and finally into municipal sewers.[3,4]

In 1985, a pH greater than 12.5 or less than 2.0 was detected in the basin's influent. The impoundment's contents were at this time classified as hazardous waste. The basin did not meet the provisions for a hazardous waste surface impoundment; therefore, a closure plan, approved by MD WMA, was developed by FMC Corporation for the basin. The contents of the basin were removed to an approved facility, and the basin was filled with soil and covered with a clay cap and asphalt. The basin was replaced with a tank system (neutralization system) in 1988.[7]

Several areas throughout the site have been identified by the company as areas of concern and have been utilized for the disposal of wastes and the storage of raw materials. See figure 2.3 (page 2-8) for the locations of these areas of concern identified by the company.[3]

Coal was stored on the northern portion of the site for an unknown period of time until 1950.[3]

An area used for research and development was demolished in 1972. Waste solvents from this area were stored in a subsurface tank until removal to an approved facility.[3] The tank was removed in 1970.[4]

The southwestern portion of the site along the eastern shoreline was the location of several lagoons, water intakes and outfalls, and old process facilities. From 1970 until 1980, the lagoons were filled, the outfalls were decommissioned, and the shoreline was recontoured. The uses, locations, contents, and closure procedures for the lagoons are not known.[3]

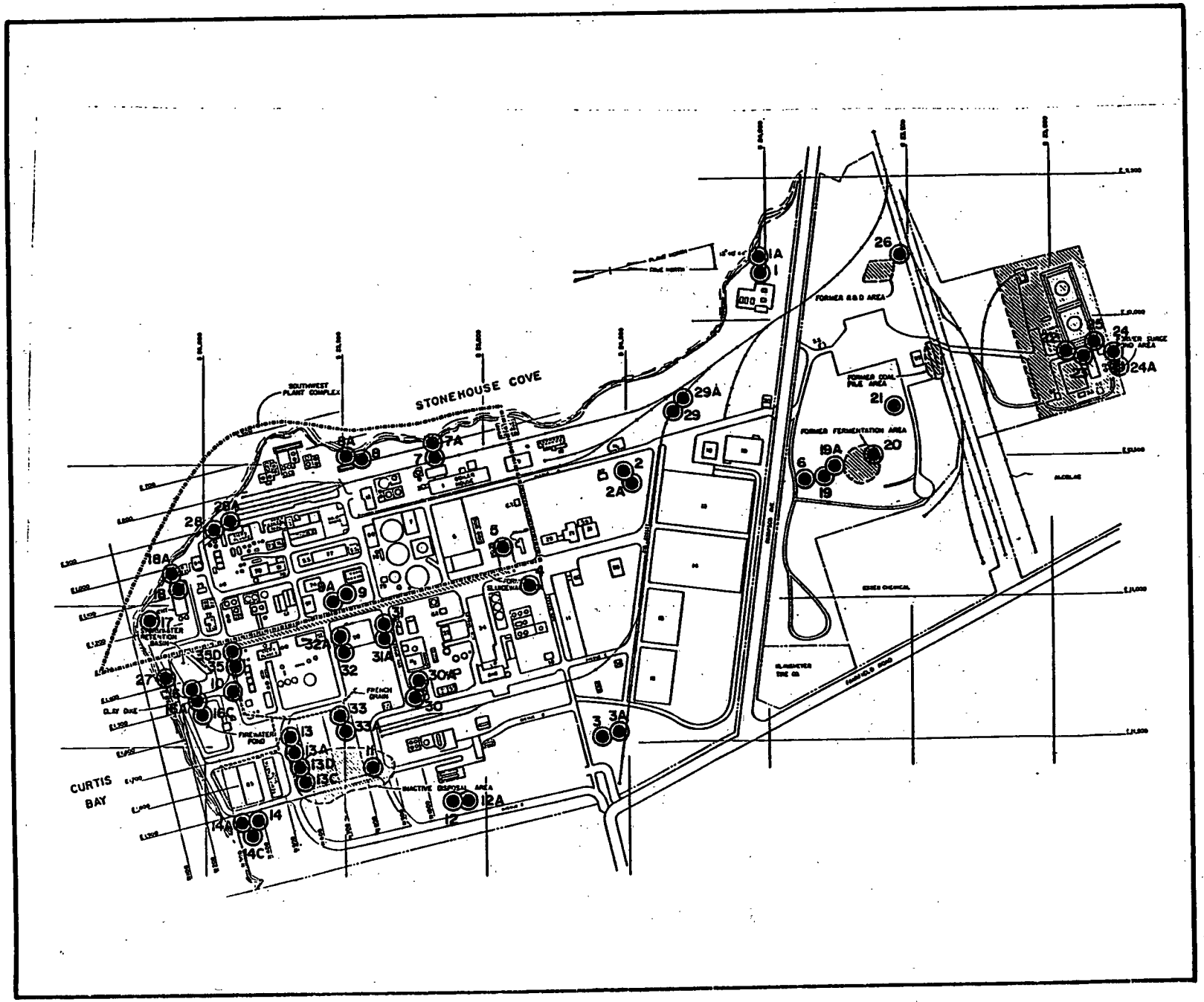

FIGURE 2.3

LEGEND

● GROUND WATER MONITORING WELL OR WELL GROUP LOCATION

FMC CORPORATION
BALTIMORE, MARYLAND

SITE PLAN/
STUDY AREAS

SCALE
100 0 200 400
FEET

O'BRIEN & GERE

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A fire pond was constructed in 1976 to contain brackish water pumped from Curtis Bay to be used in the event of a fire. The information provided does not indicate why the fire pond was identified as an area of concern.[3]

Before 1981, FMC Corporation operated an incinerator for the incineration of non-controlled hazardous substances and liquids, gaseous streams and liquids, and ignitable controlled hazardous substance waste streams (see appendix A). The incinerator system consisted of a vertical, cylindrical, 45 M BTU per hour solid stationary hearth; a venturi quench column for initial combustion gas cooling; a packed tower wet scrubber for particulate and acid-gas removal; and a wet electrostatic precipitator unit for final exhaust gas cleaning. Exact operational dates for the incinerator are not known.[8]

In 1981, in response to a schedule of compliance issued to FMC Corporation by MD DHMH, the company installed a leachate collection system for the disposal area (molasses-storage pond) and obtained the services of Geraghty and Miller, Incorporated to install monitoring wells and prepare a hydrogeological assessment report for the subject site.[8,9]

Currently, the subject site is divided into northern and southern plant areas. The southern plant area is utilized for the production of 7-OH, ethion, D.V. ester, and TMA. Pounce is produced in the northern plant area. The production facilities are equipped with several waste storage tanks, waste treatment systems, drum storage areas, and sumps.[10] The exact operations conducted in the facilities are not known.[4] For details of the types of plants located on site, see appendix B, and for the plant's hazardous waste management areas, see appendix C.[4,10]

The subject site holds an NPDES-permitted discharge (MD0000299) to discharge to Curtis Bay from on-site wastewater treatment systems.[11] The date of issuance is not known, but it is sometime prior to 1983.[12]

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2.5 Permit and Regulatory Action History

The subject site holds NPDES Permit No. MD0000299 for discharge to Curtis Bay via four outfalls. Monthly monitoring reports are prepared in accordance with the permit: the discharge is sampled and analyzed for flow, total organic carbon (TOC), FMC product no. 33297 (pounce), FMC product no. 39338 (methyl D.V. ester), FMC product no. 30953 (phenoxybenzyl alcohol), FMC product no. 30062 (methyl D.V. acid), 2-nitrophenol, and chlorinated benzenes (see appendix D). No records exist in the state files of exceeded discharge limits. The date of permit issuance and expiration are currently unavailable.[11]

The state-designated Hazardous Substances Facility Permit No. A-023 was issued before 1978 by MD DHMH to the subject site for the operation of a treatment and storage facility and the maintenance of an inactive disposal facility. The permit authorizes the incineration and storage of several controlled hazardous substances (see appendix A).[6,8] Special conditions included in the permit are the submission of a report about the quantity and the nature of the materials disposed in the inactive disposal site (see appendix E).[6] The permit was reissued on November 16, 1981. A schedule of compliance was included in the permit, which required the design and construction of a leachate collection system for the inactive disposal area, the submission of a chemical analysis of leachate collected from the french drain system for the inactive disposal area within 30 days of permit re-issuance, and the implementation of a groundwater monitoring program (see appendix A). The sample results from the leachate are unavailable. Records indicate that the company complied with the schedule outlined in the permit.[8]

In response to the permit requirements, FMC Corporation obtained the services of Geraghty and Miller, Incorporated to install 31 monitoring wells at the subject site (see appendix F). Quarterly groundwater monitoring reports were submitted by FMC Corporation to MD DHMH beginning in 1982.[9] Analytical parameters included COMAR Regulation 10.51.05.06 parameters, pH, total organic halogens, TOC, 16 trace metals, and specific conductance.[13] Sample results from these sampling rounds are included in the Groundwater Report for FMC Corporation (contained in EPA RCRA files).[3]

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A Notification of Hazardous Waste Activity was submitted on June 5, 1981, and the site received EPA ID No. MDD003071875.[10] A Part A RCRA Permit for the subject site was received by MD DHMH on November 19, 1980; several revised Part A applications have subsequently been submitted. A copy of this permit is unavailable at this time.[3,14]

On December 11, 1981, a potential hazardous waste site identification and preliminary assessment were conducted by JRB Associates for EPA. The resulting report indicated that regular compliance inspections were conducted at the subject site by MD DHMH. Permits identified as held by the site were NPDES Permit No. MD000299 and EPA ID No. MD003671875. An old fill area, used to dispose organic, inorganic, heavy, and trace metal wastes, was identified as graded and capped. Monitoring wells were also observed.[15]

On February 15, 1982, a hazardous waste site assessment report was prepared by JRB Associates for EPA Region III and MD DHMH. The assessment included site use information, wastes disposed on site, and wastes identified in the RCRA Notification.[13]

In 1982, a hydrogeologic assessment prepared by Geraghty and Miller, Incorporated for FMC Baltimore was completed, in accordance with the compliance requirements outlined in the 1981 Permit No. A-023. The report included the third-quarter 1982 groundwater monitoring data and on-site monitoring well logs. Samples were analyzed for total organic halogens (TOH), which were detected in the range of 2.4 ug/l to 3,276.7 ug/l (see appendix G).[9]

MD DHMH received and reviewed four quarterly reports of groundwater monitoring data on March 11, 1983. MD DHMH identified the disposal area, the surge pond, and the retention basin as the sources of contamination detected in on-site monitoring wells. Additional sampling of actual sources was recommended by the reviewer (see appendix H).[16]

On May 10, 1983, the Maryland Office of Environmental Programs, Hazardous Waste Division, notified FMC Corporation that, due to the detection of high levels of TOH in on-site monitoring wells, MD WMA was initiating a comprehensive sampling/analysis program to assess groundwater quality in the vicinity of the surge pond, retention basin, and disposal area. The generated information was to be used by MD WMA to determine the need for further monitoring or remedial measures.[17]

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On June 15, 1983, EPA notified FMC Corporation that it needed to evaluate the site as a potential source of environmental pollution. EPA, which requested background information from the subject site, was concerned that dioxins may have been formed as a by-product of on-site activities. EPA requested that an investigation be conducted at the subject site to determine whether any release of hazardous substances had occurred. A list of specific questions was also included in the request. The company had 10 days to reply to EPA's request.[18]

On June 20, 1983, a meeting was held by FMC, EPA Region III, NUS Corporation, the Baltimore Health Department, and the Maryland Office of Environmental Programs. At this time, background information was exchanged on tetradifon (tedion), manufacturing operations, and disposal activities at the FMC Baltimore plant from 1957 until 1970.[19] This satisfied EPA's initial request for information. FMC Corporation asked for more time to reply to attachment II of EPA's June 15, 1983 request.[20]

On July 20, 1983, FMC Corporation submitted its reply to attachment II of EPA's request. Tetradifon was identified as the only known hazardous substance that was produced, stored, and processed or disposed at the FMC Baltimore plant. The amount and areas where tetradifon was produced were also identified.[5]

On January 6, 1984, a remediation plan for the pounce surge pond was developed by FMC Corporation and the Maryland Office of Environmental Programs. A 40,000-gallon carbon steel tank was proposed to be installed on March 31, 1984 to replace the pounce surge pond. The pond contents were to be removed to an approved facility, and the remaining clay lining was to be sampled to determine if all hazardous materials had been removed. Following the sampling and subsequent analysis of the area, a formal closure plan was developed.[21] Sample results from the pond are not available. Closure was complete and approved by the state in 1984.[22]

ORIGINAL (Red)

On January 19, 1984, MD WMA notified FMC that the disposal area was to be closed because of the presence of chemicals indicative of the acetoacetarylide dryer scrap disposed in the disposal area. Closure was to be performed pursuant to the standards of COMAR 10.51.05.07 and 10.51.140 Regulations and performed to minimize post-closure escape of waste constituents to groundwater. MD WMA requested that FMC Corporation submit a proposal in 90 days to address the closure and post-closure of the disposal area.[22] [Closure of this area will be performed in accordance to a Consent Order issued on January 13, 1986 to FMC Corporation by MD WMA (discussed on page 2-14). Remedial activities for this area are currently being developed by MD WMA and FMC Corporation.[23]]

On June 21, 1983, NUS Corporation obtained 12 split-spoon core samples at the FMC site. The samples were analyzed for dioxins and priority pollutants. Sample analytical results did not detect 2,3,7,8 - TCDD (dioxin) in any of the 12 samples obtained.[24]

On February 5, 1985, an addendum to the field trip report for FMC Baltimore was submitted to EPA by NUS. Significant levels of DDT (up to 2,200 ug/kg), DDE (up to 950 ug/kg), and DDD (up to 2,000 ug/kg) were detected in on-site soils. Three nontarget, tentatively identified pesticides were detected in soil samples. Tedion was detected in seven soil samples at levels from 14 mg/kg to 3,300 mg/kg. Ethion (FMC's product, nialate) and permerge were detected at levels as high as 12 mg/kg and 220,000 mg/kg, respectively, in one on-site soil sample. Polynuclear aromatic hydrocarbons (PAHs) were detected at significant levels in soil samples in the range of 16,000 ug/kg to 112,000 ug/kg. Notable concentrations of heavy metals were detected, including lead at levels ranging from 30 mg/kg to 1,400 mg/kg and mercury at levels ranging from 0.3 mg/kg to 4.5 mg/kg.[25]

The state identified the subject site under two different state identification numbers or two different sites. A preliminary assessment was completed by MD WMA in August 1984 for the FMC Corporation (state identification number MD-102). The site was identified at this time as the same site as the FMC Corporation state identification number MD-017.[2]

A RCRA Part B Permit Application was submitted to the Maryland Department of the Environment (MDE) and EPA in 1984.[3] The submission was in response to the detection of pH greater than 12.5 or less than 2 in basin effluent to the storm water retention basin.[7]

ORIGINAL (Red)

Numerous spills of raw product and waste materials have occurred at the subject site from 1985 until 1989. The spills were reported to MD DHMH and were cleaned up in compliance with the guidelines outlined in Permit No. A-023 (see appendix F).[8,26,27]

On February 21, 1985, a complaint from a construction worker at the FMC Baltimore plant was received by MD DHMH. According to the complainant, drums of chemicals were unearthed during construction activities. MD DHMH visited the site on February 22, 1985 and observed several drums. The drums were subsequently sampled, removed, and shipped by Chemical Waste Management. No subsequent correspondence or sample results were contained in the state files provided. The drums were observed by the employee adjacent to the old disposal area. Former magnetometer and ground-penetrating radar results from this area showed no buried material. The dates of these studies and the actual results of the studies are unavailable.[28]

On March 21, 1985, a Notice of Violation was issued to FMC Corporation by MD DHMH because FMC had not reported a 2,000-gallon spill of 33 percent hydrochloric acid on December 21, 1984 within the proper time frame outlined in Permit No. A-023. FMC was assessed a civil penalty of $3,000.00. No correspondence from FMC pertaining to this matter is available.[29]

On January 13, 1986, Consent Order No. C-0-85-498 was issued by MD WMA to FMC Corporation. The Consent Order outlined a program of action that was to be performed by FMC in order to characterize the site contamination. The company was directed to install additional monitoring wells, perform groundwater investigations and groundwater sampling, and submit a groundwater report, including a detailed summary and analysis regarding all data or information gathered. Pursuant to the groundwater investigation, a remedial action report was to be developed (see appendix I).[23]

Quarterly reports, including quantities of material stored and incinerated on site, were submitted to the state as per the requirements of Section I, Special Condition A of Permit No. A-023, issued in November 1984. In compliance with the general conditions of the permit and the Consent Order of January 13, 1986, sampling and analytical results of the groundwater monitoring program were submitted to MD WMA on a quarterly basis. Pursuant to Part III G of the permit, deviations from the incinerator operating conditions specified in Part III C of the permit were also submitted on a quarterly basis (see appendix J).[30,31]

ORIGINAL (Red)

In accordance with the terms and conditions of Consent Order C-0-85-498, a groundwater report, prepared by O'Brien and Gere for FMC, was submitted to the Maryland Office of Environmental Programs and EPA on January 30, 1986.[32] The report included information on regional and site hydrogeology, groundwater characterization, a summary of data collected, and a risk assessment of releases from the subject site. Nine areas of concern were identified, including the former surge pond area, the former coal-pile area, the former research and development area, the former fermentation area, the former sluiceway area, the inactive disposal area, the southwestern plant complex, the storm water retention basin, and the firewater pond area (see appendix K).[3]

A total of 58 monitoring wells have been installed at the subject site. Twenty-one wells were installed by O'Brien and Gere hydraulically downgradient of the property boundary to determine the groundwater quality discharging to Curtis Bay and to Stonehouse Cove. An additional six monitoring wells were installed in 1985 to determine horizontal and vertical flow patterns. Thirty-one monitoring wells were already located on site from previous investigations. Monitoring wells were installed by O'Brien and Gere to specially characterize the source of contaminants (i.e., the sources mentioned above) (see figures 2.4 and 2.5, pages 2-16 and 2-17). Quarterly monitoring reports since 1985 were submitted to the state, including samples from on-site monitoring wells. Samples were analyzed for inorganics, organic priority pollutants, bioassays, treatability testing, COMAR Regulation 10.51.01.01 parameters, and property specific parameters. Specific property parameters include aniline, o-chloroaniline, o-toluidine, chlorobenzene, methallyl chloride, 1,2-dichloro-2-methylpropane, morocide, 2,4-dinitro-6-sec-butylphenol, ethion, tedion, 0,0,0-triethylthiophosphate, diphenylsulfone, p-chlorophenyl phenyl sulfone, 7-hydroxy, 2,3-dyhydro-2,2-dimethylbenzofuran, 7-amino 2,3-dihydro-2,2-dimethylbenzofuran, 7-nitro 2,3-dihydro-2,2-dimethylbenzofuran, 2-[2-methyl-2-propenyl]-6-nitrophenol, 2-[2-methyl-1-propenyl]-6-nitrophenol, o-nitrophenyl methallyl ether, and o-nitrophenol.[3]

The groundwater report included a compilation of all quarterly groundwater monitoring reports from 1982. [See Groundwater Report (contained in EPA RCRA files)].[3]

Figure ORIGINAL (Red)

TABLE 5

GEOGRAPHIC STUDY AREAS AND MONITORING WELLS

Area	Wells Included
I. Hydraulically Upgradient Perimeter Wells	3, 3A, 12, 12A, 24, 24A, 26
II. Hydraulically Downgradient Perimeter Wells	1, 1A, 7, 7A, 8, 8A, 14, 14A, 14C, 15, 16, 16A, 16C, 17, 18, 18A, 27, 28, 28A, 29, 29A
III. A. Former Surge Pond Area	22**, 23**, 24*, 24A*, 25**
B. Former Coal Pile Area	20**, 21**, 22*, 23*
C. Former R & D Area	1**, 1A**, 26*
D. Former Fermentation Area	6**, 19**, 19A**, 20*, 21*
E. Former Sluiceway Area	4**, 5**, 9**, 9A**, 19*, 20*, 21*
F. Inactive Disposal Area	11**, 12*, 12A*, 13**, 13A**, 13C**, 13D**, 30**, 30A**, 31**, 31A**, 32**, 32A**, 33**, 33A**, 34**
G. Southwest Plant Complex	5*, 7**, 7A**, 8**, 8A**, 9*, 9A**, 17**, 18**, 18A**, 28**, 28A**
H. Stormwater Retention Basin Area	10*, 13*, 16**, 16A**, 16C**, 27**, 35*
I. Firewater Pond Area	13*, 15**, 34*

*This well hydraulically upgradient of the geographic study area.

**This well hydraulically downgradient of the geographic study area.

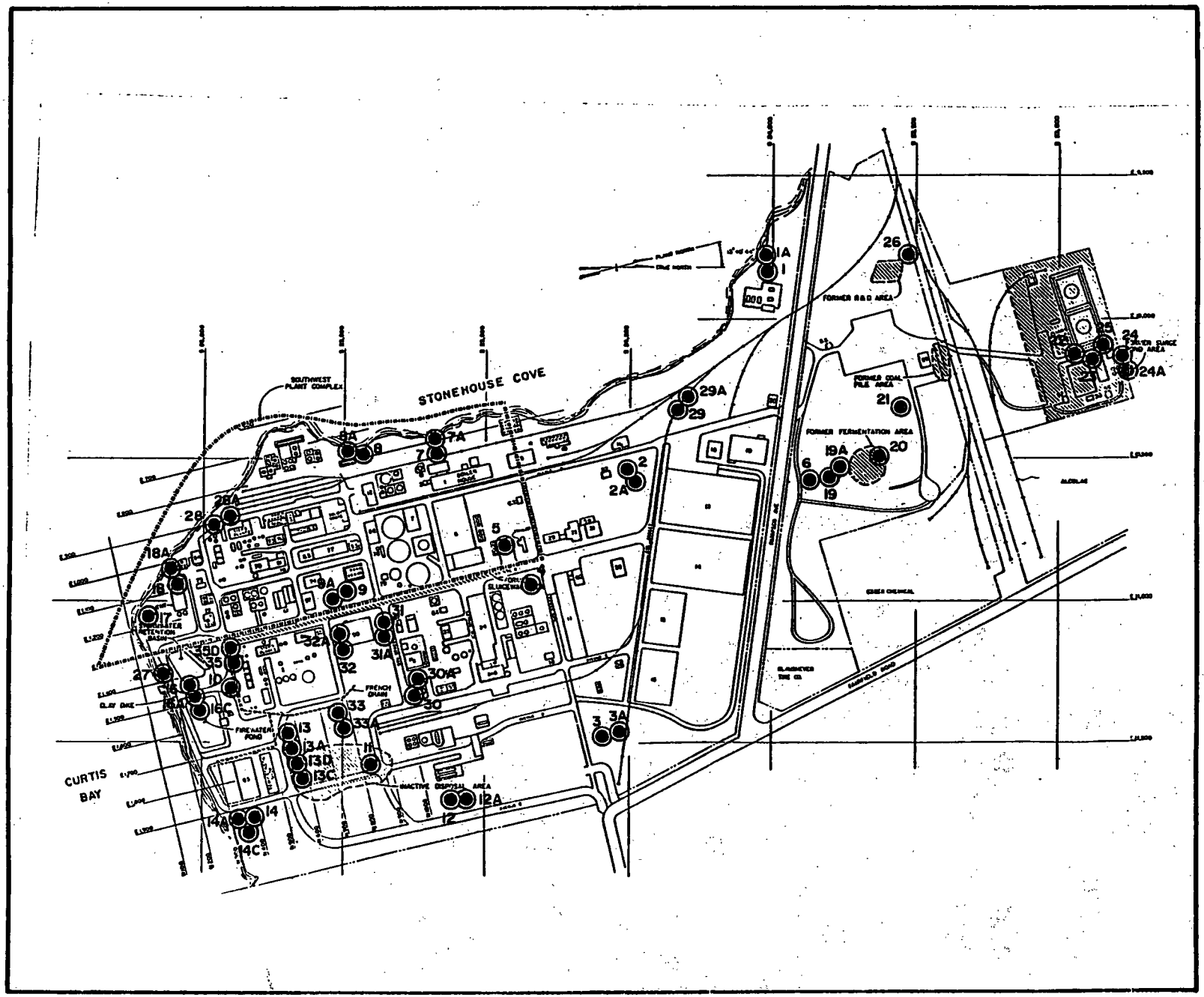


FIGURE 2.5

LEGEND

● GROUND WATER MONITORING WELL OR WELL GROUP LOCATION

FMC CORPORATION
BALTIMORE, MARYLAND

SITE PLAN/
STUDY AREAS

SCALE
100 0 200 400
FEET

O'BRIEN & GERE

ORIGINAL (Red)

Hydraulically downgradient monitoring wells detected organics in the range of 7.6 mg/l to 2,000 mg/l. Groundwater samples from monitoring wells surrounding the former surge pond detected TOH in the range of 20 mg/l to 50 mg/l, TOCs in the range of 0.02 mg/l to 100 mg/l, chlorobenzene in the range of 0.01 mg/l to 90 mg/l, phenols in the range of 0.026 mg/l to 0.848 mg/l, benzene up to 1.6 mg/l, and bioassay results of moderate inhibition. Groundwater from the monitoring wells surrounding the former coal area detected total dissolved solids (TDS) in the range of 310 mg/l to 570 mg/l, sulfates in the range of 12 mg/l to 23 mg/l, and iron in the range of 5.9 mg/l to 7.4 mg/l. Monitoring wells in the former research and development area detected TOC in the range of 15 mg/l to 200 mg/l, TDS in the range of 578 mg/l to 705 mg/l, sulfates in the range of not detected to 150 mg/l, benzene in the range of 0.01 mg/l to 0.1 mg/l, methylene chloride in the range of 0.03 mg/l to 1.8 mg/l, and chlorobenzene in the range of 0.0006 mg/l to 0.7 mg/l. Bioassays did not detect increases in microorganism toxicity beyond that observed for Stonehouse Cove and Curtis Bay Water Control. Site-specific contaminants detected include o-nitrophenyl-2-methallyl ether (ONPME0) up to 0.2 mg/l and (7-nitro 2,3)-dihydro-2, and dimethylbenzofuran (7-nitro) up to 0.094 mg/l.[3]

The monitoring wells surrounding the former fermentation area detected 2,4-dinitrophenol in the range of 0.7 to 0.8 mg/l, methylene chloride in the range of not detected to 0.3 mg/l, and benzene in the range of 0.1 to 0.2 mg/l. The former sluiceway area monitoring wells detected significant levels of dissolved solids and sulfate concentrations greater than 1,000 mg/l, iron concentrations greater than 100 mg/l, TOC up to 130 mg/l, benzene in the range of 0.0003 mg/l to 0.134 mg/l, chlorobenzene in the range of 0.023 to 56 mg/l, and 1,2-dichlorobenzene in the range of 0.056 mg/l to 0.36 mg/l. Bioassays results were no different from controls.[3]

The inactive disposal area monitoring wells detected TDS up to 44,800 mg/l, TOC up to 6,700 mg/l, and TOH up to 150 mg/l. Arsenic, barium, cadmium, chromium, copper, fluoride, lead, mercury, nickel, selenium, silver, and zinc were detected in the range of 0.01 to 10 mg/l. Numerous organic compounds were detected. Bioassay results indicated that this groundwater area was the most toxic, with LC50 (lethal concentration to 50 percent of the population) value calculations in the range of five to eight percent. A microtox test yielded a value of 0.8. Property-specific indicators detected were methallyl chloride, dichloroisobutane, monchlorobenzene, and xylenes in the range of 0.87 mg/l to 6 mg/l, aniline up to 1.12 mg/l, 0-toluidine up to 0.2 mg/l, 0-chloroaniline up to 0.08 mg/l, triethyl thiophosphate (TETP) up to 2.77 mg/l, and monobenzene up to 0.28 mg/l. See Groundwater Report (located in EPA RCRA files), pages 79 to 85, for details.[3]

The southwestern plant complex monitoring well groundwater samples detected chloride in the range of 240 mg/l to 3,650 mg/l. TOCs were detected in the range of 15 mg/l to 2,100 mg/l, TOH was detected in the range of 0.1 mg/l to 56 mg/l, and numerous organic priority pollutants were detected in the surrounding monitoring wells. See Groundwater Report (page 87; EPA RCRA files) for results. Bioassay results calculated LC50 values in the range of less than 1 percent to 100 percent. Property-specific compounds detected in the 0.02 mg/l to the 0.03 mg/l range include aniline, o-toluidine, diphenyl sulfone, 7-hydroxy, and isobutenyl. Other site-specific compounds detected include (7-amino 2,2)-dihydro-2,2-dimethylbenzofuran (7-amino) up to 0.094 mg/l, o-toluidine up to 1.3 mg/l, TETP up to 0.638 mg/l, xylene up to 12.1 mg/l, (7-hydroxy)-2-3-dihydro-2-2dimethyl-7-bezofuranol (7-hydroxy) up to 0.504 mg/l, monochlorobenzene up to 0.85 mg/l, and several other site-specific compounds [see Groundwater Report (EPA RCRA files), page 89, for details].[3]

The storm water retention monitoring wells detected TDS in the range of 340 mg/l to 18,040 mg/l, TOC in the range of 3 mg/l to 1,070 mg/l, and TOH in the range of 0.02 mg/l to 183 mg/l, and several organic priority pollutants and inorganic compounds were detected [see Groundwater Report (EPA RCRA files), page 91]. Bioassays yielded LC50 values in the range of four to six percent of the sample concentration. Microtox testing results suggested inhibition. Property-specific compounds detected in the range of 0.001 mg/l to 0.01 mg/l include monochlorobenzene, diphenyl sulfone, and chlorophenyl phenyl sulfone (CPPS). Aniline up to 0.064 mg/l, o-toluidine up to 0.029 mg/l, 0-chloroaniline up to 0.136 mg/l, monochlorobenzene up to 1.3 mg/l, isobutenyl up to 0.005 mg/l, and monochlorobenzene, TETP, and 7-amino up to 0.1 mg/l were detected. 7-Hydroxy was detected in monitoring wells up to 0.407 mg/l, and xylene was detected up to 3.274 mg/l.[3]

No significant inorganic contaminates were detected in monitoring wells surrounding the fire pond area. Bioassay LC50 values for 48- and 96-hour acute tests revealed values less than 3 percent of the samples. Microtox analysis values of 0.9 indicated considerable reduction in microbial activity. TOCs were detected up to 3,000 mg/l. Property-specific contaminants detected in the range of 0.005 mg/l to 0.02 mg/l included 0-toluidine, o-chloroaniline, TETP, diphenyl sulfone, and CPPS.[3]

On October 28, 1986, MD DHMH notified FMC that the removal of the D.V. ester brine tank from the permit application was authorized.[33] Controlled Hazardous Substances Facility Permit No. A-023 was reissued by MD DHMH on October 5, 1987 and is effective until October 4, 1990 (see appendix L).[34]

On January 14, 1987, a tar surge tank with a 3,000-gallon capacity (holding no more than 1,500 gallons of tar at any given time) ruptured. The entire 1,500 gallons were contained in the concrete dike surrounding the tank. MD DHMH oversaw the cleanup of this area. On January 15, 1987, Clean American cleaned the area, and GSX Pinewood facility landfilled the tar.[35]

On October 6, 1987, MD WMA approved a closure plan for the storm water retention basin at the subject site. The closure was performed in accordance with applicable provisions of COMAR 10.51.05. On December 30, 1988, a closure certificate for the storm water retention basin was submitted to MD WMA and EPA. WMA notified FMC on February 23, 1989 that the final closure of the basin was approved by the department.[7,36]

On September 28, 1988, the subject site was inspected by MDE. Storage containers were observed to be in poor condition, and controlled hazardous substances were observed in unpermitted storage areas. On October 3, 1988, the company responded to MDE with corrective actions.[21]

On November 11, 1988, MDE issued a complaint to FMC Corporation for leaking and poor condition of containers on the 7-OH container storage pad, storage of hazardous controlled substances in unpermitted areas, and the lack of noting of poor conditions of storage containers in the inspection log. The company was assessed a civil penalty of $4,000.00 for these violations (see appendix M).[37]

On March 16, 1989, EPA issued a draft permit of corrective action for FMC Corporation. The draft permit established a plan for corrective action to the subject site to include a deadline for submitting a RCRA facility investigation (RFI) work plan to EPA for approval in accordance with the disposal impoundment closure requirements of COMAR 10.51.01.11 (F) (1) (b) -e; a schedule for the implementation of the work plan after receiving EPA approval; a deadline for submitting a corrective measures study (CMS) to EPA based on the RFI finding; and a schedule for implementing a corrective measures plan (CMP) approved by EPA.[38]

No correspondence pertaining to this permit was contained in the state files provided.[38]

ORIGINAL (Red)

A controlled hazardous site inspection was conducted by MD WMA at the subject site on September 25, 1989. No significant observations were made.[39]

A letter was sent to EPA from FMC Corporation at an unknown date identifying and describing the solid and hazardous waste activities on site (see appendix C).[3]

2.6 Remedial Action to Date

An unlined pond of an unknown size located at the subject site was utilized for the disposal of production wastes of an unknown content from 1940 until 1954 by the United States Industrial Alcohol Company. In 1954, FMC Corporation purchased the site and continued to use the unlined pond (disposal area) for the disposal of production wastes and general wastes.[3] In 1975, the disposal area was covered with an unknown amount of earth and gravel.[4]

In 1975, construction of a 7-OH plant no. 3 began in this area. An unknown quantity of material was excavated from this area during the construction and was removed to the B.F.I. Solley Road Landfill, in Anne Arundel, Maryland. The surface water from the area was directed to the plant wastewater treatment system.[4] In 1976, french drains were installed to collect leachate from the disposal area.[6] On January 19, 1984, MD WMA required FMC to close the disposal area pursuant to the closure standards of COMAR 10.15.05.07. This action was in response to the detection of chemicals in the monitoring well groundwater samples, obtained downgradient of the disposal area, that were indicative of the acetoacetarylide scrap disposed in the disposal area.[22] In accordance with the Consent Order issued to FMC by MD WMA on January 13, 1986, a remedial action report, currently in the developmental stages pending review of the groundwater report for FMC by MD WMA, will address closure plans for this area.[3]

Building 52, utilized for the production of tedion, caught fire in 1979. An unknown quantity of demolition material was disposed at an unknown landfill. Process equipment was scrapped by American Wrecking Company, Incorporated.[4,5] No soil samples were obtained from this area. Monitoring well samples collected downgradient of building 52 revealed significant levels of site-specific compounds/products. See Groundwater Report (located in EPA RCRA files) for details.[3] The building is currently a RCRA hazardous substance storage facility. It is surrounded by a fence and is paved and curbed. The size of this area has not been determined.[4]

ORIGINAL (Red)

A waste pond of an unknown size was constructed in 1960 to contain spent hydrochloric acid from the manufacture of tetradifun (building 52). The pond was no longer utilized in 1970. The area was excavated, and materials and residues of an unknown quantity were disposed at the B.F.I. Solley Road Landfill, in Anne Arundel, Maryland. No samples are known to have been obtained from the area at that time.[6] The area currently houses a chemical manufacturing plant (7-OH plant). A storm water retention basin was constructed in this area in 1976 to collect surface water runoff from the area surrounding the 7-OH plant. The basin had a single clay liner of an unknown thickness; it was approximately 2,200 square feet in size and had an unknown depth.[4] Surface water collected in the basin was discharged to the plant's wastewater treatment system and finally to the municipal sewers. Analysis of the basin contents in 1984 detected pH greater than 12.5 or less than 2.0. On the basis of the pH, the influent was classified as hazardous waste and, therefore, the basin fell under the provisions of RCRA and COMAR 10.51. The basin did not meet the requirements for a hazardous waste storage surface impoundment; the basin was therefore excavated in 1988. A closure plan was approved by MD WMA on October 6, 1987.[7]

A replacement tank system (neutralization system) was installed to replace the basin. Closure activities included the removal of accumulated liquids (approximately 215 tons), solid residues (approximately 1,097 tons), and fabriform and other concrete debris (approximately 504 tons). These materials were removed to GSX Services (EPA ID No. SCD070375985). Soil samples were collected during excavation activities to determine the integrity of the removal of the hazardous substances contained in the basin. Soils were analyzed for orthonitrophenol, orthonitrophenol methyl ether (ether), 7-hydrogen, 7-nitro, carbon tetrachloride, benzene, monochlorobenzene, chloroform, toluene, claisen, and isobutenyl.[7]

The removal of the contaminated soils, debris, and liquid was completed in March 1988. The clay lining was kept in place. Analysis of samples from the remaining clay lining did not detect any contaminants. The basin was backfilled with soil (amount unknown) and overlain by a clay cap system, which was covered with asphalt. The installation of the clay cap was in accordance with the disposal impoundment closure requirements of COMAR 10.51.05.11 (F) (1) (b)-e.[7]

During excavation and installation procedures, all surface water from this area was pumped to tanks, neutralized, and discharged to the plant's wastewater treatment system. The tank system, of an unknown size, was installed and operating by September 1988 (see appendix N).[7]

On February 28, 1989, MD WMA found that the Stormwater Retention Basin Closure Certification submitted to MD WMA in December 1988 satisfied all elements of the approval closure plan and COMAR 26.13.05.07.[36]

A subsurface tank of an unknown size, located outside the research and development area, was excavated and removed in 1970. The start-up date of the tank is unknown. The tank stored spent solvents of unknown content from the research and development area. The tank contents were pumped out regularly and disposed and removed by an approved facility. No soil samples were obtained during the tank excavation. It is not known where the tank was disposed. File information indicates that soil removed during the excavation was used to fill the hole left by the tank.[4] Monitoring well groundwater samples obtained downgradient from this area detected elevated levels of TOC, TOH, and several site-specific compounds. See Groundwater Report (EPA RCRA files) for details.[3]

The southwestern plant area was the location of lagoons, outfalls, and old process facilities. From 1970 until 1980, the lagoons were filled, the outfalls were demolished, and the shoreline was recontoured. The contents, size, use, and location of the lagoons and the content of the effluent outfalls are not known. The closure procedures for this area are not known. No soil samples have been obtained from this area. Monitoring well groundwater samples obtained downgradient from the research and development area detected several contaminants. See Groundwater Report (EPA RCRA files) for details.[3]

A 38,500-gallon clay-lined surface impoundment (pounce surge pond) stored wastewater runoff and washdown from the pounce manufacturing area from 1977 until 1984. The pond was closed in 1984 in accordance with closure plans developed by MD WMA and FMC Corporation. Samples were obtained from the pond contents and from the clay lining; the results are unavailable. File information indicates that no contaminants were detected in the clay lining; the clay lining was left in place.[3,21]

Approximately 233,608 pounds of waste were excavated from the pond and disposed at the SCA Chemical Services facility (EPA ID No. SCD070375985).[40]

ORIGINAL (Red)

According to correspondence between MD WMA and FMC, the pond was closed in accordance with FMC's Controlled Hazardous Substance Permit No. A-023.[3,21] A 40,000-gallon vertical cylindrical open-top above-grade steel tank was installed to replace the pond in 1984.[3]

On February 22, 1985, several drums (the exact number and contents unknown), observed during construction activities, were removed to Chemical Waste Management under the supervision of MD WMA. Samples were obtained from the drums prior to disposal. The analytical results are unavailable.[28]

On January 14, 1987, a 3,000-gallon waste-tar surge tank 4982, which holds no more than 1,500 gallons of tar at any given time, ruptured. The entire 1,500 gallons of tar were contained in the concrete dike surrounding the tank. MD WMA supervised the cleanup, which was performed by Clean-America. Although the tar was nonhazardous, it was disposed at the GSX-Pinewood facility.[35]

Several spills of raw products and wastes have occurred at the subject site. The spills were reported to MD DHMH and were cleaned up in accordance with FMC's Controlled Hazardous Substances Permit No. A-023 (see appendix O).[8,26,27]

ORIGINAL
(Red)

SECTION 3

ORIGINAL (Red)

3.0 ENVIRONMENTAL SETTING

3.1 Water Supply

[redacted]

[redacted]

There are no drinking water wells in the Pleistocene or Patapsco aquifers in areas near or on the site, either upgradient or downgradient. There are no public or private drinking water intakes in any portion of Curtis Bay, the Patapsco River, or Chesapeake Bay. In addition, groundwater beneath the site discharges directly to the surface waters of Curtis Bay, Stonehouse Cove, and subsequently to the Patapsco River. It cannot, therefore, reach any of the water supply wells in Anne Arundel County.[3]

A total of 58 monitoring wells have been installed at the site. The wells were completed in boreholes advanced by hollow-stem-auger drilling. All newly installed wells were constructed of two-inch-inner-diameter polyvinyl chloride flush joint threaded well casing and number 10 slot (0.01 inch) screen. A number of well nests were created to gauge vertical groundwater flow patterns and deeper groundwater chemistry.[3]

ORIGINAL (Red)

3.2 Surface Waters

Surface water runoff flows to the west and south to Stonehouse Cove and Curtis Bay, respectively; both are inlets of the main Patapsco Channel. The site is bordered to the west by Stonehouse Cove and to the south by Curtis Bay and is located in the Patapsco River drainage basin. The Patapsco River, located approximately 2.8 stream miles east of the subject site, flows approximately eight stream miles to the southeast and converges with the Chesapeake Bay. Several bays, rivers, coves, and inlets bisect the study area into long, narrow peninsulas that extend to the southeast and terminate at the Chesapeake Bay. The surface waters are brackish.[1]

The Patapsco River drainage basin, including Stonehouse Cove and Curtis Bay, are classified as Class I receiving waters as defined by the Maryland Receiving Water Quality Standards (COMAR 10.50.10.02). Class I is designated as tidal areas and wetlands. Class I waters are suitable for water-contact recreation, aquatic life, and wildlife but are not intended as suitable for the growth and propagation of fish or shellfish. However, licensed commercial and recreational fishing is permitted.[3]

The Patapsco River drainage basin and the Chesapeake Bay are utilized for several industrial/commercial purposes including wastewater discharges, commercial fishing, and commercial shipping. There are no state fish-management areas that are acquired and managed for the propagation, protection, and maintenance of fish populations by the state within the study area.[3]

No wetlands within the study area receive surface water runoff from the subject site.[46]

3.3 Hydrogeology

The geologic and hydrogeologic conditions in the study area were researched as part of the site inspection. A preliminary literature review was conducted to determine surface and subsurface geologic conditions, soil character, and the status of groundwater transport and storage.

ORIGINAL (Red)

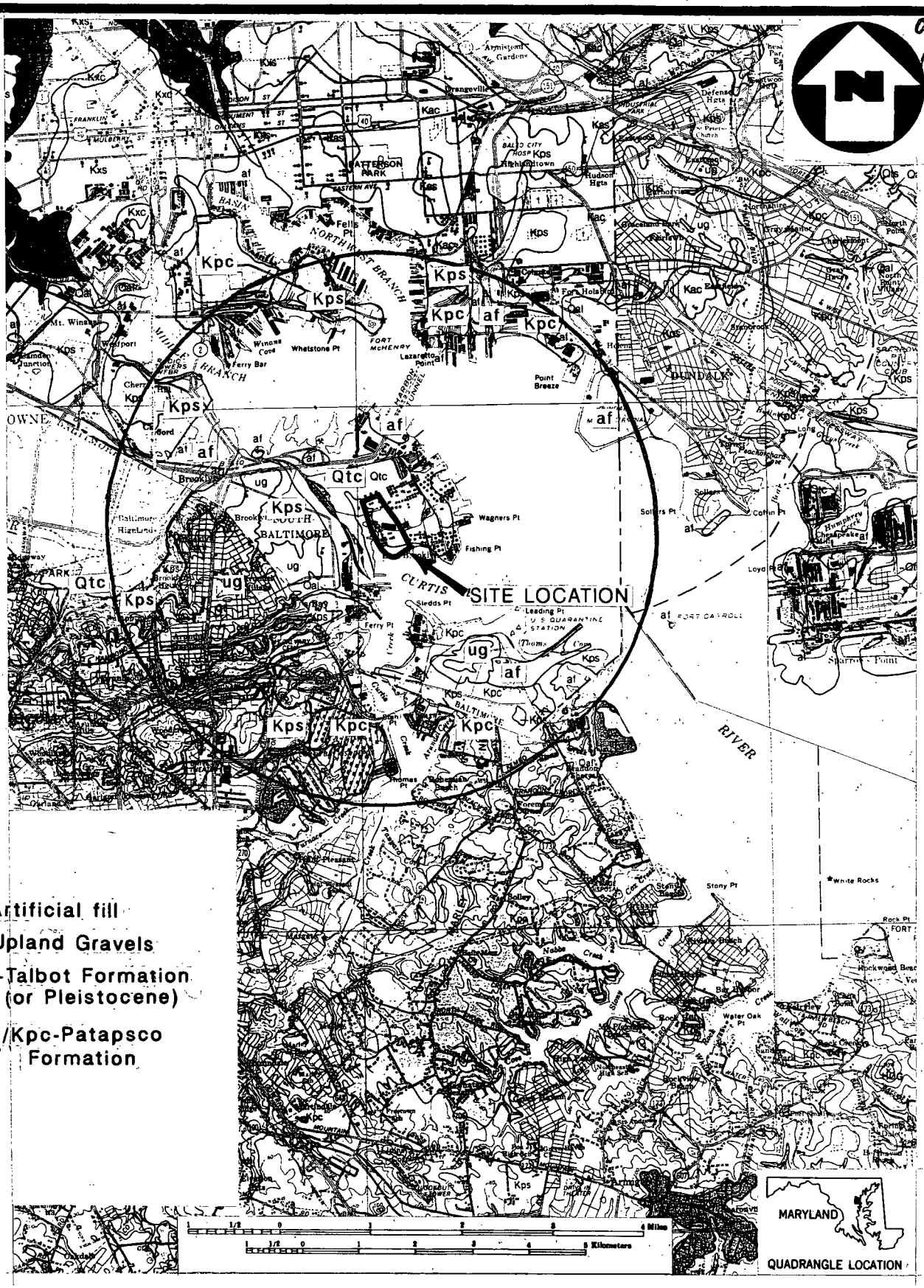
3.3.1 Geology

FMC Corporation site lies within the Atlantic Coastal Plain Province of Maryland. The Coastal Plain consists of unconsolidated sedimentary units, ranging in geologic age from Cretaceous to Recent, overlying Mesozoic age non-marine and Paleozoic age crystalline rocks. These southeastward-dipping sedimentary units, which range in thickness from tens to hundreds of feet in the study area, consist of interbedded gravels, sands, silts, and clays. Areas are also covered by interglacial fluvial deposits of Quaternary (Pleistocene) age. In addition, there are exposures of Paleozoic age basement rock, primarily in the stream valleys. The study area has a dendritic drainage pattern.[47]

Three distinguishable subsurface units underlie the FMC property. In descending stratigraphic order, they are surface or artificial fill, the Talbot Formation or Pleistocene deposits, and the Patapsco Formation.[3,47]

The majority of the site is immediately underlain by Quaternary age artificial or surface fill.[3,47] This unit consists of heterogeneous materials such as rock, unconsolidated sediment, slag, refuse, and dredge spoil.[47] Fill thickness on site generally increases from the northern portions of the site toward Stonehouse Cove and Curtis Bay. Total fill thickness on site ranges from 10 to 20 feet.[3]

The artificial fill is underlain by the silt-clay facies of the Quaternary age Talbot Formation, commonly referred to as the Pleistocene deposits.[3,47] This facies consists of buff to orange, poorly sorted, poorly bedded quartz silts, with kaolinite, illite, and montmorillonite clays. The bedded silt deposits also contain very sparse leaf and twig debris. The silt and silty clays probably accumulated in alluvial flood plain - open marsh environments, and the clays accumulated in estuarine environments.[47] Several lenses of sand and gravel occur throughout the silt and clay matrix but are relatively thin and discontinuous. These fine sand to boulder-size particles are mapped as Upland gravels (see figure 3.1, page 3-4) but were included as part of the Pleistocene sediments in this study. The Talbot Formation ranges in thickness from 3 to 40 feet beneath the site and appears to be continuous across the site. This would, for the most part, effectively isolate the artificial or surface fill material from the underlying Patapsco Formation.[3]



SOURCE: GEOLOGIC MAP OF BALTIMORE COUNTY AND CITY

FIGURE 3.1

GEOLOGIC MAP

NUS CORPORATION

FMC CORPORATION SITE

ORIGINAL (Red)

The two units are underlain by the important water-bearing Cretaceous age Patapsco Formation (uppermost unit of the Potomac Group). The Patapsco Formation (Kps - sand facies) consists of yellow, white, to red, well-sorted, medium- to fine-grained quartz sand, with locally abundant quartz gravel and clay clasts.[3,47] The sands are planar bedded to high-angle crossbedded and occasionally have fining-upward packages that are 10 to 15 feet thick.[47] This formation, deposited in a low-gradient, braided stream complex, is less than 100 feet in thickness and, based on a well log from an abandoned FMC water supply well, is approximately 75 feet thick beneath the site.[3,47] The formation has an approximate slope of 46 feet per mile beneath the site. Available information indicates that the intermediate clay horizon (Kpc - clay facies) typically found in the middle of the unit is nonexistent in the Fairfield district. The Patapsco Formation beneath the FMC property is probably a uniform sandy unit.[3] The clay facies crops out elsewhere within the three-mile radius and is typically a buff, red-yellow, and brown mottled kaolinitic clay containing variable amounts of quartz sand and silt.[47]

The Patapsco Formation is underlain by the Arundel Formation, a 25- to 200-foot-thick, low-permeable clay, and the Patuxent Formation, a 150-foot-thick sand, silt, and clay formation. Neither is utilized as an aquifer in the study area. Beneath these formations, at a depth greater than 400 feet, lies consolidated Paleozoic bedrock.[3]

3.3.2 Soils

The soil beneath the site has not been mapped; however, it is very likely it would have been classified as Urban land. Urban structures cover so much of this land type that identification of the soils is not practical. Most areas have been smoothed, and the original soil material has been disturbed, filled over, or otherwise destroyed by construction. The soil would have a permeability of approximately 10^{-3} to 10^{-5} cm/sec and a pH that would be too variable to estimate.[48]

ORIGINAL (Red)

3.3.3 Groundwater

The artificial fill and the Pleistocene sediments that underlie the site have relatively uniform water-bearing properties and, therefore, function as one continuous hydrologic unit. Shallow groundwater occurs in the fill material and Pleistocene water table at depths between 3 to 15 feet below ground surface. This shallow groundwater flows from the north to the south beneath the property. As this groundwater approaches the surface waters of Stonehouse Cove and Curtis Bay, the flow becomes radial and discharges to these bodies of water. This is because these surrounding bodies of water are at a lower hydraulic potential. The discharge rate has been estimated to be between 9,000 to 90,000 gallons per day (gpd) using hydraulic conductivity, hydraulic gradient, and water-table elevation data. There is also evidence of groundwater mounding throughout the site, resulting from preferential areas of recharge, but, generally, the groundwater flow in the Pleistocene water table is relatively constant.[3]

The representative hydraulic gradient across the site for the Pleistocene-fill aquifer is approximately 0.016 foot per foot. Calculated hydraulic conductivities of the Pleistocene-fill water table from numerous in-situ tests range from a low of 0.1 gpd per square foot to a high of 21 gpd per square foot (or 5×10^{-6} to 9.9×10^{-4} cm/sec). Aquifer performance tests yielded a higher hydraulic conductivity value of 50 gpd per squared foot (2.4×10^{-3} cm/sec) and may better represent the true aquifer groundwater conditions. The coefficient of transmissivity calculated from these tests was approximately 1,000 gpd per foot. Lastly, calculated groundwater velocities in the Pleistocene-fill water table using hydraulic conductivities and gradients range from approximately 0.03 to 0.8 feet per day.[3]

The Patapsco Formation is the major aquifer that underlies the site. Groundwater elevations observed in wells screened in the Patapsco range from 15 to 3 feet above mean sea level. Since these values are between 13 and 25 feet above the contact of the Pleistocene sediments and the Patapsco aquifer, it indicates that the Patapsco aquifer beneath the site is under artesian (confined) conditions. Flow direction in the Patapsco is to the southwest and is consistent with the regional dip of the formation. Based upon hydraulic gradients and storage coefficient data, groundwater in the Patapsco aquifer will discharge into the Curtis Bay approximately 300 to 2,000 feet into the bay from the southern shore of the site. Additional evidence that the bay and the Patapsco Formation are hydraulically interconnected resulted from the close relationship between tidal movement and groundwater elevation fluctuations observed in the monitoring wells. Discharge from the Patapsco into Curtis Bay has been estimated at 11,880 to 151,800 gpd.[3]

ORIGINAL (Red)

The hydraulic gradient in the Patapsco Formation beneath the site ranges from 0.005 to 0.002 foot per foot. In-situ tests indicate a representative hydraulic conductivity for the Patapsco is approximately 21 gpd per square foot (9.9×10^{-4} cm/sec), and available literature on the formation equates to a hydraulic conductivity of 270 gpd per square foot (1.3×10^{-2} cm/sec). Literature values for the coefficient of transmissivity for the formation in the vicinity of the site are approximately 2,700 per square foot per day or 20,000 gpd per foot. Lastly, groundwater flow velocities in the Patapsco range between 0.03 to 0.9 feet per day.[3] Wells completed in this aquifer can yield from at least 30 to 650 gallons per minute (gpm).[49]

Groundwater elevation monitoring data gathered at nested well pairs (at least two closely spaced wells that are screened in the Pleistocene-fill water table and the Patapsco aquifer) indicate a vertical flow potential between these two water-bearing units. An upward flow potential exists around the perimeter of the site, and downward flow is possible for the interior portions of the site. Although the silty clay layer does restrict vertical flow, there is a hydraulic connection between the Pleistocene-fill water table and the Patapsco aquifer.[3] Only a detailed on-site analysis of source location and hydraulic conductivity pathways could determine whether the Patapsco is affected by on-site contamination.

More than five acres of wetlands are located within the three-mile radius of the site. These wetlands are hydraulically interconnected with the shallow sedimentary units that underlie them and serve as discharge points for groundwater.[46]

3.4 Climate and Meteorology

Maryland has a continental type of climate and is marked by well-defined seasons. Spring and fall are occasioned with a rapid succession of warm and cold fronts. Summers are warm to hot. Winters are generally mild, with an average annual snowfall over Maryland ranging from 8 to 10 inches along the coastal area. Precipitation is generally uniform throughout the year. The heaviest precipitation occurs in the summer.[50]

The following values were compiled from the Baltimore - Washington International Airport, Maryland region, which is approximately five miles southwest of the site. This is the closest weather station to the site. The mean annual temperature for this area is 55.1°F. January is the coldest month, with a mean temperature of 32.7°F. July is the warmest month, with mean temperatures of 76.8°F. The mean annual precipitation for this area is 41.84 inches. The month with the highest precipitation is August, with a mean value of 4.62 inches. The month with the lowest precipitation is February, with a mean value of 2.98.[51] The 1-year, 24-hour rainfall is 2.5 inches.[52] The mean annual lake evaporation for this area is 36 inches, leaving a net precipitation of approximately 5.84 inches per year.[51,53]

ORIGINAL (Red)

3.5 Land Use

The subject site is bordered to the west by Stonehouse Cove, to the south by Curtis Bay, to the east by a chemical, oil, and tire company, and to the north by an oil company. The site is located in the commercial/industrial area of Curtis Bay, Maryland; the shoreline in this area is increasingly industrial.[1] Industries in this area include industrial and manufacturing parks, warehouses, storage yards, research laboratories, truck terminals, chemical storage tanks, coal and ore storage, and petroleum tank farms.[3]

Curtis Bay, located approximately 0.6 mile west, and Brooklyn, located approximately 1.3 miles west of the subject site, are the closest residential areas within the study area.[1]

The Baltimore and Ohio Railroad station is located approximately 0.6 mile southwest of the subject site. The Curtis Bay GSA Depot is located two miles south of the subject site. Immediately surrounding the site are tank farms.[1]

3.6 Population Distribution

According to the 1980 Baltimore Census of Population and Housing, approximately 7,664 people reside within the 0- to 1-mile radius of the site, approximately 26,630 people reside within the 1- to 2-mile radius of the site, and approximately 31,315 people reside within the 2- to 3-mile radius of the site. The total population within the 0- to 3-mile radius of the site is 65,609.[1,54]

3.7 Critical Environments

Except for occasional transient individuals, no federally listed or proposed endangered or threatened species are known to exist in the project impact area. There are no listed critical habitats for these species in the project area.[55]

No state fish-management areas acquired and managed by the state for the propogation, protection, and maintenance of fish population are located within the study area.[3]

No wetlands greater than five acres in size receive drainage from the subject site.[46]

ORIGINAL
(Red)

SECTION 4

4.0 WASTE TYPES AND QUANTITIES

An earthen pond of unknown size was utilized from an unknown date until 1930 for storing molasses before fermentation. The pond was allowed to dry between 1930 and 1940. The United States Industrial Alcohol Company, Incorporated, the owners and operators of the subject site, used this area between 1940 and 1954 for the disposal of an unknown quantity and content of production wastes. The quantity and content of other wastes generated by the company are unavailable.[6]

In 1954, FMC Corporation purchased the subject site from United States Industrial Alcohol and continued to dispose production and general wastes in the pond (disposal area). FMC Corporation estimated that the following wastes and waste quantities were disposed (see below).[3] The disposal area was closed in 1975. The actual size of this area has not been determined.[3,4,6]

Material	Estimated Amount (pounds)
acetoacetarylides dryer scrap	1,000,000
carbamate residues	400,000
pyrethrum flower residues	20,000
pilot plant wastes	10,000
7-hydroxy tar	3,000,000
7-nitro centrifuge bottoms	3,000,000
ethion filter aids and filter tubes	40,000
butacide tar	2,000,000
dapon gel and polymerized monomers	2,000,000
general trash and debris	30,000,000

Leachate, collected from a french drain system under the inactive disposal area, is discharged to an on-site wastewater treatment system. Quantities and characteristics for the leachate are unavailable. Information related to the operation and location of the wastewater treatment system is also unavailable.[4] A Notification of Hazardous Waste Site for the disposal area was completed by FMC Corporation on June 15,1981. The total facility waste amount that was landfilled, according to the form, was 216,000 cubic feet. The general waste types identified included inorganic, solvent, pesticide, heavy metal, acids, bases, and mixed municipal waste. No other waste information was contained in the notification.[10]

An unlined waste pond, of an unknown size, received spent hydrochloric acid solution from the production of tetradifon from 1960 until 1970. The pond was excavated in 1970, and the contents and residues (an unknown quantity) were disposed at the B.F.I. Solley Road Landfill in Ann Arundel County. The pond received an estimated 900 pounds per hour of the spent hydrochloric acid solution.[4,5] The waste pond received the influent from building no. 52, where tetradifon was produced from 1960 until 1970. The building caught fire in 1979. An unknown quantity of demolition material from the fire was disposed off site at an unknown landfill. An unknown quantity of process equipment was scrapped by American Wrecking Company, Incorporated.[4,5]

In 1977, pounce (a pesticide) was produced in building no. 91. A 38,500-gallon-capacity, clay-lined pond (pounce surge pond), stored wastewater and wash water from the pounce manufacturing area from 1977 until 1984. The exact composition of these liquids is unknown. The pond was closed in 1984 in accordance with closure plans developed by the Maryland Waste Management Administration (MD WMA) and FMC Corporation. Approximately 233,608 pounds of hazardous waste solid (hazardous class N.O.S. - ORME, I.D. No. NA9189) material were excavated from the pond and transported by Bryson Trucking (EPA I.D. No. SCD000822312) to SCA Chemical Services (EPA I.D. No. SCD070375985).[40] The clay lining was left in place, and the pond was filled and covered in 1984.[3]

A stormwater retention basin, approximately 2,200 square feet in size, with an unknown depth, was installed in 1976. The basin was utilized for the collection of surface water runoff from the 7-OH plant area and had a single clay lining. Analysis of the basin's influent detected levels of pH from greater than 12.5 to less than 2. The basin was therefore considered to be a hazardous waste storage facility. The basin was closed in 1987, and approximately 215 tons of accumulated liquids, approximately 1,097 tons of solid residues, and approximately 504 tons of fabriform and other concrete debris were removed to LSX Services (EPA I.D. No. SCD070375985). The basin was replaced with a neutralization tank. Waste characteristics and quantities for the tank are unavailable.[4,7]

A subsurface tank of an unknown size stored spent solvents of an unknown quantity and composition from the research and development area. According to FMC representatives, the tank contents were pumped at periodically and disposed off site at an approved facility (this facility was not identified). The tank was removed in 1970 and disposed off site at an unknown facility. The soil from the tank excavation was replaced to its original location.[4] The research and development facility was demolished in 1972. An unknown quantity and composition of demolition debris were disposed off site at an unknown facility.[3]

ORIGINAL (Red)

According to the 1980 Potential Hazardous Waste Site Identification and preliminary assessment for FMC Corporation, approximately 120 tons per year of sludge organic residues, 598,000 gallons per year of caustics, and 225 tons per year of general refuse were disposed at the B.F.I. Solley Road Landfill in 1980. The company incinerated an estimated 3,600 gallons per year of oily wastes and 2,590,800 gallons per year of nonhalogenated solvents. Approximately 18 tons per year of ferrous salvage and 222.5 tons per year of nonferrous were disposed at Englehald Industries (location and EPA identification number are not available).[56]

In 1981, Controlled Hazardous Substances (CHS) Permit No. A-023 authorized FMC Corporation to incinerate the following:[8]

Material	Quantity (tons per year)
allyl alcohol (allyl ether)	40
o-nitrophenol (basin oils)	322
diallyl phthalates (and related materials)	30
pounce organics	90
D.V. step 3 head cut (chloroacetylenics)	85
D.V. (ester waste methanol)	1,800
methallyl chloride (mac wastes)	2,500
7 hydroxy tar	3,800
claisen tar	2,200
xylene	20
D.V. step I waste	16
D.V. step I bottoms	150
D.V. step III bottoms	168
D.V. step III waste	16
waste carbon tetrachloride	130
heptane	29
hexane	48

ORIGINAL (Red)

This permit allowed the facility to store the following materials:[8]

Material	Quantity (tons per year)
Phosphorous pentasulfide (P_2S_5)	5
ethion filter cake	40
D.V. ester spent carbon	5
contaminated laboratory glassware	4
acute hazardous (miscellaneous)	100
hazardous (miscellaneous)	4,000

An inactive disposal area containing the following was also allowed under this permit:[3,8]

Material	Quantity (tons per year)
acetoacetarylides dryer scrap	500
carbamate residues	200
pyrethrum flower residues	10
pilot plant wastes	5
ethion filter aids and filter tubes	20
butacide tar	1,000
dapon gel and polymerized monomers	1,000
7 hydroxy tar	1,500

A 1981 Potential Hazardous Waste Site Identification and preliminary assessment indicated that, before 1981, wastes were incinerated, landfilled, or placed in surface impoundments on site. Wastes identified were hardened sludges, polymerized tars and resins. No waste quantities or disposal location/facilities were identified.[15]

ORIGINAL (Red)

According to the 1982 RCRA Notification, the following wastes were identified as being handled by the subject site.[13]

Code	Material
F001	Spent halogentated solvents used in degreasing
F002	Spent halogenated solvents
F003	Spent nonhalogenated solvents
F004	Creosols, cresylic acid, nitrobenzenes, still bottoms from their recovery
F005	Methanol, toluene, methyl ethyl ketone, methly isobutyl ketone, carbon desulfide, isobutanol, pyridine, and still bottoms
U002	acetone
U013	asbestos
U019	benzene
U037	chlorobenzene
U044	chloroform
U056	cyclohexene
U068	dibromomethane
U090	dihydrosafrole
U112	ethyl acetate
U135	hydrogen sulfide; phenol
U141	isosafrole
U154	methanol
U190	phthalic anhydride
U203	safrole
U211	tetrachloromethane
U220	toluene
U239	xylene

An inventory of known hazardous wastes that were generated or known to exist at the FMC Corporation Baltimore plant was submitted to MD DHMH in November 1986. See appendix D for the waste characteristics, waste quantities, and disposal facilities identified by the FMC Company.

Wastes identified in the 1987 CHS Permit No. A-023 for on-site incineration were as follows:

NON-CHS WASTES

Liquid Waste Streams

- super tar
- claisen tar
- 7-OH tars (Plants I, III, IV)
- D.V. ester step 1 waste
- D.V. ester step 3 waste
- plant 4 CD-101 flush oil
- plant 4 tars (U-11 and U-12 tars)
- waste No. 2 fuel oil
- waste oil
- pounce organics
- D.V. ester step 3 head cut C/A
- D.V. ester step 3 bottoms
- heptane
- hexane
- xylene from 7-OH
- plant 4 organics
- command herbicide organic waste stream
- diallyl phthalates

Gaseous Waste Streams

- xylene waste gas stream
- 7-OH Plant III Step I gas steam

CHS WASTES

- second basin oil
- third basin oil
- waste methanol
- TMOA waste (trimethyl-orthoacetate)
- MAC waste (methallyl chloride)
- allyl alcohol/ether

Waste quantities were not included in the permit.[34]

Approximately 1,500 gallons of waste tar from a ruptured "tar surge tank 4982" were disposed by GSX Services at its Pinewood facility in 1987.[35]

Quarterly reports submitted to WMA in 1988 and 1989 listed the quantities of materials stored and incinerated on site. Some of the quarterly reports included the following wastes and quantities:[12,29]

FMC CORPORATION - BALTIMORE, MARYLAND
FOURTH QUARTER, 1988 REPORT

Permit No. A-023

EPA I.D. No. MDD003071875

Special Condition A

Materials Incinerated On Site	Quantity (tons)
7-hydroxy tar (plant 3)	372
claisen tar	134
plant 4 waste	1,142
methallyl chloride waste	914
D.V. ester waste methanol and chloroacetylenics	224
basin oil	4

Materials Stored on Site	Quantity (tons)
waste phosporus pentasulfide	3.2
contaminated glassware	7.5
hazardous waste	260

ORIGINAL (Red)

FMC CORPORATION - BALTIMORE, MARYLAND
FIRST QUARTER, 1989 REPORT

Permit No. A-023

EPA I.D. No. MDD003071875

Special Condition A

Materials Incinerated On Site	Quantity (tons)
7-hydroxy tar (plant 3)	85
claisen tar	18
plant 4 waste	1,126
methallyl chloride waste	548
D.V. ester waste methanol and chloroacetylenics	705
basin oil	52

Materials Stored on Site	Quantity (tons)
glassware	3.3
P_2S_5	0.175
hazardous waste (pounds)	224

ORIGINAL (Red)

FMC CORPORATION - BALTIMORE, MARYLAND
SECOND QUARTER, 1989 REPORT

CHS Facility Permit A-023

Special Condition A

Materials Incinerated On Site	Quantity (tons)
7-hydroxy tar (plant 3)	0
claisen tar	0
plant 4 waste	1,219
methallyl cloride waste	471
D.V. ester waste methanol and chloroacetylenics	795
basin oil	64

Materials Stored on Site	Quantity (tons)
Glassware	1.9
P_2S_5	0.360
Hazardous Waste	176

ORIGINAL (Red)

FMC CORPORATION - BALTIMORE, MARYLAND
THIRD QUARTER, 1989 REPORT

Permit No. A-023

EPA I.D. No. MDD003071875

Special Condition A

Materials Incinerated On Site	Quantity (tons)
plant 4 waste	969
basin oils	44
methallyl chloride waste	523
D.V. ester waste methanol	631
herbicide bottoms	69
waste oil	0

Materials Stored on Site	Quantity (tons)
glassware	2.1
phosphorous pentasulfide	0.4
hazardous waste	242

It is not known if quarterly reports are currently submitted by FMC Corporation.

Several spills of raw product and wastes have occurred at the subject site. The spills were reported to MD WMA and were cleaned up and disposed off site at approved facilities, as outlined in the facility's Controlled Hazardous Substance Permit No. A-023.[8,26,27] (See appendix O for a copy of spill correspondence).

A summary of spill quantities and characteristics is as follows:[8,26,27]

ORIGINAL (Red)

Summary of Spills

Spill	Volume	Date
hydrochloric acid	490 gallons	January 3, 1985
hydrochloric acid	96 gallons	June 20, 1985
caustic (exact content unknown)	25 gallons	July 12, 1985
D.V. ester	1 to 2 gallons	December 26, 1985
D.V. ester	1 to 3 gallons	January 15, 1986
sodium sulfide	50 gallons	January 18, 1986
copper sludge	20 gallons	May 22, 1986
93 percent sulfuric acid	30 to 40 gallons	June 2, 1986
heavy oils (exact content unknown)	100 gallons	December 25, 1986
25 percent caustic solution	10 gallons	March 9, 1987
sodium sulfide	10 gallons	March 30, 1987
47 percent potassium carbonate	50 gallons	April 1, 1987
hydrochloric acid	100 gallons	May 15, 1987
sulfuric acid	10 to 15 gallons	June 12, 1987
hydroxylamine sulfate solution	6,700 gallons	January 22, 1988
methyl isobutyl ketone	180 to 190 pounds	February 26, 1988
methyl isobutyl ketone	50 gallons	March 8, 1988
sodium sulfide solution	15 gallons	June 20, 1988
methallyl chloride	20 gallons	May 24, 1989
sodium sulfide solution	50 gallons	June 5, 1989

FMC Corporation submitted a Hazardous Waste Generator Shipment Report to WMA on May 24, 1989. This report included wastes streams, wastes quantities, and waste disposal facilities for the FMC plants. For a summary of the report, see the following table.[57]

ORIGINAL (Red)

Summary of Hazardous Waste Generation, Shipment, and Management

Waste	Quantity	Disposal Facility	Disposal Facility Identification Number	Other
corrosive filtrate from the chloride process	1,588,000 pounds	E.I. Dupont DeNemours and Company, Incorporated	NJD002385730	
ignitable distillates containing methanol and N-chlorotoluene	772,000 pounds	Safety Kleen Envirosystems	ILD980613913	
ignitable distillates residue containing xylene	3,382,000 pounds			incinerated on site
corrosive sludge containing 7-OH and $7NO_2$ tars	31,000 pounds	Chemical Waste Management	ALD000622464	
ignitable residue carbon tetrachloride and methanol	514,017 pounds	Rollins Environmental Service	NJD053288239	
ignitable residue containing xylene, methanol, mirok, tars	361,025 pounds	Rollins Environmental Service	NJD053288239	
ignitable ditillates containing trithylphosphorodithidate and toluene	87,000 pounds	Rollins Environmental Service	NJD053288239	
corrosive filtrate from cyermethrin	4,704,000	E.I. Dupont DeNemours and Company, Incorporated	NJD002385730	
corrosive filtrate from bifeuthrin process	396,000 pounds	E.I. Dupont DeNemours and Company, Incorporated	NJD002385730	
wash cut from bifeuthrin process	124,000 pounds	E.I. Dupont DeNemours and Company, Incorporated	NJD002385730	
decanted organics containing o-nitrophenol and xylene	129,000 pounds			incinerated on site
ignitable residue containing methallyl chloride	3,548,000 pounds			incinerated on site
ignitable tars containing xylene	5,005,000 pounds			incinerated on site
ignitable solvent waste containing divinyl ester and methanol	2,850,000 pounds			
ignitable solvent waste from reaction of divinyl ester	40,175 gallons	Solvent Resource Recovery	OHD093945293	

FMC Corporation currently disposes all wastes off site. Several wastewater treatment systems treat an unknown content and quantity of wastewaters from production processes before discharge into the municipal sewer system or to Curtis Bay. The site has four NPDES-permitted outfalls. The average 30-day effluent from outfall no. 002A is 0.0447 million gallons per day (mgd), and the reported maximum daily discharge from outfall no. 003A is 0.00144. The quantity of effluent from outfall nos. 004 and 005 is currently unavailable.[11]

ORIGINAL
(Red)

SECTION 5

ORIGINAL (Red)

F3-8908-15

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. SITE NAME AND LOCATION

01 SITE NAME	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
FMC Corporation	1701 East Patapsco

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Baltimore	MD	21226	Baltimore	510	03

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
39° 16' 09" N	76° 34' 17" W	☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
N/A (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	approximately 1915 (BEGINNING YEAR) present (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corporation ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ☐ E. STATE ☐ F. STATE CONTRACTOR ☐ G. OTHER

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Alicia Shultz	Biologist	NUS Corporation	(215) 687-9510

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
			( )
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
			( )
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
N/A ☐ PERMISSION ☐ WARRANT	N/A	N/A

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Gregory Ham	U.S. EPA	(215) 597-8229

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Alicia Shultz	NUS	FIT 3	(215) 687-9510	2/8/90 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [X] A. SOLID
- [ ] B. POWDER, FINES
- [X] C. SLUDGE
- [ ] D. OTHER _____ (Specify)
- [ ] E. SLURRY
- [X] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS approximately 18,811

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- [X] A. TOXIC
- [X] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [X] D. PERSISTENT
- [X] E. SOLUBLE
- [ ] F. INFECTIOUS
- [X] G. FLAMMABLE
- [X] H. IGNITABLE
- [X] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [X] K. REACTIVE
- [X] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	2020.3	tons per year	
OLW	~~OILY WASTE~~ TAR	2270	tons per year	
SOL	SOLVENTS	3763	tons per year	
PSD	PESTICIDES	product		undetermined amount
OCC	OTHER ORGANIC CHEMICALS	59	tons per year	
IOC	INORGANIC CHEMICALS			
ACD	ACIDS	3034	tons per year	* All wastes are disposed off site.
BAS	BASES			The values were taken in 1989.
MES	HEAVY METALS			(reference 2)

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently used CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
pest.	DDT	50-29-3	Compounds detected in	2,200	ug/kg
pest.	DDE	72-55-9	on-site soils.	950	ug/kg
pest.	DDD	72-54-8		2,000	ug/kg
pest.	tetradifon	N/A		14	mg/kg
pest.	ethion	N/A		12	mg/kg
pest.	dinoseb	N/A		220,000	mg/kg
BNA	PAHs	N/A		112,000	ug/kg
INO	lead	7439-92-1		1,400	mg/kg
INO	mercury	7439-97-6		4.5	mg/kg
	Hazardous substances taken	from NUS FIT	3- Field Trip Report for		
	the FMC Corporation.				

V. FEEDSTOCKS (See Appendix for CAS Numbers) N/A

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. NUS FIT 3. Addendum to the Field Trip Report for FMC Corporation Baltimore. TDD No. F3-8306-02, February 5, 1985.
2. Dean, Parker, Environmental Manager, FMC Corporation, to Emily Troyer, Maryland Waste Management Administration, Correspondence. May 24, 1985.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [X] OBSERVED (DATE: 1982) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0
04 NARRATIVE DESCRIPTION
High levels of total organic halogen were detected in the range of 0.04 mg/l to 194 mg/l in on-site monitoring wells. No potable supplies are obtained from groundwater within the study area.

01 [X] B. SURFACE WATER CONTAMINATION — 02 [X] OBSERVED (DATE: 1982) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 7,664
04 NARRATIVE DESCRIPTION
High levels of total organic halogens were detected in on-site monitoring wells in the range of 0.04 mg/kg to 194 mg/kg, which discharge to Stonehouse Cove and Curtis Bay. Population reflects the total population within the 1-mile radius of the site.

01 [X] C. CONTAMINATION OF AIR — 02 [X] OBSERVED (DATE: 8/5/88) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 7,664
04 NARRATIVE DESCRIPTION
Approximately 200 cubic feet of gas containing 100 ppm hydrogen cyanide was vented to the atmosphere. The total population within the 1-mile radius of the site is 7,664.

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE:) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
None reported or observed.

01 [ ] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE:) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
None reported or observed.

01 [X] F. CONTAMINATION OF SOIL — 02 [X] OBSERVED (DATE: 2/15/85) — [ ] POTENTIAL — [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: unknown acres
04 NARRATIVE DESCRIPTION
Pesticides in the range of 12 mg/kg to 220,000 mg/kg were detected in on-site soils. The area of contamination has not been determined.

01 [ ] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE:) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
None reported or observed.

01 [ ] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE:) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
None reported or observed.

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE:) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
None reported or observed.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None reported or observed.

01 ☒ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Groundwater, containing significant levels of total organic halogens and other contaminants, discharges to Stonehouse Cove and Curtis Bay. Fish, shellfish, aquatic invertebrates, and water fowl could be potentially affected.

01 ☒ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Groundwater containing significant levels of contaminants and potential pesticides discharges to Stonehouse Cove and Curtis Bay. Pesticides taken up by fish and shellfish have the potential to contaminate the bay's food chain.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: unknown — 04 NARRATIVE DESCRIPTION

Contaminants have been detected in groundwater wells that "finger print" substances disposed in a disposal area.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None reported or observed.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None reported or observed.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None reported or observed.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None reported or observed.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 7,664

IV. COMMENTS

The total population within the 1-mile radius of the site is 7,664.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS FIT 3. Addendum to the Field Trip Report for the FMC Corporation, Baltimore. TDD No. F3-8306-02. February 5, 1985.

Chicca, William, Maryland Department of Health and Mental Hygiene, to John Koontz, Maryland Waste Management Administration. Memorandum. March 11, 1983.

(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	017

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
[X] A. NPDES	MD0000299	unknown	unknown	
[ ] B. UIC				
[ ] C. AIR				
[X] D. RCRA	MD0003071825	1981	N/A	Notification of Hazardous Waste
[ ] E. RCRA INTERIM STATUS				Site Form
[ ] F. SPCC PLAN				
[X] G. STATE (Specify)	A-023	1987	1990	Used to operate a controlled
[ ] H. LOCAL (Specify)				hazardous substance facility
[ ] I. OTHER (Specify)				
[ ] J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
[X] A. SURFACE IMPOUNDMENT	unknown	
[ ] B. PILES		
[X] C. DRUMS, ABOVE GROUND	unknown	
[X] D. TANK, ABOVE GROUND	unknown	
[X] E. TANK, BELOW GROUND	unknown	
[X] F. LANDFILL -disposal area	216,000	cubic feet
[ ] G. LANDFARM		
[ ] H. OPEN DUMP		
[ ] I. OTHER (Specify)		

04 TREATMENT (Check all that apply)
[X] A. INCINERATION
[ ] B. UNDERGROUND INJECTION
[ ] C. CHEMICAL/PHYSICAL
[ ] D. BIOLOGICAL
[ ] E. WASTE OIL PROCESSING
[X] F. SOLVENT RECOVERY
[ ] G. OTHER RECYCLING/RECOVERY
[ ] H. OTHER (Specify)

05 OTHER

[X] A. BUILDINGS ON SITE

approximately 60

06 AREA OF SITE

67.5 Acres

07 COMMENTS

An incinerator operated on-site on an intermittent basis from 1978 until 1990 under permit A-023. Many of the on-site processes are unknown. All hazardous wastes are currently disposed off site.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

[ ] A. ADEQUATE, SECURE [X] B. MODERATE [ ] C. INADEQUATE, POOR [ ] D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Several tanks of an unknown size and content are located on site. Drums containing hazardous substances are stored on concrete permitted hazardous storage areas.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: [ ] YES [X] NO

02 COMMENTS

A gate equipped with a guardhouse surrounds the site.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

O'Brien and Gere. Ground Water Report for the FMC Corporation. January 1986.
National Pollutant Discharge Elimination System. Discharge Monitoring Report. April 1, 1989.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	017

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as appropriate)

	SURFACE	WELL
COMMUNITY	A. ☒	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS N/A

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. >4 (mi)

B. >4 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (Adequate other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other water sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER approximately 32,805

03 DISTANCE TO NEAREST DRINKING WATER WELL unknown (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
3 to 15 (ft)	to southwest	3 to 15 (ft)	936,000 (GPD)	☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including number, depth, and condition; records of abandonment and locations)

No known home wells are located within the study area. The only known wells within the study area are the 58 monitoring wells on site.

10 RECHARGE AREA

☒ YES ☐ NO

COMMENTS recharge from percolation of precipitation.

11 DISCHARGE AREA

☒ YES ☐ NO

COMMENTS To Curtis Bay, Stonehouse Cove, and Patapsco River.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Stonehouse Cove	☐	adjacent (mi)
Curtis Bay	☐	adjacent (mi)
Patapsco River	☐	2.8 (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 7,664 (NO. OF PERSONS)	B. 34,294 (NO. OF PERSONS)	C. 65,609 (NO. OF PERSONS)

02 DISTANCE TO NEAREST POPULATION 2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE approximately 9,500

04 DISTANCE TO NEAREST OFF-SITE BUILDING adjacent to the site boundaries (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The site is located within an industrial/commercial area of Curtis Bay, Maryland. Immediately surrounding the site are tank farms. The closest residential areas are Brooklyn and Curtis Bay, located 1.3 miles and 0.6 miles, respectively, from the site.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	017

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-6} - 10^{-8} cm/sec ☐ B. 10^{-4} - 10^{-6} cm/sec ☐ C. 10^{-4} - 10^{-3} cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

10^{-3} to 10^{-5} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE (10^{-4} - 10^{-6} cm/sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} - 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

$<10^{-3}$ cm/sec

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
400 (ft)	unknown (ft)	unknown

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
5.84 (in)	2.5 (in)	3 to 5 %	south-southwest	3 to 5 %

09 FLOOD POTENTIAL	10
SITE IS IN 1 YEAR FLOODPLAIN	N/A ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. adjacent (mi)	B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

0 (mi)

ENDANGERED SPECIES: N/A

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. adjacent (mi)	B. 0.6 (mi)	C. N/A (mi)	D. N/A (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The FMC Corporation lies in the Atlantic Coast Plain Physiographic Province. The topography of the coast plain is characterized by low-relief hills, shallow valleys, and broad plains. The site is located in the Patapsco River Drainage Basin.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

O'Brien and Gere, Ground Water Report for the FMC Corporation. January 1986.

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	N/A	N/A	N/A
SURFACE WATER	N/A	N/A	N/A
WASTE	N/A	N/A	N/A
AIR	N/A	N/A	N/A
RUNOFF	N/A	N/A	N/A
SPILL	N/A	N/A	N/A
SOIL	N/A	N/A	N/A
VEGETATION	N/A	N/A	N/A
OTHER	N/A	N/A	N/A

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL none

02 IN CUSTODY OF N/A

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS NUS FIT 3 Files

V. OTHER FIELD DATA COLLECTED

none

VI. SOURCES OF INFORMATION

N/A

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
FMC Corporation	

03 STREET ADDRESS	04 SIC CODE
1701 East Patapsco Avenue	

05 CITY	06 STATE	07 ZIP CODE
Baltimore	MD	21226

PARENT COMPANY

08 NAME	09 D+B NUMBER
N/A	

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S)

01 NAME	02 D+B NUMBER
Industrial Alcohol Corporation	

03 STREET ADDRESS	04 SIC CODE
out of business	

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S)

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION

O'Brien and Gere. Ground Water Report for FMC Corporation, Baltimore. January 1986.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. CURRENT OPERATOR

01 NAME: same as owners	02 D+B NUMBER	10 NAME: N/A	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER		

OPERATOR'S PARENT COMPANY (If applicable)

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from current operator)

01 NAME: N/A	02 D+B NUMBER	10 NAME: N/A	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

O'Brien and Gere. Ground Water Report for the FMC Corporation, Baltimore. January 1986.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	017

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
FMC Corporation	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
1701 East Patapsco Avenue	

05 CITY	06 STATE	07 ZIP CODE
Baltimore	MD	21226

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
EI Dupont De Nemours		Rollins Environmental	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Route 130		Route 322	

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
Deepwater	NJ	08023	Bridgeport	NJ	08014

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Chemical Waste Management		Safety Kleen	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
AL. Highway 17 at milemarker 163		633 East 138 Street	

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
Emelle	AL	35459	Polton	IL	60419

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Maryland Hazardous and Solid Waste Management Administration. Hazardous Waste Generation Shipment and Management Report. 1988.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ D. SPILLED MATERIAL REMOVED — 02 DATE 1988 — 03 AGENCY _____
04 DESCRIPTION
Numerous spills have occurred and have been reported to MD WMA and cleaned up in accordance with permit A-023.

01 ☒ E. CONTAMINATED SOIL REMOVED — 02 DATE 1988 — 03 AGENCY _____
04 DESCRIPTION
Numerous spills have been cleaned up; soils associated with the spills were removed.

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
The contents of the acid-waste pond , pounce surge pond, and the storm water retention basin were removed and disposed at approved facilities.

01 ☒ H. ON SITE BURIAL — 02 DATE 1975 — 03 AGENCY _____
04 DESCRIPTION
From 1915 until 1975, an on-site disposal area was used to dispose manufacturing and general wastes.

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ L. ENCAPSULATION — 02 DATE 1988 — 03 AGENCY O'Brien and Gere
04 DESCRIPTION
The storm water retention basin was covered with a clay cap.

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	017

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ S. CAPPING/COVERING
02 DATE 1984 and 1988 03 AGENCY O'Brien and Gere
04 DESCRIPTION
A storm water retention pond and a pounce surge pond were emptied, capped, and covered.

01 ☐ T. BULK TANKAGE REPAIRED
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ V. BOTTOM SEALED
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ W. GAS CONTROL
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ X. FIRE CONTROL
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ Y. LEACHATE TREATMENT
02 DATE 1978 03 AGENCY FMC Corporation
04 DESCRIPTION
Installation of a French drain was completed by FMC Corporation under the disposal area in order to collect leachate and direct it to the on-site wastewater treatment system.

01 ☐ Z. AREA EVACUATED
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ 1. ACCESS TO SITE RESTRICTED
02 DATE unknown 03 AGENCY FMC Corporation
04 DESCRIPTION
A fence with a guardhouse surrounds the site.

01 ☐ 2. POPULATION RELOCATED
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☒ 3. OTHER REMEDIAL ACTIVITIES
02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
The contents of an acid-waste pond , a pounce surge pond, and a storm water retention basin were filled and covered in 1970, 1984, and 1988, respectively. All waste materials were removed off site, to an approved facility. The Maryland Waste Management Administration oversaw the removal of the pounce surge pond and the storm water retention basin.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

O'Brien and Gere. Ground Water Report for the FMC Corporation, Baltimore. January 1986.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	017

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☒ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

Before 1978, permit A-023 was issued to the FMC Corporation by the Maryland Department of Health and Mental Hygiene (MD DHMH) for the operation of a treatment and storage facility and for the maintenance of an inactive disposal facility. In addition, the facility was authorized to operate an incinerator and was required to submit a report on the quantity and the nature of the materials disposed in the area. The permit was re-issued in 1981, including a schedule of compliance. The company was directed to install a leachate collection system for the disposal area, sample the leachate, and implement a groundwater monitoring program.

On June 21, 1983, NUS FIT 3 collected 12 split spoon samples from the subject site.

A Notice of Violation was issued to FMC by MD DHMH on March 21, 1985 because FMC had not notified MD DHMH of a hydrochloric acid spill within the time frame outlined in Permit-A02.

On January 13, 1986, a Consent Order was issued by MD WMA to the FMC Corporation. The order required the company to develop a comprehensive plan to characterize and remediate the contamination detected on site. In addition, quarterly groundwater quality data reports were required to be submitted to MD WMA.

On November 11, 1988, the Maryland Department of the Enviroment assessed FMC Corporation with a civil penalty of $4,000 for leaking and poor storage containers in controlled hazardous substance areas: a violation of Permit A-023.

*

Convey, JH, FMC Corporation, to William Chicca, Maryland Water Resources Administration. Correspondence. 1978.

Maryland Department of Health and Mental Hygiene, Designated Hazardous Substances Facility Permit A-023, for the FMC Corporation. November 16, 1981.

NUS FIT 3. Addendum to the Field Trip Report for the FMC Corporation, Baltimore. TDD No. F3-8306-02. February 5, 1985.

Waste Management Administration. Notice of Violation for the FMC Corporation. C-0-85-246. March 21, 1985.

Department of Health and Mental Hygiene. Consent Order for the FMC Corporation. C-0-85-498. January 13, 1986.

Department of the Environment. Hazardous and Solid Waste Management Administration. Complaint in the matter of the FMC Corporation. C-85-057. November 30, 1988.

III. SOURCES OF INFORMATION

* see above.

ORIGINAL
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SECTION 6

6.0 REFERENCES FOR SECTIONS 1.0 THROUGH 5.0

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2. Maryland Waste Management Administration. Preliminary assessment of FMC Corporation. August 1984.

3. O'Brien and Gere. Groundwater Report for FMC Corporation, Baltimore, Maryland. January 1986.

4. FMC Corporation, to United States Environmental Protection Agency. Identification of Solid Waste Management Units. Undated.

5. Palmer, D.W., Environmental Manager, FMC Corporation, to Neil Swanson, Environmental Protection Agency. Correspondence. July 20, 1983.

6. Convey, J.H., Environmental Manager, FMC Corporation, to William Chicca, State of Maryland Water Resource Administration. Correspondence. December 19, 1978.

7. O'Brien and Gere. Stormwater Retention Basin Closure Certification for FMC Corporation, Baltimore, Maryland. December 1988.

8. State of Maryland, Office of the Secretary, Department of Health and Mental Hygiene. Designated Hazardous Substances Facility Permit A-023 for FMC Corporation. November 16, 1981.

9. Geraghty and Miller, Incorporated. Hydrogeologic Assessment, FMC Baltimore. 1981.

10. United States Environmental Protection Agency. Notification of Hazardous Waste Site for FMC Corporation. MDD003071875. June 5, 1981.

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11. National Pollutant Discharge Elimination System. Discharge Monitoring Report, Permit No. MD0000299 for FMC Corporation. Monitoring period April 1, 1989.

12. Parker, Dean, Environmental Manager, FMC Corporation, to Joseph Stang, Maryland Department of the Environment. Correspondence. October 3, 1988.

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14. United States Environmental Protection Agency, Facility Inventory System. Facility Master Listing; Facility ID No. MDD003071875. January 23, 1981.

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16. Chicca, William, Fredric Sachs, and Lou Martino, Maryland Department of Health and Mental Hygiene, to John Koontz, FMC Corporation. Memorandum. March 11, 1983.

17. Sachs, Fredric, Office of Environmental Programs to Darryl Palmer, FMC Corporation. Correspondence. May 10, 1983.

18. Laskowski, Stanley, Action Regional Administrator, United States Environmental Protection Agency, to Daryl Palmer, FMC Corporation. Correspondence. June 15, 1983.

19. Palmer, D.W., Environmental Manager, FMC Corporation, to Neil Swanson, United States Environmental Protection Agency. Correspondence. June 29, 1983.

20. Palmer, D.W., Environmental Manager, FMC Corporation, to Neil Swanson, Environmental Protection Agency. Correspondence. July 7, 1983.

21. Palmer, D.W., Environmental Manager, FMC Corporation, to Lou Martino, Environmental Protection Agency. Correspondence. January 6, 1984.

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23. Maryland Department of Health and Mental Hygiene. Consent Order for FMC Corporation. C-0-85-498. January 13, 1986.

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25. NUS Corporation. Addendum to the Field Trip Report for FMC, Baltimore. TDD No. F3-8306-20, February 5, 1985.

26. Palmer, D.W., Environmental Manager, FMC Corporation to Joseph Stans, Maryland Department of Health and Mental Hygiene. Correspondence. January 3, 1985.

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28. Maryland Department of Health and Mental Hygiene, Office of Environmental Programs. Report of Observations for FMC Corporation. February 21, 1985.

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33. Nelson, Ronald, Maryland Department of Health and Mental Hygiene, to Charles Shadeen, Environmental Engineer, FMC Corporation. Correspondence. October 28, 1986.

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36. Bowels, Alvin, Hazardous Waste Program, Maryland, Hazardous and Solid Waste Management Administration, to Parker Dean, FMC Corporation. Correspondence. February 23, 1985.

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39. Maryland Department of Environmental Administration, Hazardous and Solid Waste Management. CHS/Inspection Form, Generators/TSD Facilities; FMC Corporation. September 25, 1989.

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ORIGINAL
(Red)

APPENDIX A

State of Maryland

ORIGINAL (Red)

OFFICE OF ENVIRONMENTAL PROGRAMS
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201 • Area Code 301 • 383-5734
Harry Hughes, Governor
Charles R. Buck, Jr., Sc.D. Secretary

~~January 11, 1982~~

Charles A. Shaheen
Environmental Engineer
FMC Corporation
1701 East Patapsco Avenue
P. O. Box 1616
Batlimore, Maryland 21203

Dear Mr. Shaheen:

Members of my staff have reviewed your submittal of December 16, 1981. The submittal indicates that the subsurface drainage system does not function as an adequate leachate collection and removal system for the inactive disposal site. Consequently, this Office is ~~amending permit A-023~~ to require groundwater monitoring for the inactive disposal site. As of this date, Special Condition B. Schedule of Compliance; shall be amended as follows:

1. Within 60 days of this amendment the permittee shall submit for approval a groundwater monitoring plan that will demonstrate the effect of the inactive disposal site upon groundwater in the area.

2. This condition has been deleted from the permit.

3. Permit condition unchanged.

If you have any questions concerning this amendment or any other aspect of your Designated Hazardous Substances Permit, please contact Mr. Louis Martino of my staff at the above number.

Sincerely yours,

Fredric L. Sachs, Chief
Hazardous Waste Division

FLS:LM:lry

cc: Mr. Ronald Nelson
A-023

ORIGINAL (Red)

State of Maryland

OFFICE OF THE SECRETARY

DEPARTMENT OF HEALTH AND MENTAL HYGIENE

201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201 • Area Code 301 • 333-

Harry Hughes, Governor

Charles R. Buck, Jr., Sc.D. Secretary

DESIGNATED HAZARDOUS SUBSTANCES

FACILITY PERMIT

Permit Number	A023
Effective Date	NOV 16 1981
Expiration Date	NOV 16 1984

Pursuant to the provisions of Section 8-1413.2 of the Natural Resources Article, Annotated Code of Maryland (1974 Volume as amended) and Regulations promulgated thereunder, the Office of Environmental Programs, Waste Management Administration, hereinafter referred to as "WMA" hereby authorizes

FMC Corporation

to operate

a Treatment and Storage Facility
and Maintain an Inactive Disposal Facility

located at

1701 East Patapsco Avenue
Baltimore, Maryland 21226

in accordance with the following special and general conditions including the attached map made a part hereof, and the provisions of COMAR 10.51.

A. The permittee is authorized to treat by incineration;

	Quantity (tons/yr.)
allyl alcohol (allyl ether)	40
o-nitrophenol (basin oils)	322
diallyl phthalates (and related materials)	30
pounce organics	90
DV Step 3 head cut (chloroacetylenics)	85
DV (ester waste methanol)	1800
methallyl chloride (mac wastes)	2500
7 hydroxy tar	3800
claisen tar	2200
xylene	20
DV Step I Waste	16
DV Step I Bottoms	150
DV Step III Bottoms	168
DV Step III Waste	16
waste carbon tetrachloride	130
heptane	29
hexane	48

ORIGINAL (Red)

The permittee is authorized to store:

	Quantity (tons/yr.)
Phosphorous Pentasulfide (P_2S_5)	5
ethion filter cake	40
DV ester spent carbon	5
contaminated lab. glassware	4
acute hazardous (misc.)	100
hazardous (misc.)	4000

The permittee is authorized to maintain an inactive disposal facility which contains:

	Quantity (tons/yr.)
acetoacetarylides dryer scrap	500
carbamate residues	200
pyrethrum flower residues	10
pilot Plant wastes	5
Ethion filter aids and filter tubes	20
butacide Tar	1000
Dapon gel & polymerized momomers	1000
7 hydroxy tar	1500

B. Schedule of Compliance

1. Within 30 days of issuance the permittee shall submit engineering plans covering the design and construction of the leachate collection system for the inactive disposal site. (See attachments I and II)

2. Within 30 days of issuance the permittee shall submit to the WMA a chemical analysis of leachate collected from the french drain system for the inactive disposal site. The following analyses shall be performed:

ORIGINAL
(Red)

a. pH
b. specific conductance
c. TOC
d. total organic halogen
e. ortho nitrophenol
f. carbamates
g. Ethion
h. pyrethrum
i. Diallyl phthalate
j. Xylene
k. Copper
l. Chromium (total and hexavalent
m. Nickel
n. Zinc
o. Mercury
p. Cadmium

3. On the effective date of this permit, the permittee shall comply with COMAR Regulation 10.51.05.06 Groundwater Monitoring.

c. Upon permit issuance, the permittee will comply with the following COMAR regulations:

10.51.05.09 Use and Management of Containers
" 10 Tanks
" .11 Surface Impoundments (Stormwater Retention Pond--- Pounce Pond)
" .15 Incinerators
" .17 Chemical, Physical, and Biological treatment
or any other applicable incinerator regulations.

II. General Conditions

A. Operations Manual

Unless otherwise authorized by the WMA the permittee shall comply with all provisions of the FMC Agricultural Chemical Group - Baltimore Plant - August, 1981 RCRA Comprehensive Operations Manual.

B. DHS Transportation and Manifests

Any shipments of DHS received at the facility or transported off-site, shall be accompanied by a completed manifest and conducted in accordance with Regulations 10.51.03 thru 10.51.05.

C. Notification

1. No later than 14 calendar days following a date identified in the Schedule of Compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the case of noncompliance, the notice shall include the information required under § C(3).

2. If for any reason the permittee does not comply with or will be unable to comply with any provisions of the approved operations manual, or immediately upon becoming aware of a loss of control or release of hazardous substance (occurring outside of the FMC hazardous waste management areas sited in attachments I and II) permittee shall immediately notify WMA by telephone at 301-383-6650 or 243-8700 (nights/weekends) within 1 hour of becoming aware of such an occurrence, and provide WMA with the information required in C(3) within five days of such notification.

3. Notification details:

   1. a description of the noncompliance; including the cause and the anticipated time the condition of non-compliance is expected to continue or if such condition has been corrected, the duration of the period of noncompliance;

   2. steps taken or to be taken by the permittee to bring the facility into compliance;

   3. steps to be taken by the permittee to prevent recurrence of the condition of noncompliance;

   4. a description of the accelerated or additional monitoring by the permittee to determine the impact of the non-compliance on the environment and public health.

D. Reporting

Unless otherwise specified in the special conditions for this permit, the groundwater monitoring results obtained during the previous quarter shall be summarized on a Monitoring Report Form of the permittee's choice for each calendar month of the reporting quarter. These forms and other records required shall be submitted to WMA, postmarked no later than the 28th day of the month following the end of the reporting period. Reporting periods shall end on the last day of the following months: March, June, September and December. The first reporting period ends March 31, 1981. Manifest copies shall be submitted on a weekly basis.

The reports shall be submitted to:

Office of Environmental Programs
Waste Management Administration
Hazardous Waste Division
201 W. Preston Street
Baltimore, Maryland 21201

E. Right of Entry

The permittee shall allow the Director of WMA and the local Health Office or their authorized representatives upon the presentation of credentials;

1. to enter upon the permittee's premises where a facility is located or in which any records are required to be kept under the terms and conditions of this permit;

2. to have access to and copy, any records required to be kept under the terms and conditions of this permit;

3. to inspect, the facility, monitoring equipment or monitoring method required in this permit;

4. to have access to the facility for the purpose of obtaining samples, drilling test wells, measuring volumes and kinds of substances received and discharged.

F. Terms

Conditions set forth herein shall be valid for a period of 3 years from the effective date of this permit. At least 120 days before the expiration date, permittee shall submit a new application for renewal or notify WMA of the intent to cease operation by the expiration date. If the applicant has made timely application, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable until such time as WMA issues or denies the new permit.

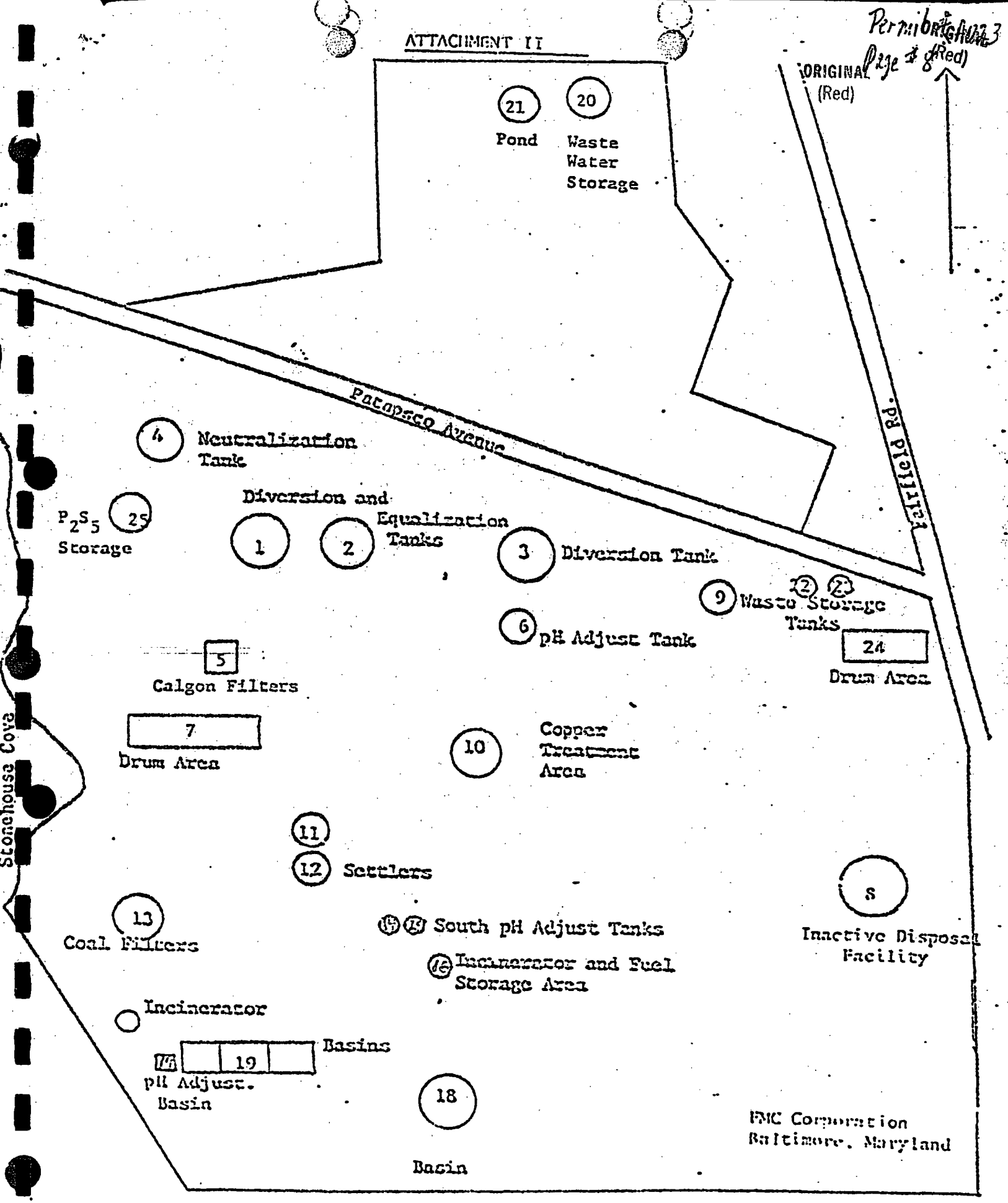
William M. Eichbaum
Assistant Secretary for
Environmental Programs

1. Plant Wastewater Storage
2. Plant Wastewater Storage
3. Plant Wastewater Storage
4. Plant Wastewater Neutralization (pH adjust)
5. Calgon Activated Carbon Beds (Wastewater Treatment)
6. Plant Wastewater - pH adjust
7. DHS Storage Area - 7-OH Waste, 7-OH Sludge, 7-Nitro Bottoms, Spent Carbon, 7-OH Tar, Cooling Tower Sludge, Misc.
8. Inactive Disposal Site
9. Waste Methanol, DV Ester Brine, DV Ester Step I Bottoms, DV Ester Step III Bottoms, DV Ester Step III Headcut, DV Ester Carbon Tet, Arrivo - NaCN
10. Copper Treatment Area - Copper Sludge
11. Copper Settlers - Copper Sludge
12. Copper Settler - Copper Sludge
13. Coal Filter Beds (Wastewater Treatment)
14. pH Adjust Tanks (Wastewater Treatment)
15. pH Adjust Tanks (Wastewater Treatment)
16. Incinerator and Storage - Ortho-nitrophenol (basin Oils), Diallyl Phthalates (And related materials), Pounce Organics, DV Ester Step III Headcut (Chloroacetylenics), DV Ester Waste Methanol, Methallyl Chloride (MAC Wastes), 7-Hydroxy Tar, Claisen Tar, Xylene, Step I Waste, Step I Bottoms, Step III Bottoms, Step III Waste, Waste Carbon Tet, Heptane, Hexane, Allyl Alcohol
17. pH Adjust Basin - (Wastewater Treatment)
18. North and South Pond (Wastewater Treatment) - Stormwater runoff.
19. 7-OH Basins - Basin Oils, 7-OH Sludge
20. Pounce Wastewater
21. Pounce Pond
22. Waste Methanol Storage
23. Waste Methanol Storage
24. Drum Storage Area
25. P_2S_5, NaBr, Na_2S Storage Area

ATTACHMENT II

Permit Attachment 3
Page # 8

ORIGINAL (Red)



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ORIGINAL
(Red)

ATTACHMENT II

This site which included several buildings was established as a research facility for organic chemicals in approximately 1946. The site is located north of Patapsco Avenue adjacent to the main manufacturing facilities. Various chemicals were handled as commonly used in laboratory analysis and synthesis. FMC Corporation acquired this area with the purchase of the main plant in September, 1954. Research continued using the facilities until approximately 1972. These facilities were then demolished the following year. There exists the possibility that several dumping pits were used during the life of the research facility in this area although no specific knowledge of quantities of chemicals or classification are presently available. There are no residential wells, springs, lakes or housing in the vicinity of this site location. The nearest body of water (Stonehouse Cove) is approximately 1000 feet away.

ATTACHMENT II

ORIGINAL (Red)

Sometime prior to 1918, this landfill area was dug out to form a holding area for molasses residue. This molasses residue was a material of process under U.S. Industrial Alcohol Co., Inc., resulting from the manufacture of alcohol from Cuban molasses. The residue was stored in tanks and in this reservoir, until it could be processed into a potash type fertilizer.

After USI went out of this alcohol-from-molasses business during Work War II, this pond was dried up leaving a low spot in the land. During the middle 1940's landfilling of this area began. The U.S. Industrial Alcohol Company undertook the manufacture of a number of chemicals and specialities based on alcohol. The chemicals plant was sold to FMC Corporation in September 1954. This landfill operation had continued sporadically until mid-1975. At this time, dumping operations were terminated.

One segment of the plant dump was removed in 1975 to allow construction of a new 7-Hydroxy Plant. Materials excavated were removed to the BFI Solley Road landfill in Anne Arundel County, Maryland.

This dump was closed in July 1975 and an earth fill placed atop it. Surface waters from this former dump site now flow into the plant waste water treatment system. A "french drain" system just southwest of the former dump site was installed in 1976 to collect leachate in this area. This drainage system ties into the wastewater treatment system.

The site is located southeast of the Operations Building at the south end of Avenue C. There are no residential wells, springs, lakes or housing near the site location. The nearest body of water (Curtis Bay) is approximately 1300 feet away.

Of the estimated 216,000 cubic feet listed for Total Facility Waste Amount, it is also estimated that in excess of 20% of this amount is dirtfill.

ORIGINAL
(Red)

APPENDIX B

ORIGINAL (Red)

Primary Health Hazard - the major concern is chlorine, a highly toxic, liquified gas which can cause thermal burns or frostbite upon contact with the liquid (isobutylene can also cause thermal burns). The vapors are highly irritating to the respiratory tract and can cause permanent damage. Hydrochloric acid, a byproduct of the process is highly corrosive and gives off highly irritating vapors of hydrogen chloride. Respiratory and skin protection are a must. SCBAs are to be worn in the event of a chlorine release. Gas masks are not sufficient for concentrations above 1000 ppm.

Fires - all organic chemicals in this process are flammable. Dry chemical and carbon dioxide are useful for small fires. For larger fires use water spray, fog, or foam. Do not extinguish isobutylene fires unless the source is eliminated as explosive atmospheres can be formed. Water spray can be used to contain chlorine and hydrogen chloride vapors, but chlorine puddles should not be sprayed as it will increase the rate of evaporation. Chlorine is an oxidizer and may ignite combustibles.

Spills - Spills should be diked for containment. Foam may be used to hold down organic vapors to avoid explosive atmospheres. Hydrochloric acid spills can be washed into the plant sewer system for neutralization. Soda ash is useful for small HCl spills. Chlorine spills should be pumped to an empty railcar or suitable container, taken up with caustic, or pumped to the caustic scrubber. Isobutylene spills should be allowed to evaporate and disperse. Small organic spills can be absorbed on oil dry and drummed for disposal or washed to the plant sewer system. Large MAC spills should be diked for recovery and/or disposal. AFFF/ATC foam can be used for vapor suppression. Small chlorine leaks from railcars can be handled with the chlorine capping kit and trained personnel.

Environmental - materials from this process should be diked to prevent spills to Stonehouse Cove. With the exception of chlorine and isobutylene, these materials are commonly found in the plant sewers and may be allowed to enter them. The City outfall should be diverted until the severity of the situation can be assessed. Spills of MAC/ICC in the sewers should be followed by large quantitites of water to avoid explosive mixtures in the sewers.

Community Impact - chlorine and isobutylene have the potential to cause problems beyond the plant fenceline. Chlorine is a toxic, yellow-green gas, heavier than air which is used in large quantities. In the event of a major release it will be necessary to notify the authorities and the neighborhood. Isobutylene is similar to liquified petroleum and has the potential for explosion if involved in a fire. In the event of release of either chlorine or isobutylene it is recommended that the area be isolated for at least a 1/2 mile in all directions. A longer distance should be considered for the downwind direction.

ORIGINAL (Red)

MAC PLANT (cont)

MAC PROCESS CHEMICALS

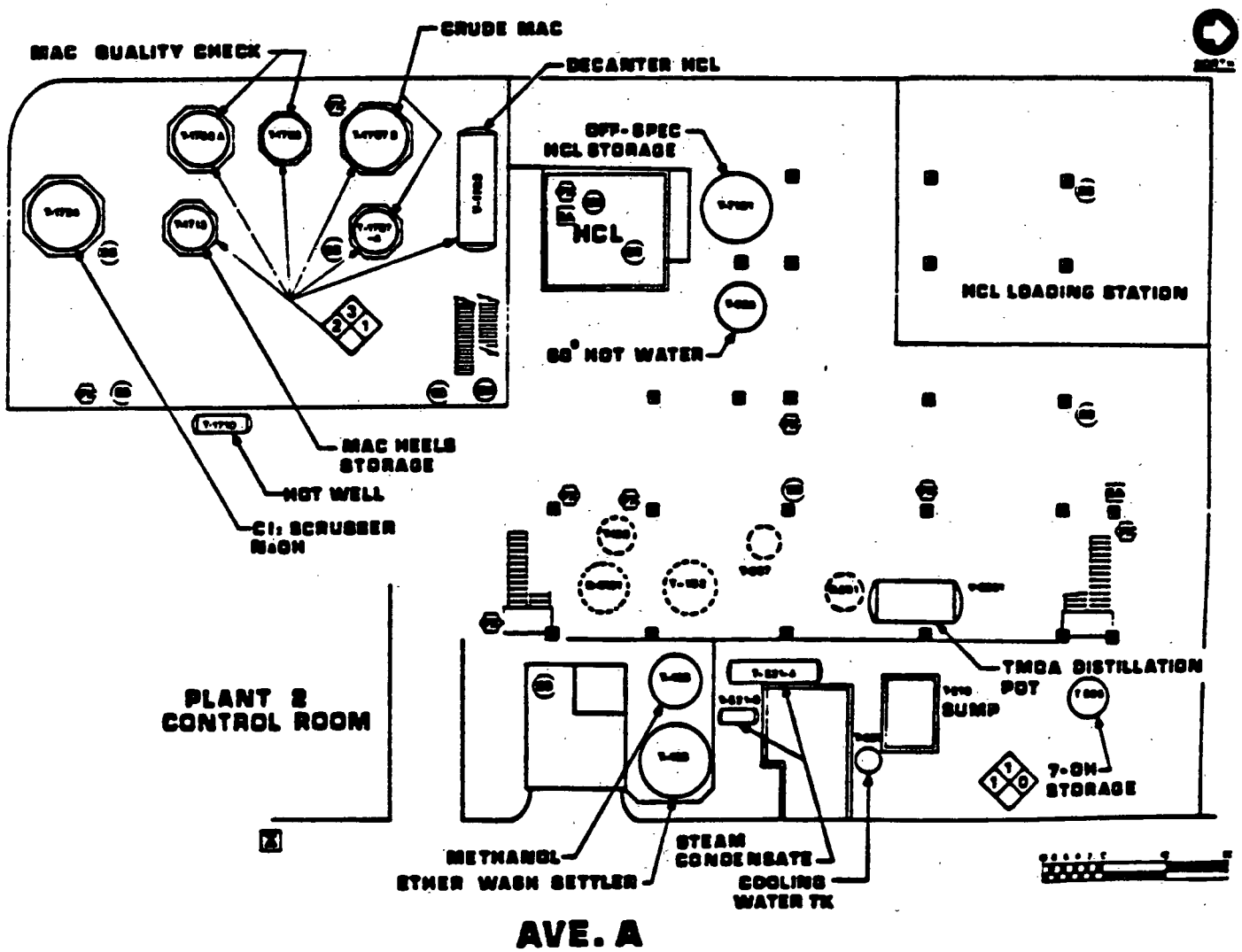
NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
chlorine	--	3	0	0	oxidizer - may ignite combustibles toxic, liquid gas, contact may result in frostbite
isobutylene	-105	1	4	0	flammable liquified gas can cause thermal burns or frostbite
MAC	-2.2	2	3	1	flammable skin irritant suspected mutagen
ICC	--	2	3	1	flammable skin irritant
TBC	32	2	3	0	flammable skin irritant
MAC Heels	95	2	3	0	flammable skin irritant
HCl (aq)	--	3	0	0	highly corrosive

FMC Agricultural Chemical Group, Baltimore

ORIGINAL (Red)

AREA MAP

MAP NO. 18 BLDG. NO. (s) 76 OPERATION NAME TMOA, MAC & HCl



Issued: Revised: 60-27

ORIGINAL (Red)

HYDROGEN PLANT

Primary Health Hazard - materials are relatively non-toxic, but in sufficient quantity are asphyxiants. Liquified gases are cold enough to cause thermal burns or frostbite on contact.

Fires - materials are extremely flammable and easily form explosive mixtures with air. Dry chemical or carbon dioxide may be used on small fires. Water spray, fog or AFFF/ATC foam should be used on large fires. Do not extinguish hydrogen or propane fires until the source of release is eliminated. Reignition could result in an explosion. Under many circumstances it is desirable to withdraw and allow the material to burn until consumed.

Spills - spills should be allowed to evaporate. Water sprays can be used to disperse the spills and reduce explosive hazard.

Environmental - materials are gaseous the only environmental concern is that of air pollution. Contact the Environmental Dept. to determine if the particular release is of sufficient magnitude to be reported to the regulatory agencies.

Community Impact - the potential for explosive atmospheres exists. In the event of fires involving tanks or tank cars the area should be isolated for 1/2 mile in all directions.

HYDROGEN PLANT PROCESS CHEMICALS

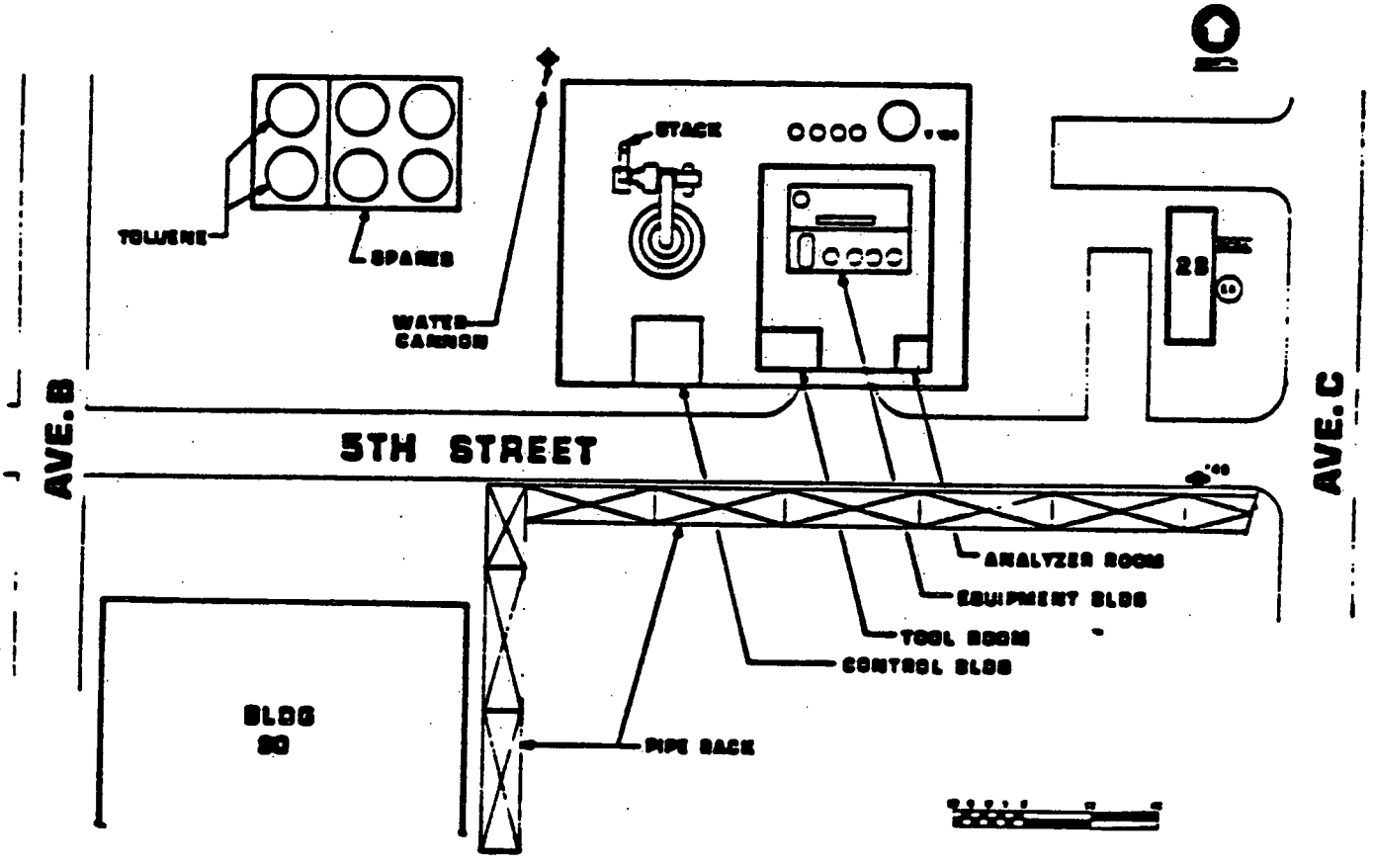
NAME	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
propane (liquid)	3	4	0	extremely cold potential for frostbite or thermal burns
propane (gaseous)	0	4	0	flammable gas
hydrogen (liquid)	3	4	0	extremely cold potential for frostbite or thermal burns
hydrogen (gaseous)	0	4	0	flammable gas

FMC Agricultural Chemical Group, Baltimore

ORIGINAL (Red)

AREA MAP

MAP NO. 28 BLDG. NO. (s) _____ OPERATION NAME Hydrogen



Issued: Revised:

ORIGINAL
(Red)

Primary Health Hazard - Ammonia (anhydrous liquid) and hydrogen chloride (anhydrous liquid) are strong bases and acids, respectively. They are liquified gases and are cold enough to cause thermal burns or frostbite on contact as well as highly toxic by inhalation. They are both strong irritants and corrosive materials. Acetonitrile is absorbed through intact skin and has the potential to release low levels of hydrogen cyanide upon thermal decomposition. SCBAs, slicker suits, and protective gloves (rubber) should be worn in emergency situations.

Fires - small fires may be fought with dry chemical or carbon dioxide. Larger fires should be fought with water spray, fog or alcohol foam (AFFF/ATC is suitable). Water sprays can be use to knockdown irritating vapors of ammonia and hydrogen chloride both of which are extremely water soluble. Methyl chloride is a flammable gas but is of less concern because it is formed only during reaction and burned in a flare. There are no stored quantities.

Spills - ammonia and hydrogen chloride spills should be flushed to the plant sewer system where they will be neutralized by pH adjustment. Acetonitrile spills can be diluted with water to reduce risk of fire. Other solvent spills (methanol, chlorotoluenes, TMOA) should be diked for collection, small spills absorbed on oil dry and the area flushed with water after cleanup. AFFF/ATC type foam can be used for vapor suppression of acetonitrile or other solvent spills.

Environmental - in the event of release of large quantities of acetonitrile or other organics to the plant sewers, discharge to the city should be diverted. Spills contained as above should be disposed of properly.

Community Impact - major releases of the toxic gases ammonia and hydrogen chloride would require notification and possible evacuation of nearby areas depending on wind direction. Water sprays should be used to knockdown vapors and minimize risk to the neighborhood. In the event of a fire in the TMOA plant tank farm, evacuation for approximately 1/2 mile is recommended.

TMOA PROCESS CHEMICALS

NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
acetonitrile	42	2	3	0	flammable can release cyanides on thermal decomposition
ammonia (anhyd. liq.)	--	3	1	0	toxic, liquified gas strong irritant, thermal burns from contact with liquid

ORIGINAL
(Red)

TMOA PROCESS CHEMICALS (cont.)

NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
methanol	52	1	3	0	flammable
TMOA	59	1	3	0	reacts with water to form methanol and methyl acetate
chlorotoluenes	123	2	2	1	
methyl chloride	<32	2	4	0	flammable gas can cause CNS damage
hydrogen chloride	--	3	0	0	strong irritant, liquified corrosive toxic gas, thermal burns from contact with liquid

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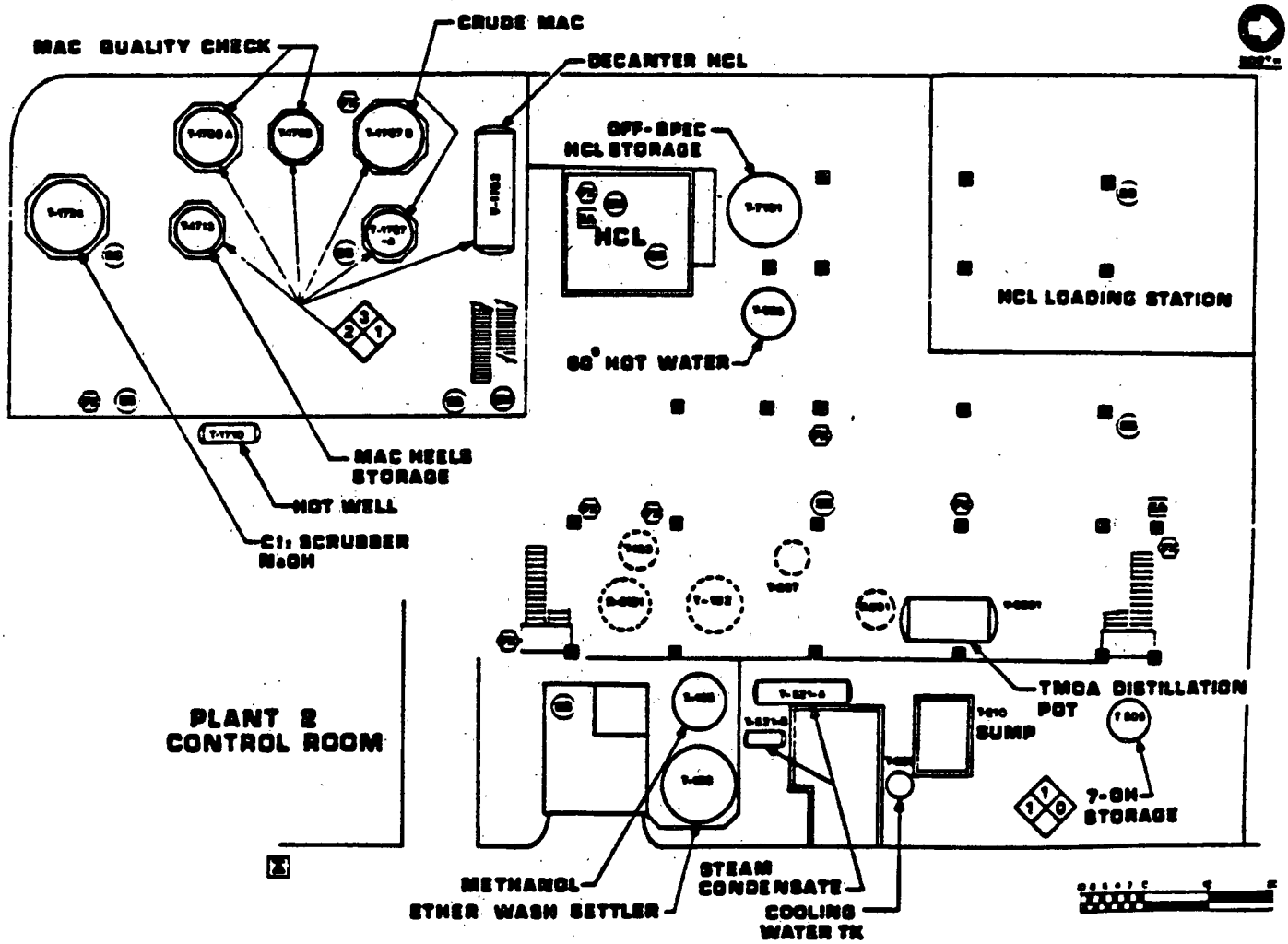
ORIGINAL (Red)

AREA MAP

MAP NO. 18 BLDG. NO. (s) 76 OPERATION NAME TMOA, MAC & HCl



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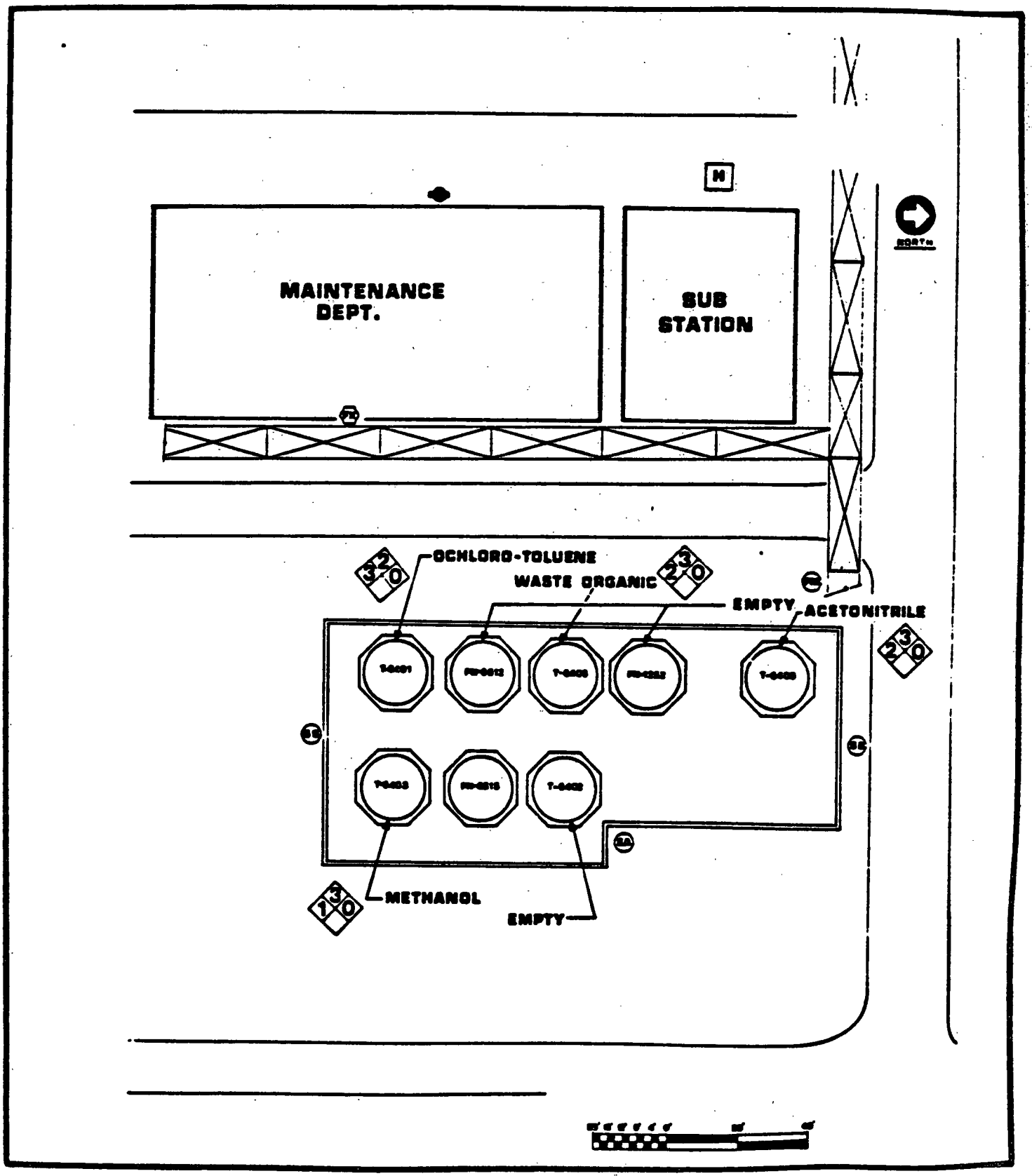
AREA MAP

ORIGINAL (Red)

MAP NO. 21 BLDG. NO. (s) _____ OPERATION NAME TMOA Tank Farm



Issued: Revised:

MONOMERS

ORIGINAL (Red)

Primary Health Hazard - allyl alcohol and allyl ether are both flammable liquids which are strong lachrymators. They are strong irritants to the eyes, skins, and respiratory tract and are also absorbed through intact skin. Full face respirators, gas masks or SCBAs should be used when responding to releases. In case of leaks of molten PA or MA contact will result in thermal burns.

Fires - water spray, carbon dioxide, and alcohol foam are useful for all fires. Dry chemical can be used for all fires except those involving maleic anhydride. Full protective equipment with sealed neck, arms, legs, and waist should be worn. Fog is useful for containing vapors.

Spills - allyl compounds should be diked to prevent loss to sewers or Stonehouse Cove. Small spills should be absorbed with oil dry and drummed for disposal. Contact the Environmental Dept. for labelling requirements. Large spills should be pumped into another container and disposed or recovered properly. AFFF/ATC foam application may be used to suppress vaporization. Residues can be washed into plant sewers. Release of hot liquid/gaseous MA or PA from tank trucks should be knocked down with water spray and the truck cooled. Solidified anhydrides (acids) can be shovelled into drums.

Environmental - every effort should be made to avoid significant quantity of materials entering the plant sewers or Stonehouse Cove. Notify the Environmental Operator to divert the city outfall in the event of loss to sewers.

Community Impact - impact on the community is not very likely. In the event of a significant gaseous leak of allyl alcohol areas downwind should be notified.

MONOMER PROCESS CHEMICALS

NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
allyl alcohol	70	3	3	0	flammable, lachrymator- strong irritant to eyes, skin and respiratory tract. Absorbed through intact skin.
allyl ether	20	3	3	0	
maleic anhydride	215	3	1	1	irritant, molten material causes thermal burns on contact
phthalic anhydride	305	2	1	0	molten material contact results in thermal burns

ORIGINAL (Red)

MONOMER PROCESS CHEMICALS (cont.)

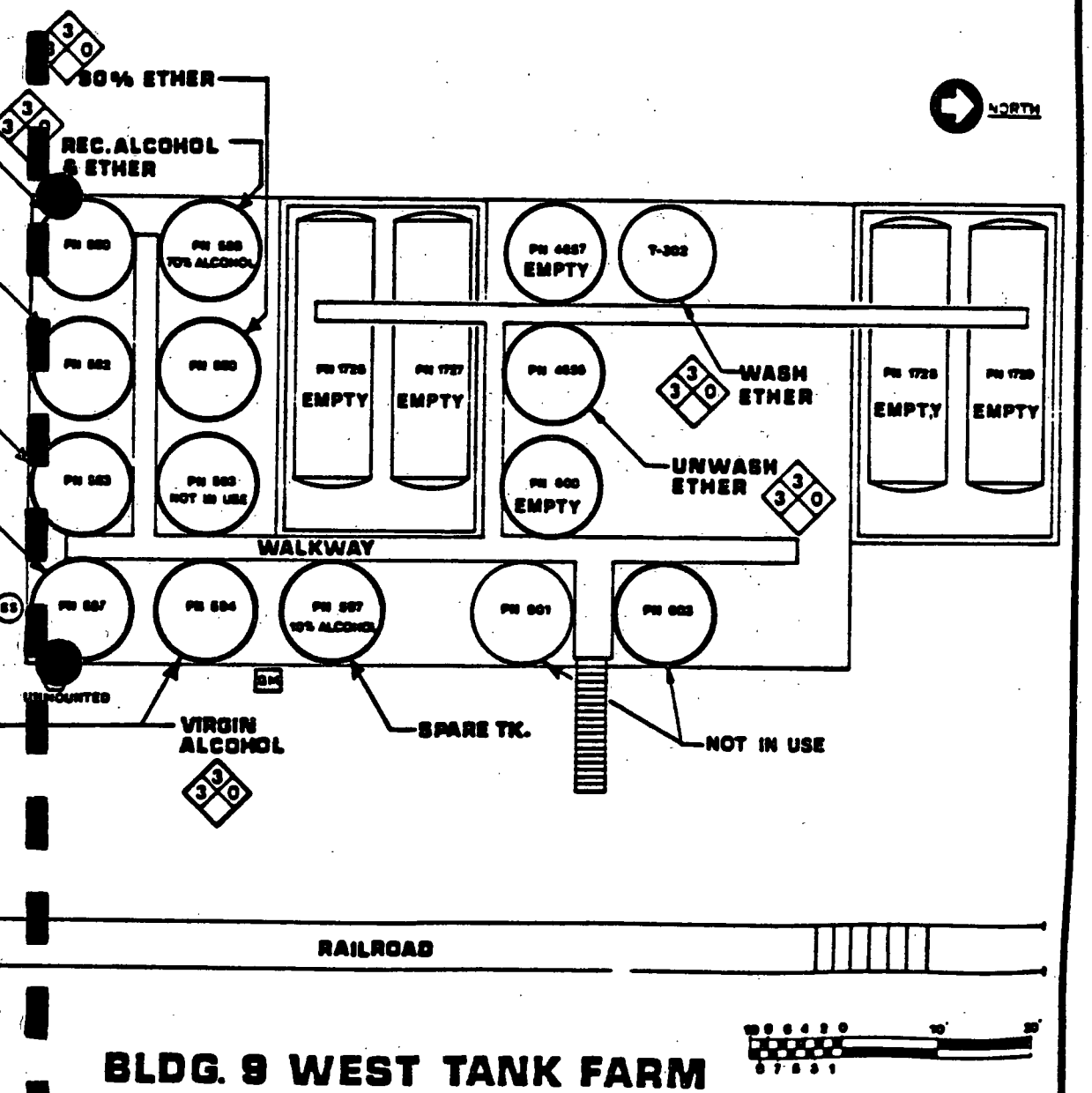
NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
isophthalic acid	--	2	1	0	mild irritant avoid breathing dust
diallyl maleate	253	2	1	0	
diallyl phthalate	330	2	1	0	
diallyl isophthalate	340	2	1	0	
p-Toluene sulfonic acid	363	3	1	0	strong acid, molten material

Agricultural Chemical Group, Baltimore

ORIGINAL (Red)

AREA MAP

BLDG. NO. (s) 9 OPERATION NAME Monomer



BLDG. 9 WEST TANK FARM

Revised: 60-35

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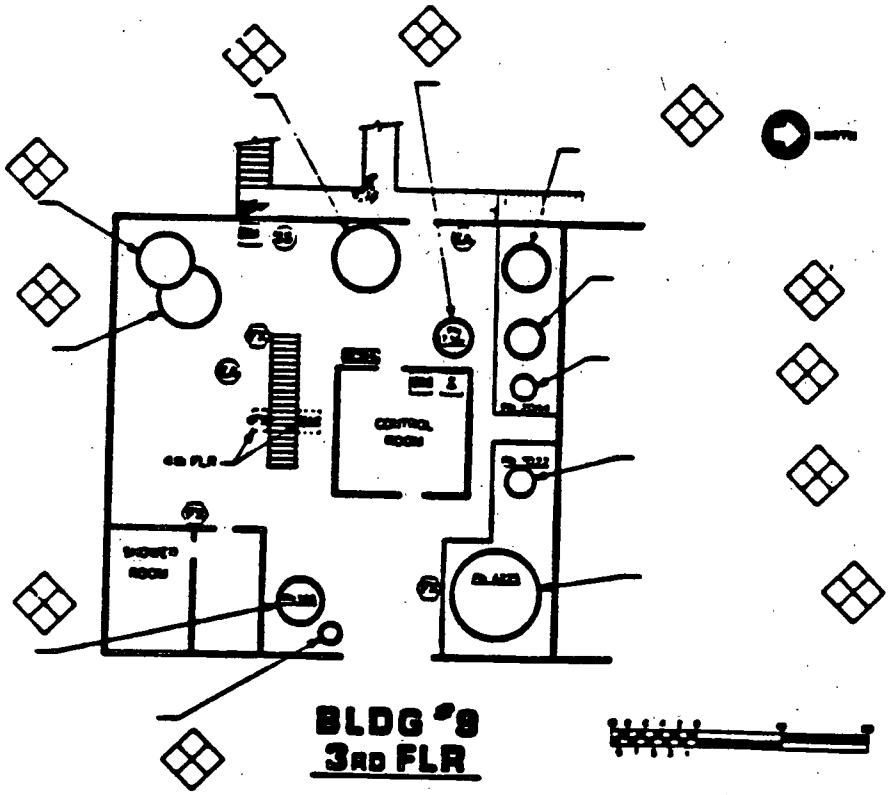
AREA MAP

ORIGINAL (Red)

MAP NO. 9 BLDG. NO. (s) 9 OPERATION NAME Monomer

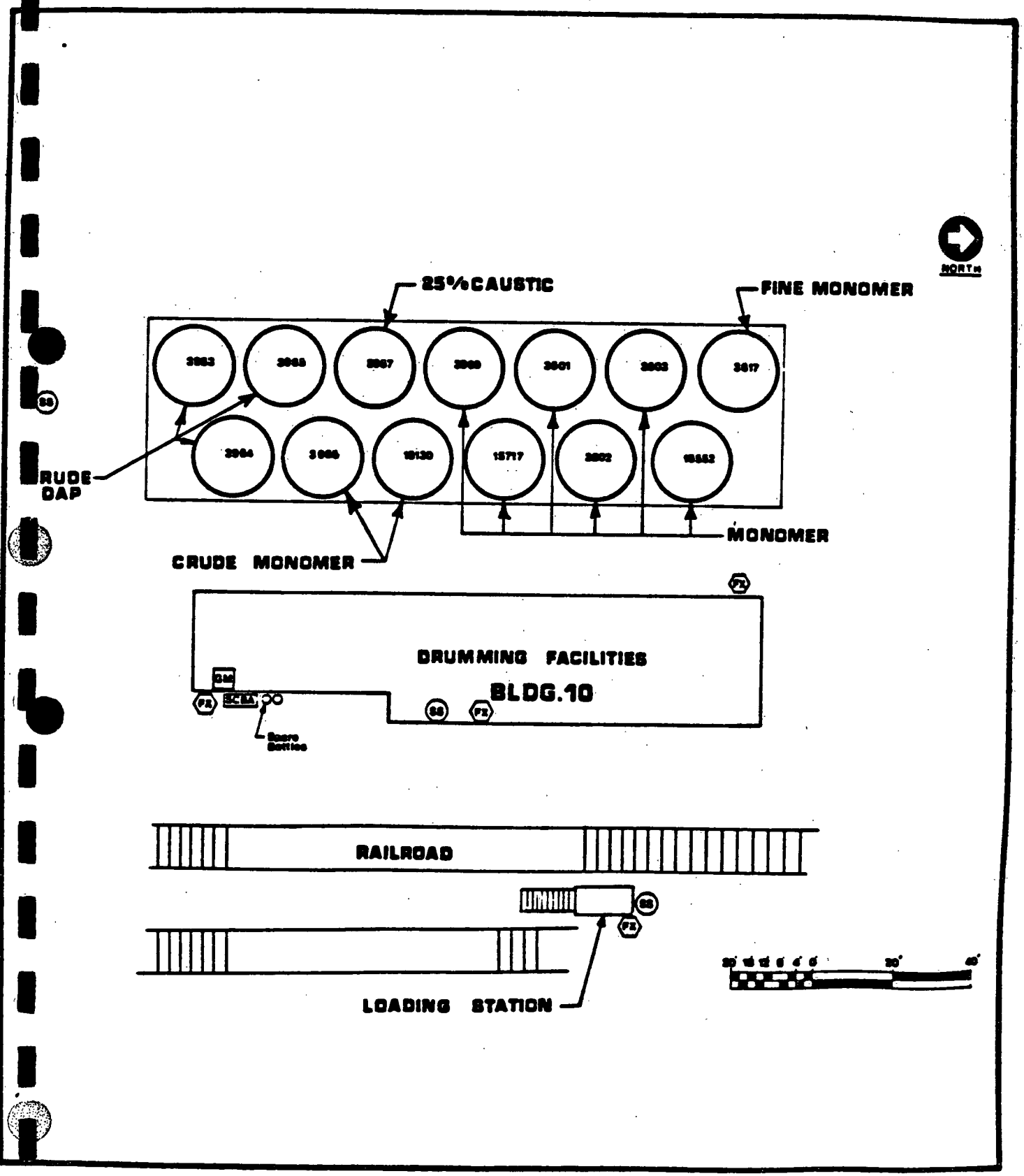


Issued: Revised: 60-38

ORIGINAL (Red)

AREA MAP

MAP NO. 10 BLDG. NO. (s) 10 OPERATION NAME Monomer



Issued: Revised:

ORIGINAL
(Red)

DV ESTER PROCESS

Primary Health Concerns - the primary concerns are carbon tetrachloride, sodium methoxide, and phosphoric acid. Carbon tetrachloride is a volatile material, a suspected carcinogen, and a known liver toxin, especially in combination with alcoholic beverages in the bloodstream. Sodium methoxide is a flammable caustic solid which reacts with moisture to produce caustic soda and methanol. Phosphoric acid is a strong acid and corrosive to skin.

Fires - there are a number of flammable and combustible materials in this process. Water spray, fog or foam are satisfactory for all materials except sodium methoxide which can ignite on contact with water. Overwhelming quantities of water will work well. Carbon dioxide and dry chemical are suitable for small fires. Respiratory protection is a must as carbon tetrachloride, although, not flammable, decomposes to release hydrogen chloride and phosgene (highly toxic and irritating gases.) Use SCBAs. Benzoyl peroxide (BPO) is an oxidizer. Organics should be diked so as not to reach the BPO storage shed.

Spills - spills should be contained within 34 Bldg. and its segregated sewer system. Sodium methoxide and BPO solid spills should be swept up and drummed for disposal. BPO spills should be picked up with wet vermicullite. Dike organic spills to keep them in the building and away from BPO. Small liquid spills can be absorbed on oil dry and picked up or washed into waste treatment.

Environmental - in the event of loss of materials to the plant sewer system, the City outfall should be diverted.

Community Impact - none of the materials in this process are expected to have any impact on the community.

DV ESTER PROCESS CHEMICALS

NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
Benzoyl peroxide (70%)	--	1	4	4	OXY highly flammable explosive when dry
Carbon tetrachloride	--	3	0	0	liver toxin gives off HCl and phosgene under fire conditions
Heptane	25	1	3	0	flammable
DVEster	116	1	2	0	
Methanol	52	1	3	0	flammable
Prenol	122	1	2	0	
FF 30098	106	1	2	0	

ORIGINAL (Red)

DV ESTER PROCESS CHEMICALS (cont)

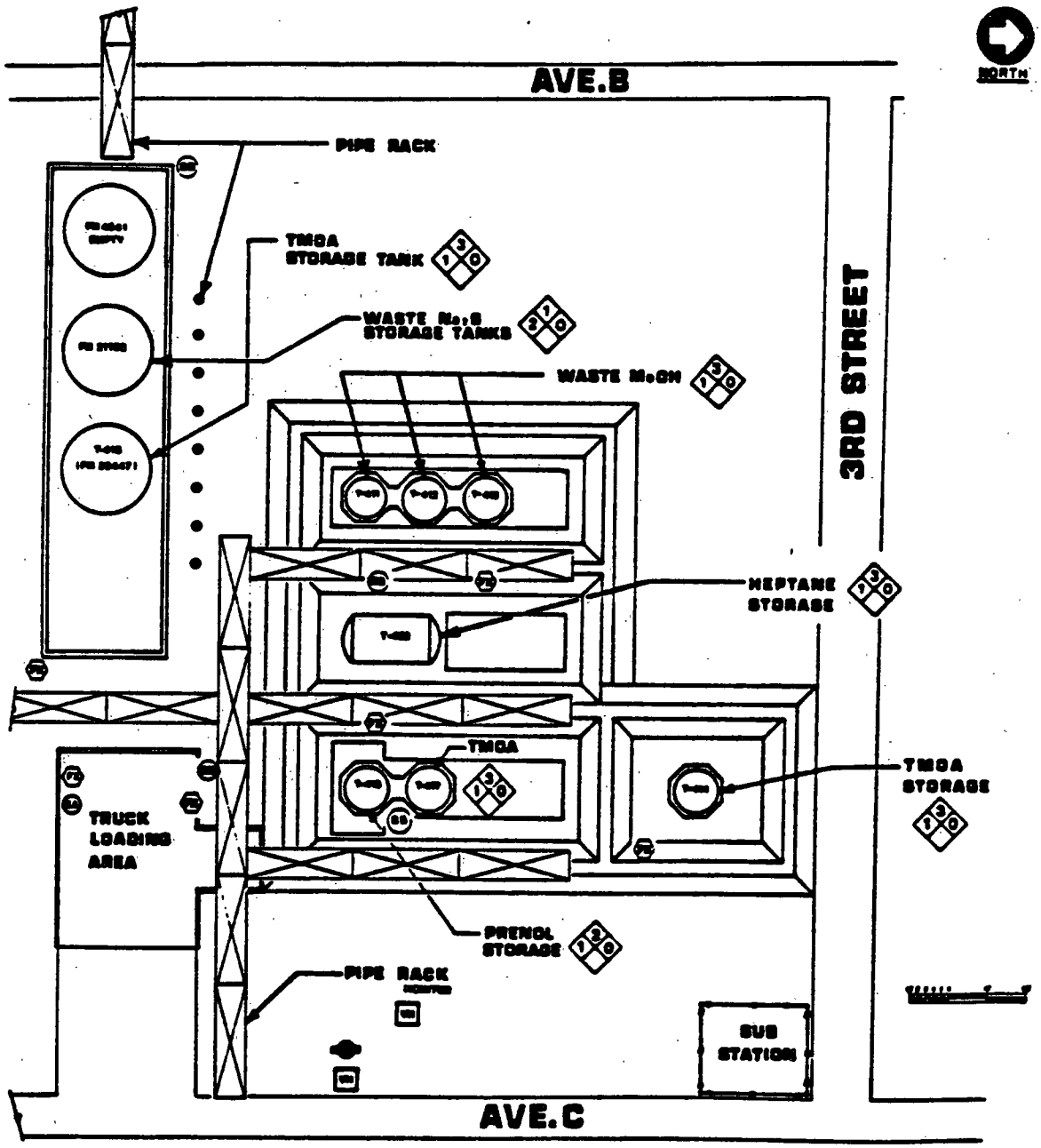
ME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
FMC 30099	127	1	2	0	
Phosphoric Acid	--	2	0	0	strong acid, corrosive
Chloroacetylenics	207	1	1	2	unstable at high temperatures
Sodium methoxide (solid)	--	3	3	0	caustic, reacts with water, use CO_2, dry chemical, or sand for fires.

FMC Agricultural Chemical Group, Baltimore

ORIGINAL (Red)

AREA MAP

MAP NO. 33 BLDG. NO. (s) 34 OPERATION NAME DV Ester



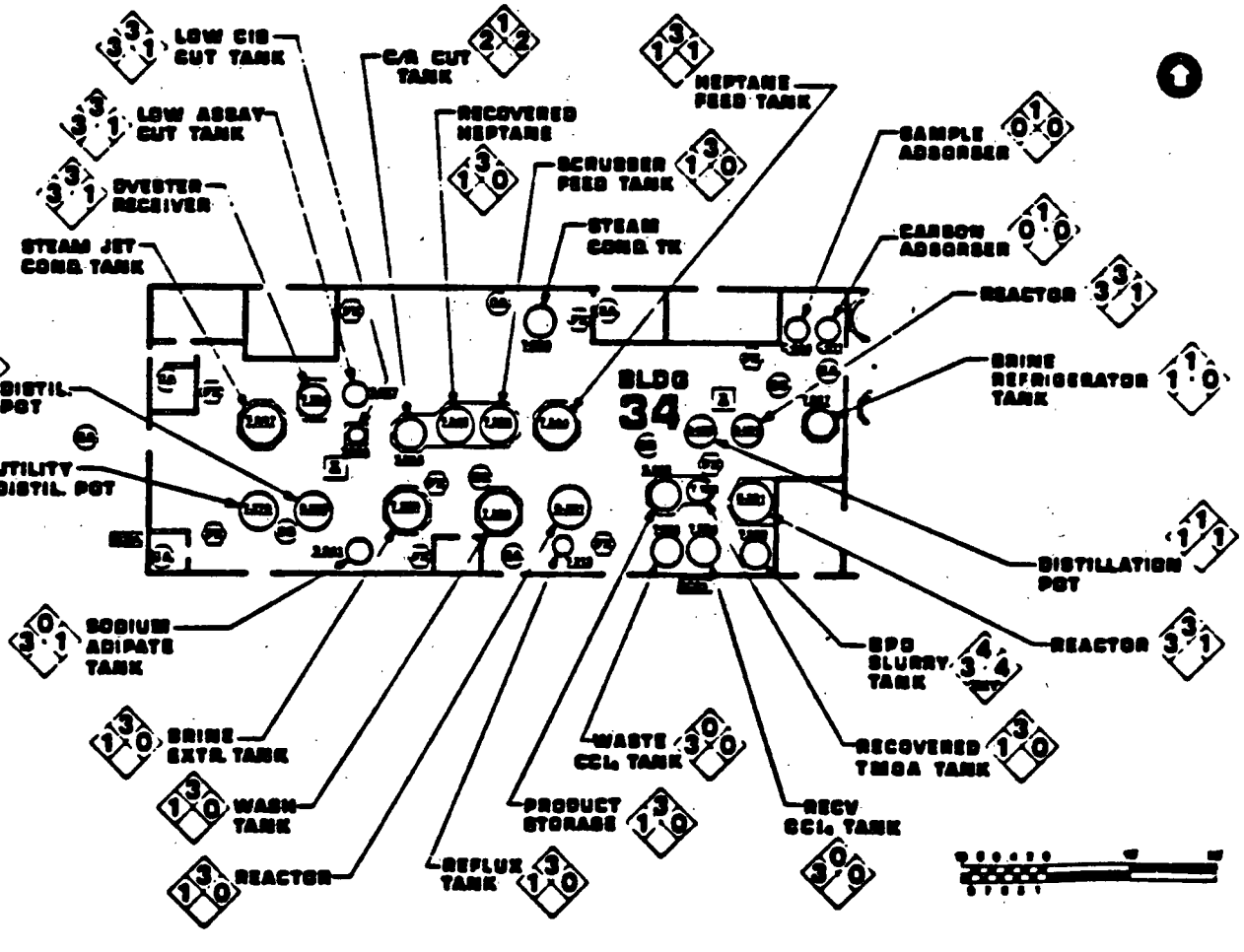
Issued: Revised:

FMC Agricultural Chemical Group, Baltimore

ORIGINAL (Red)

AREA MAP

MAP NO. 34 BLDG. NO. (s) 34 OPERATION NAME DV Ester



Issued: Revised:

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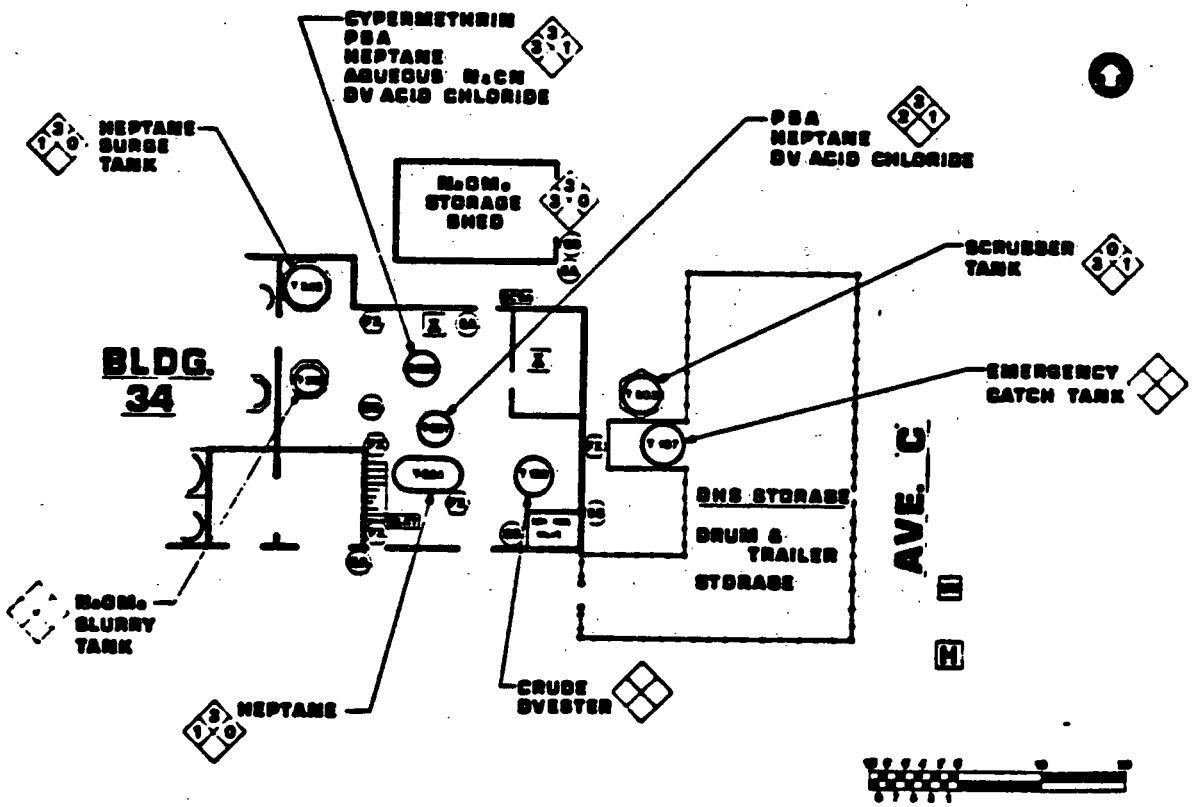
ORIGINAL (Red)

AREA MAP

MAP NO. 36 BLDG. NO. (s) 34 OPERATION NAME Cypermethrin



Issued: Revised: 60-46

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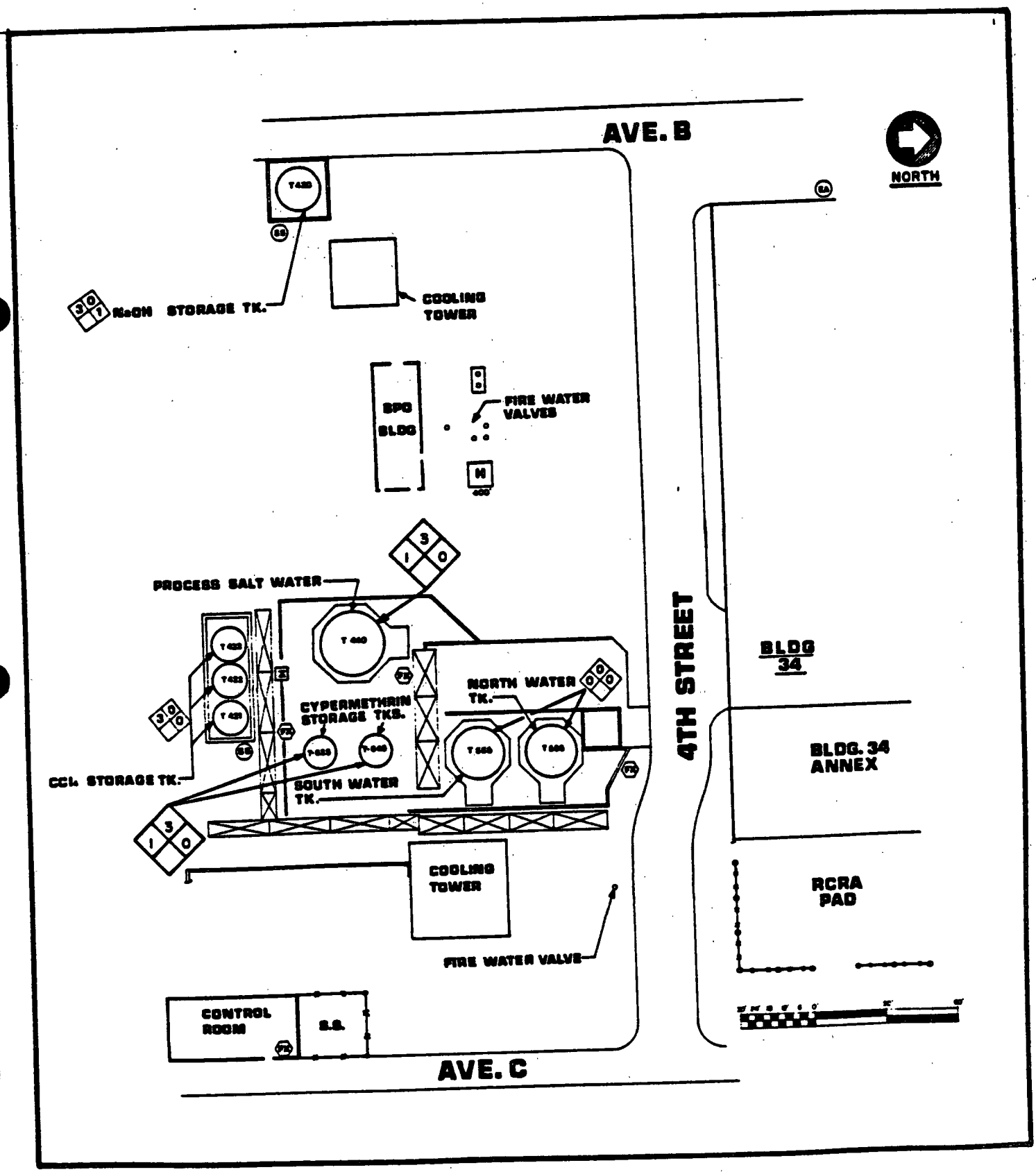
ORIGINAL (Red)

AREA MAP

MAP NO. 35 BLDG. NO. (s) 34 OPERATION NAME Cypermethrin



Issued: Revised:

ORIGINAL (Red)

ETHION® PROCESS

Primary Health Hazard - one major concern in the Ethion® Process is exposure to organophosphorus compounds which can be absorbed through intact skin and inhibits the enzyme cholinesterase which is important to the nervous system. The other major concern is phosphorus pentasulfide/hydrogen sulfide. Phosphorus pentasulfide reacts with water or alcohols to form phosphates and hydrogen sulfide. The latter is a flammable, highly toxic gas. DTA also reacts with water to generate hydrogen sulfide. Bldg. 6 has a monitoring system to alarm the presence of hydrogen sulfide. In the event of a hydrogen sulfide release, SCBAs are required. Rubber gloves or clothing are necessary for exposure to organophosphorus compounds. If there are any significant quantities (puddles, etc.) released, rubber shoes should be worn as well. Early symptoms of phosphate poisoning are headache, weakness, excess perspiration, nausea, muscular twitching, and blurring of vision. If you have these symptoms report to the nurse immediately for a blood test to determine cholinesterase level. Other concerns are caustic soda and sodium sulfide solution (scrubber effluent) which are strongly basic and can severely damage skin on contact.

Fires - Toluene, ethanol, and Oil B are flammable materials. In the absence of phosphorus pentasulfide or DTA fires involving these materials may be fought with water spray, fog, or alcohol foam. Water is not to come into contact with DTA or phosphorus pentasulfide, a flammable solid that reacts with water to release the flammable toxic gas hydrogen sulfide. Sand, soda ash or metal-x extinguisher should be used for phosphorus pentasulfide fires. Full protective equipment including SCBAs should be used when fighting fires.

Spills - phosphorus pentasulfide spills should be swept and shoveled up then the area thoroughly washed down with water if there is no other phosphorus pentasulfide in the area. Organic and organophosphate spills should be diked or sent to the Bldg. 6 sewer which is segregated, and then recovered or treated. Ethion® spills should be absorbed on oil dry and drummed for disposal. The exposed area should be treated with alcoholic caustic, KOH, or ethoxide to destroy residual Ethion®.

Environmental - the Bldg. 6 sewers are segregated from the main plant sewer system. It should not be allowed to overflow to the plant sewer without evaluation by the Environmental Department. In the event of inadvertent loss to the plant sewers, the City outfall should be diverted. In the event of release of hydrogen sulfide through the scrubber system, the process should be shut down until the scrubber can be charged with fresh caustic.

Community Impact - phosphorus pentasulfide/hydrogen sulfide are the only materials with the potential for impacting the surrounding community. Phosphorus pentasulfide is stored in individual tote bins rather than bulk which essentially eliminates the probability of enough hydrogen sulfide escaping to cause an off-site incident.

ORIGINAL (Red)

ETHION PROCESS (cont)

ETHION PROCESS CHEMICALS

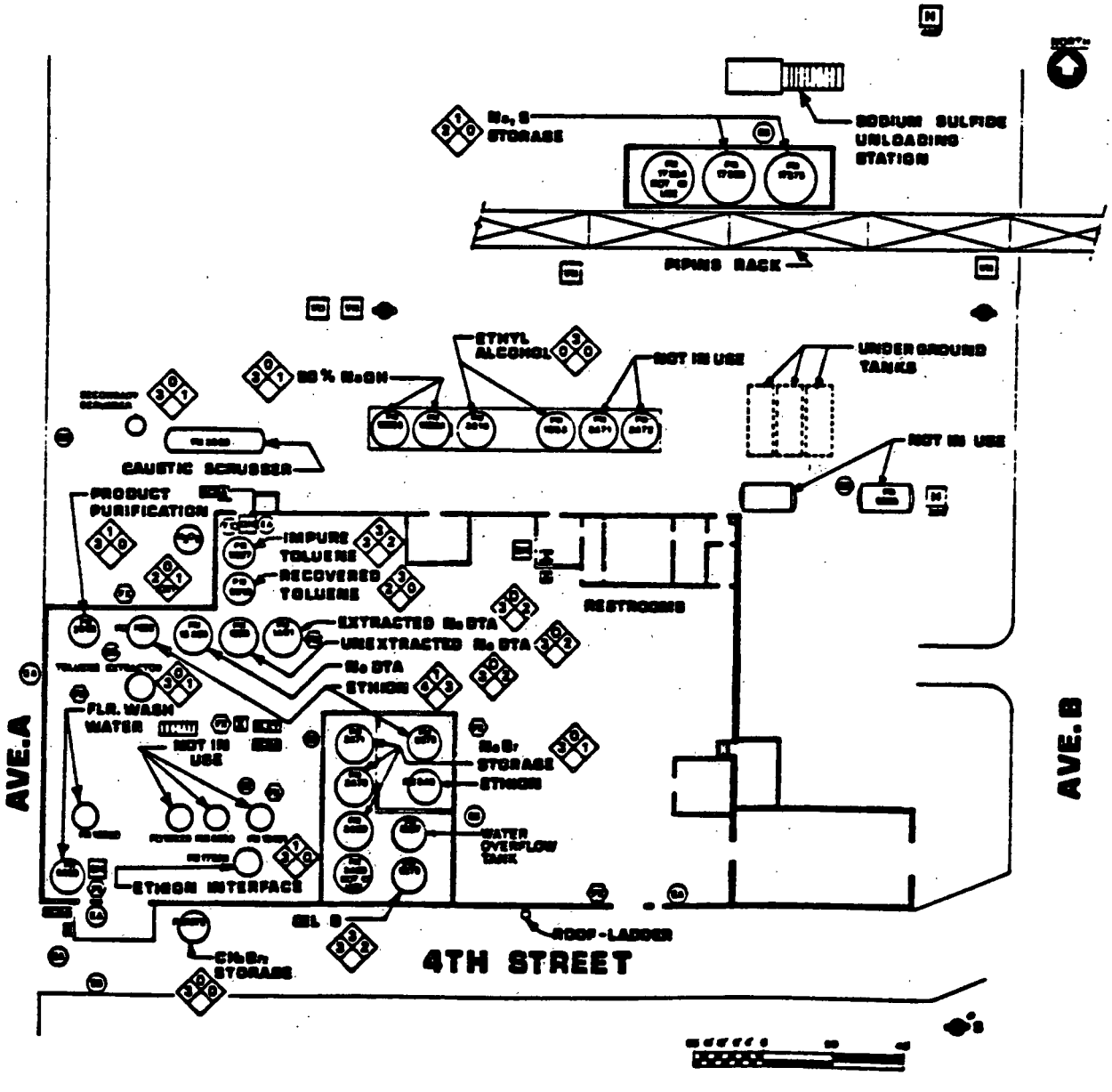
NAME	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS
caustic soda	--	3	0	1	corrosive, damages skin
toluene	40	2	3	0	flammable
ethanol	55	0	3	0	flammable
methylene bromide	--	3	0	0	avoid inhalation
Ethion®	>200	3	1	0	neurotoxin
phosphorus pentasulfide	--	3	1	2	evolves hydrogen sulfide, avoid contact with water
hydrogen sulfide	--	3	4	0	toxic flammable gas
DTA/NaSalt	105	3	1	3	DTA reacts with water or acids to evolve hydrogen sulfide
Oil B	54	3	3	2	unstable in the presence of acids
Sodium Bromide (solution)	--	3	0	1	wastewater
hydrogen peroxide (30%)		2	0	1	OXY - oxidizer keep away from organics
Sodium Sulfide		2	1	0	strongly caustic can evolve hydrogen sulfide on contact with acids

FMC Agricultural Chemical Group, Baltimore

ORIGINAL (Red)

AREA MAP

MAP NO. 6 BLDG. NO. (s) 6 OPERATION NAME Ethion



Issued: Revised:

ORIGINAL
(Red)

BUILDING 91 - POUNCE® PROCESS

th Hazard - no serious health hazards. DVEster and (Pounce®) can cause dermal irritation from exposure to e pyrethroid reaction is transient.

chemical, carbon dioxide, water spray and AFFF/ATC foam are small fires. For large fires use water spray, fog or am. Cool containers of organics in vicinity of a fire.

case of release of Pounce® process materials wear hard hat, es and goggles during cleanup operations.

al - a primary concern is the high toxicity of pyrethroids methrin to aquatic life. Avoid loss to sewers downstream of ment/containment areas. Small spills should be absorbed with lammable materials (oil dry) and the area flushed with water ethrin is involved in which case alcoholic methylate or ou be applied to destroy the fish toxic permethrin. Large ld be diked for collection followed by cleanup similar to ll spills.

mpact - there is no potential for the release of highly toxic e surrounding community. In the case of a fire involving a or tank of octane/Isopar® E, the area should be isolated for ely 1/2 mile. Vista Chemical, Alcolac, Continental Oil O'Boyle Trucking, Essex Chemical, and Klausmeyer Tire should be notified.

POUNCE® PROCESS CHEMICALS

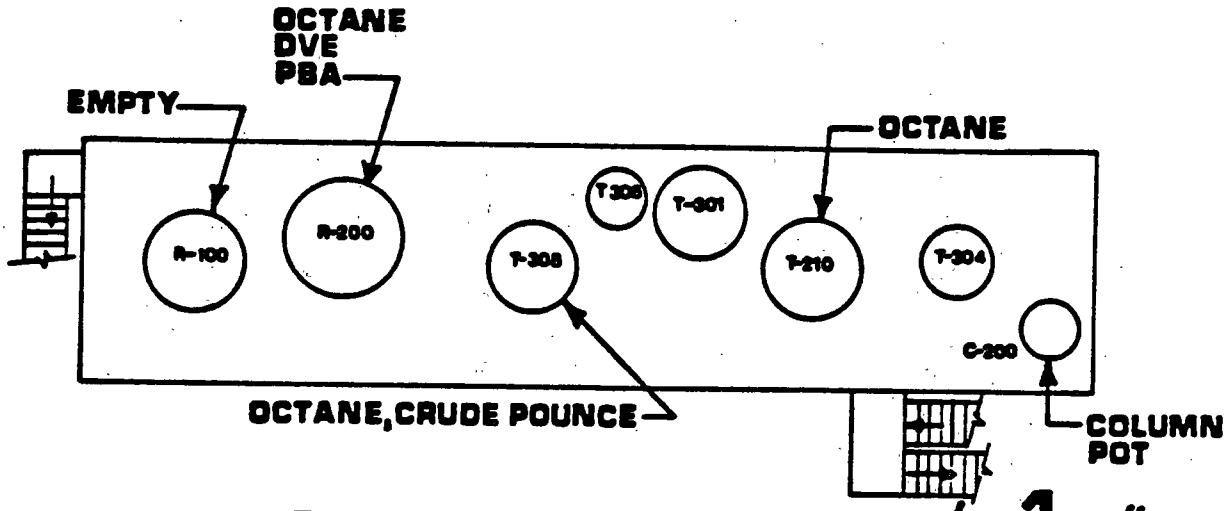
	FLASH (°F) POINT	HEALTH HAZARD	FLAMMABILITY HAZARD	REACTIVITY HAZARD	COMMENTS	
oc	56	1	3	0	flammable	th water O_2 and HCl
e organics)	52	1	3	0	flammable	
	360	1	1	0		se tissue
ermethrin)	410	1	1	0	highly toxic to aquatic life	
	116	1	2	0		id
						th water e hydrogen corrosive

FMC Agricultural Chemical Group, Baltimore

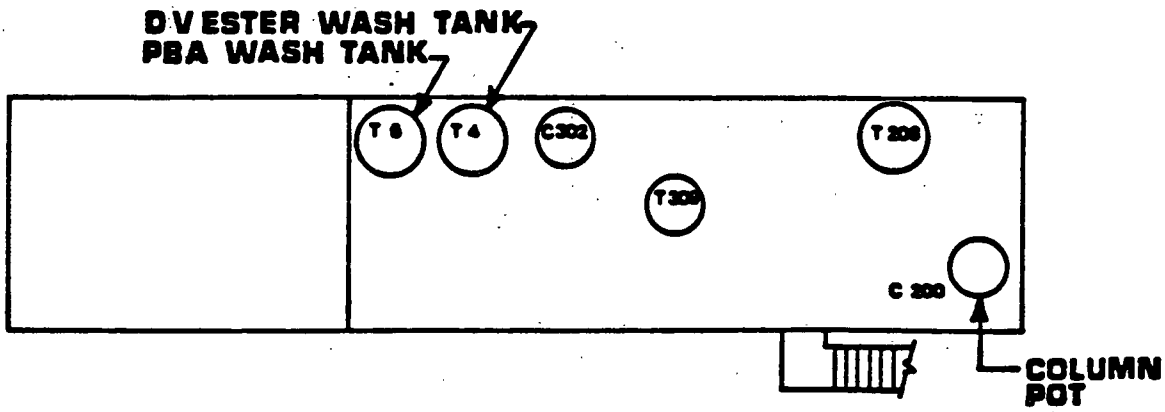
ORIGINAL (Red)

AREA MAP

MAP NO. 32b BLDG. NO. (s) 91 OPERATION NAME Pounce/Cypermethrin



MAIN DECK. ELEV. 10'-6 1/2"



DECK ELEV. 26'-9"

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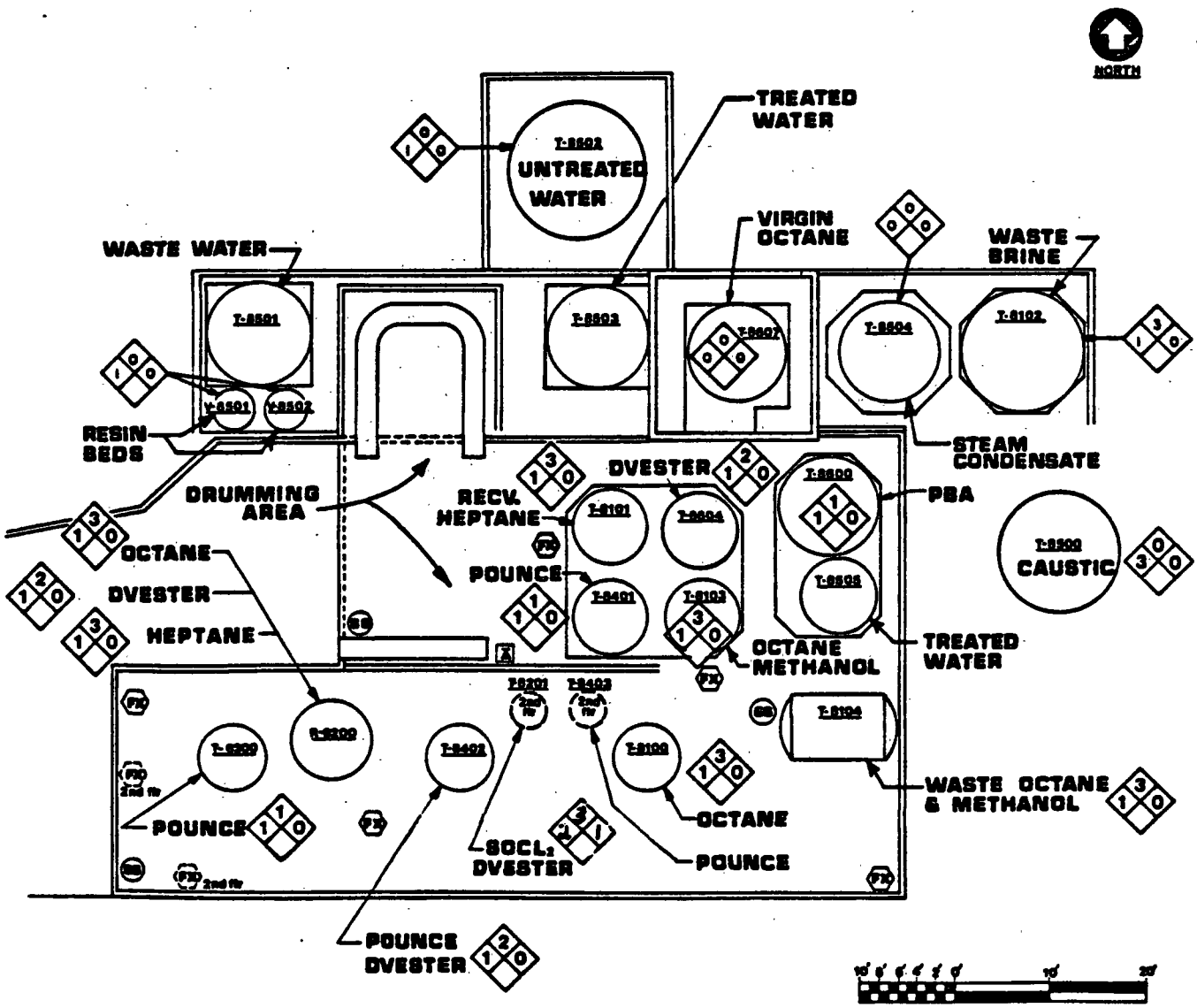
ORIGINAL (Red)

AREA MAP

MAP NO. 32 BLDG. NO. (s) 91 OPERATION NAME Pounce/Cypermethrin



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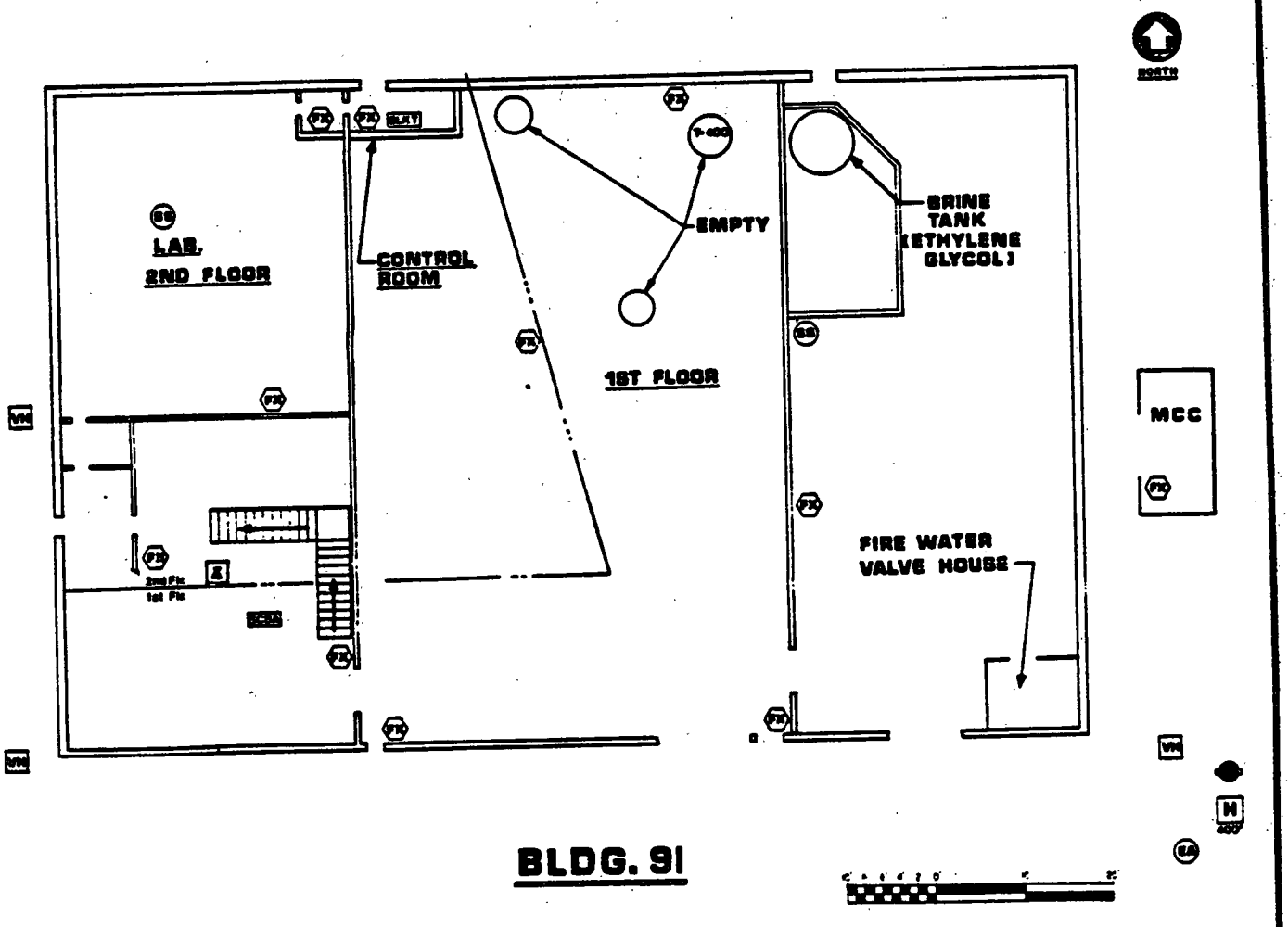
ORIGINAL (Red)

AREA MAP

MAP NO. 31 BLDG. NO. (s) 91 OPERATION NAME Pounce/Cypermethrin



BLDG. 91

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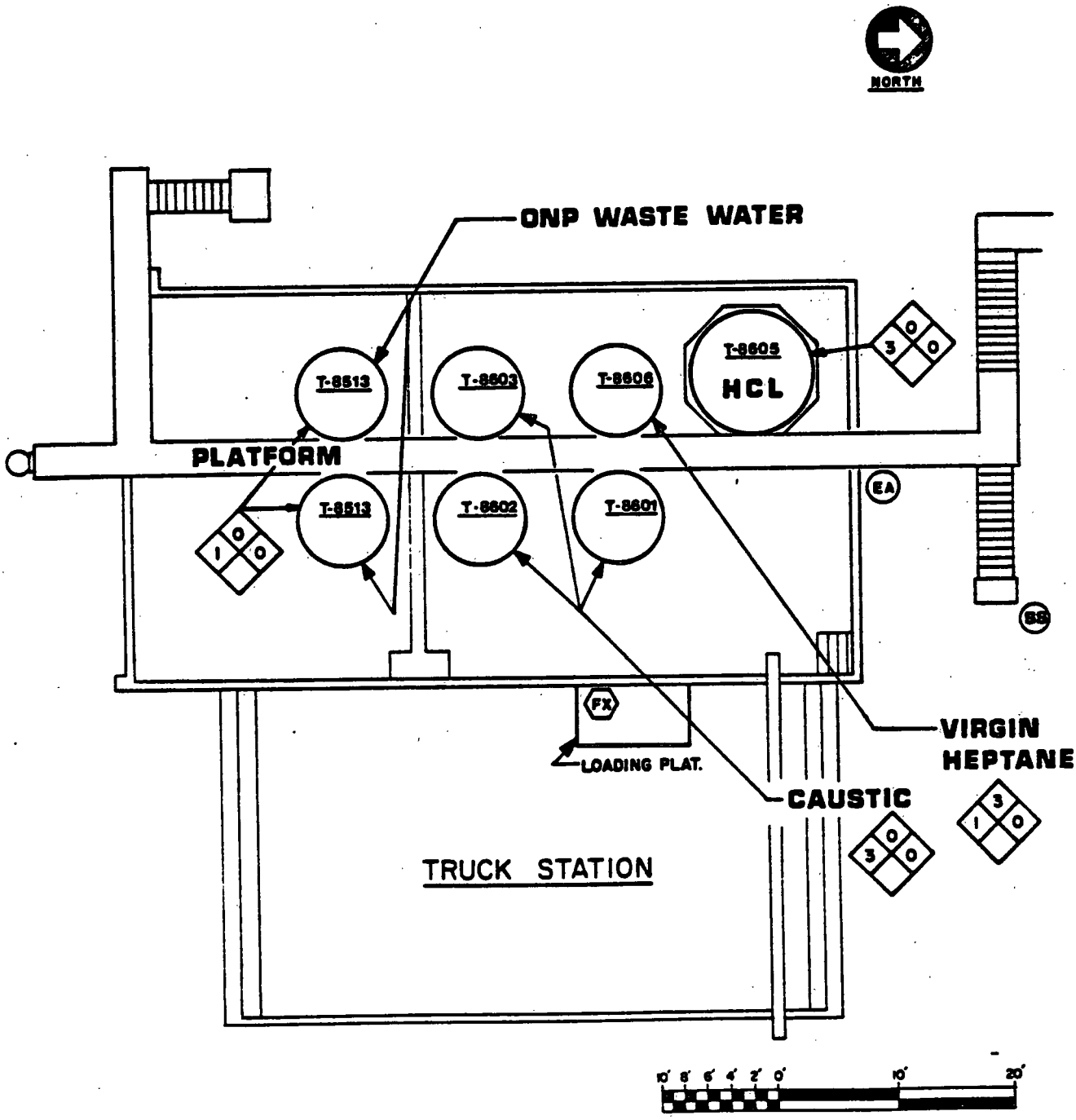
ORIGINAL (Red)

AREA MAP

MAP NO. 29 BLDG. NO. (s) 91 OPERATION NAME Pounce



Issued: Revised:

ORIGINAL
(Red)

APPENDIX C

ORIGINAL
(Red)

1. UNIT NAME: DV Ester Wastewater Tank, T-440

This is a 60,000-gallon open-top vertical cylindrical welded steel wastewater storage tank for processing wastewater from insecticide manufacturing.

2. UNIT NAME: Pounce Surge Pond

This unit was a 38,500-gallon clay-lined surface impoundment located in the Pounce manufacturing facilities in the north area of the site. The pond stored wastewater run-off and washdown from the Pounce insecticide manufacturing area.

In December 1984, the pond was replaced with a tank. It was closed by removal of wastes and sludges.

3. UNIT NAME: Pounce Process Resin Treatment System

The system consists of a wastewater storage tank and two resin treatment vessels, V-8501 and V-8502. The vessels are about 250 gallons each, and treat 5-10 gallons per minute of wastewater from the Pounce manufacturing area.

4. UNIT NAME: Pounce Surge Tank, T-8502

This is a new 40,000-gallon vertical cylindrical open-top above-grade steel tank that collects storm water run-off and washdown water from the Pounce area. It replaced the closed Surge Pond, Unit No. 2, but is not in exactly the same location. The tank stores the wastewaters prior to NPDES discharge or treatment in the Pounce Resin Treatment System (Unit 3).

WASTEWATER TREATMENT SYSTEM (Units 5 through 28)

The wastewater treatment system treats process and storm waters prior to discharge to the Baltimore City Patapsco Wastewater Treatment Plant. Direct discharges to Stonehouse Cove prior to January, 1983, were regulated by NPDES Permit No. MD0000299.

The wastewater facilities are divided into four parts, North Plant System, South Plant System, Combined Plant Systems, and Process Waste Incineration. The South Plant and Combined Plant Systems have been determined to consist of several SWMUs, which are discussed as individual units here.

ORIGINAL
(Red)

5. UNIT NAME: Wastewater Treatment System, South Plant System, West Tank Farm Lift Station

This unit is a below-grade concrete sump, approximately 10 feet square and 10 to 15 feet deep. It collects rainwater and spills from the west tank farm containment system and from catch basins located along a perimeter drain that runs from the west tank farm south to the settling basin area and discharges to the diversion box (Unit 43).

6. UNIT NAME: Wastewater Treatment System - Sump at 7-Hydroxy Plant II (T-2211)

This is a below-grade concrete sump located within the containment curbs of the 7-Hydroxy Plant II. It collects process and storm water from the 7-Hydroxy Plant II. This plant is currently being converted from 7-OH manufacture to manufacture of COMMAND herbicide (FMC 57020). The sump discharges to oil separation basin 3 (Unit 11) either directly or via the South Plant retention ponds. Sump overfilling would cause the overflow to fill the curbed containment system.

7. UNIT NAME: Wastewater Treatment System - Sump at 7-Hydroxy Plant III, T-2240

This is a below-grade concrete sump that receives process and storm water from the 7-Hydroxy Plant III. The sump discharges to oil separation basin 3 (Unit 11) either directly or via the South Plant retention pond.

8.
through
11. UNIT NAME: Wastewater Treatment System - South Plant System, Oil Separation Basins. These are also called settling basins and effluent basins in other documents from FMC.

This basin system, located west of the Storm Water Retention Basin, consists of effluent basins 1, 2 and 3 and a mixing chamber in the corner of basin 2. The pH is adjusted in the mixing chamber, and the stream passes through the basins where 7-OH ether (2-methylallyl-o-nitrophenol ether) is recovered for re-use in the 7-OH process. They are above-ground square concrete tanks with common walls.

The tanks receive storm-and process wastewaters from the south plants, including 7-Hydroxy, TMOA and MAC processes.

ORIGINAL
(Red)

The basins discharge waste to T-2231 (Unit 13), and 7-OH ether is removed to an ether decanter in Plant III. The basins are surrounded by a concrete containment curb; spills to the containment system drain to the diversion box (Unit 43).

12. UNIT NAME: Wastewater Treatment System - South Plant System Anthracite Coal Filters

These coal filters were installed to remove excess heavy oils from the wastewater before carbon treatment. The process never worked, and the system was abandoned. The three tanks are empty and clean.

13. UNIT NAME: Wastewater Treatment System - South Plant System Filtrate Receiver T-2231

This is an approximately 10,000-gallon above-ground open-top steel tank that was installed to receive wastewater from the coal filters. Since the filters were never used, the tank has been used for flow equalization between the settling basins (Units 8-11) and the carbon columns (Unit 14).

14. UNIT NAME: Wastewater Treatment System - South Plant System-Carbon Treatment

This unit consists of six 20,000-pound Calgon granular-activated carbon treatment columns. The filters receive South Plant wastewaters directly from T-2231 (Unit 13).

Treated wastewater is discharged to T-2501 or T-2502 (Units 17 and 18). Any spills or leaks are contained within the building curbs and drain to MH-105 (Unit 15).

15. UNIT NAME: Wastewater Treatment System: MH-104, MH-104W, Grit Chamber, and Main Lift Station MH-105

This unit consists of two manholes with weirs, MH-104 and MH-104W (west); and two below-grade concrete tanks, a grit chamber and MH-105.

Wastewaters flow into MH-104, about 20 feet north of MH-105. A weir in MH-104 allows diversion of high flows to MH-104W. MH-104W has an overflow weir that, during a period of very high flow, would allow wastewater to overflow into Stonehouse Cove via Outfall 005.

Under normal conditions, wastewater flows from MH-104 to the grit chamber, where sand and heavy solids are allowed to settle out. This chamber is a below-grade square concrete vault approximately 10 feet square and 10-12 feet deep.

ORIGINAL
(Red)

Wastewater flows from the chamber to MH-105 through a bar screen to remove large floating solids. Solids are removed by hand shovel from the screens. Water is pumped from MH-105 to neutralization tank T-2505 (Unit 16).

All plant wastewaters, including treated South Plant wastewaters and raw North Plant wastewater, process, cooling and storm waters, are collected at this station prior to treatment in the combined plant system (Units 16-33).

16. UNIT NAME: Wastewater Treatment System - Neutralization Tank T-2505

This is an above-ground vertical open-top steel tank, located about 15 feet south of the MH-105.

The tank receives plant wastewaters from MH-105 (Unit 15) for neutralization with H_2SO_4 or NaOH.

17.&
18. UNIT NAME: Wastewater Treatment System - Equalization Tanks T-2501 and T-2502

These are 1.5 million-gallon open-top welded steel tanks. Both tanks receive neutralized wastewater from T-2505 (Unit 16) for flow equalization storage prior to discharge to the City of Baltimore Patapsco treatment plant.

19. UNIT NAME: Wastewater Treatment System Tank T-4301

This is an 80-foot (diameter), 40-foot (high) open-top welded steel tank (19i). The tank is located immediately east of T-2501 and T-2502 (Units 17 and 18). T-4301 is an off-specification diversion tank to store wastewater that does not meet Baltimore Patapsco Plant pretreatment standards. Wastewater is stored in T-4301 until it can be re-treated in T-4302.

20. UNIT NAME: Steam Condensate Sump T-1955

This is an in-ground concrete sump located at the west side of 7-Hydroxy Plant III.

T-1955 receives steam condensate from 7-OH Plant III. Wastes are discharged to T-2212 (Unit 21).

21. UNIT NAME: Incinerator Seal Pot T-2212

This unit is part of the operating incinerator scrubber system. It will be included in the operating incinerator permit.

22. UNIT NAME: Wastewater Treatment System, Mixer

This is an in-line pipeline mixer, (a segment of pipe with mixing baffles built-in), and is not a SWMU.

23. UNIT NAME: Wastewater Treatment System Tank T-4304

This is a 12-foot (diameter), 9-foot high above-ground open-top FRP (Fiberglass reinforced plastic) tank lined with 3mm PVDF.

The tank receives wastewater from the incinerator scrubber via the mixer. It is equipped with feeds for H_2SO_4 and NaOH for pH adjustment.

24. UNIT NAME: Wastewater Treatment System Tank T-4305

Construction is the same as T-4304 (Unit 23). The tank is a holding/equalization tank for the final pH adjustment system. It receives pH-adjusted scrubber wastewater from T-4304.

25. UNIT NAME: Wastewater Treatment System Tank T-4302

A 14-foot diameter, 12-foot 6-inch high, open-top welded steel tank. It receives wastewater from T-4305 (Unit 24) and from T-4301 (Unit 19) for flow equalization and final pH adjustment prior to discharge to the city sewer.

26. UNIT NAME: Wastewater Treatment System, pH Adjustment prior to Copper Removal, T-3560, T-3561, and T-3562

This unit refers to two different copper removal systems. One was in place in the herbicide manufacturing area, until it was removed in 1985 under a state-approved closure plan. New copper treatment tanks are in operation in the production area south of Plant 4. The system consists of three 500-gallon closed steel pH adjustment tanks (T-3560, T-3561, and T-3562); and two open-top settling tanks (T-3570A and T-3570B) (Units 27 and 28), located within the curbed process area.

This unit receives process wastewater for pH adjustment prior to copper removal. Step five of the 7-Hydroxy process uses a copper sulfate catalyst.

ORIGINAL
(Red)

27.&
28. UNIT NAME: Wastewater Treatment System, Copper Tanks T-3570A and T-3570B

These are two above-ground open-top steel tanks. The tanks receive pH-adjusted wastewater from T-3562 for settling prior to discharge to 7-OH Plant III sump (Unit 7). Copper sludges are removed and disposed offsite. The tanks are located within the plant curbed containment system.

29. UNIT NAME: Cypermethrin Process Aqueous Waste Step I Scrubber Tank, T-503

This is a vertical cylindrical closed-top tank located at the east end of Building 34. The tank contains caustic solution to scrub air from the process building.

It discharges to main lift station MH-105 if the total cyanide and cypermethrin concentrations are within the MDHMH Permit limits of 100 ppb and 3 ppb, respectively.

30.&
32. UNIT NAME: Cypermethrin Process Aqueous Waste Floor Washing Holding Tanks T-555 and T-556

These are two, 2,000-gallon open-top steel tanks that collect precipitation and floor washings from the DV Ester process area.

The tanks discharge to Main Lift Station MH-105.

31. UNIT NAME: Ethion Process Aqueous Waste Floor Washings Holding Tanks T-601/T-602

Two vertical cylindrical closed-top steel tanks inside Building 6.

33. UNIT NAME: Wastewater Treatment System - MAC Plant Decanter T-1703 and Day Tank T-1723

These are two small tanks in a contained concrete area, within the MAC that receive acidic MAC wastewater for recovery of light organics.

The water phase is discharged to neutralization tank T-2505, (Unit 16). Recovered organics are returned to the MAC process.

ORIGINAL
(Red)

34. UNIT NAME: Inactive Disposal Site II

The Disposal Site is a low-lying area in the southern portion of the plant; its boundaries are poorly defined. The top of the unit is covered with gravel and is approximately 10 feet higher than the surrounding area. However, the cover is uneven and not sloped, such that rainfall ponding is likely.

Prior to 1925, the area was excavated to form a holding area for molasses residue. It was used for landfilling beginning in the 1940s.

The Disposal Site was formally closed in 1975 by covering with earth fill.

In addition to any remaining molasses residue, manufacturing waste and construction debris materials believed present include acetoacetarylides, carbamates, pyrethrum flower residues, 7-OH tar, 7-Nitro centrifuge bottoms, Ethion wastes, Butacide tars, Dapon gel and polymerized monomers, and general trash and debris. The total volume of wastes was estimated by FMC to be in excess of 20,000 tons, though some of the materials were removed for construction of the 7-OH Plant III in 1975.

Samples from monitoring wells in this area show high values of total dissolved solids, total organic carbon, and organic and inorganic compounds. Property-specific indicators were present in this area in shallow groundwater.

35. UNIT NAME: Well Area #8

Building 12, located east of Wells 8 and 8A, was originally an intake structure for water from Stonehouse Cove. At that time, a small cove inlet existed from the shoreline to the intake sump in Building 12. The intakes were used until the 1950s. The inlet was filled with rubble and construction debris in the 1970s.

After the inlet was filled, the intake structure was used as a wastewater lift station, until MH-105 was rebuilt in 1985. During that time, water seeps had appeared on the shoreline at the filled inlet. Efforts to identify the source of the seeps led to the discovery that the sump still had its original 18-inch diameter intake ports, which had been concealed by sand and gravel in the bottom of the structure. Since then, the sump was cleaned-out and the ports have been sealed. The sump is still being used for the collection of wastewater from the Calgon treatment plant area.

ORIGINAL
(Red)

During the period from 1972 to 1985, the sump released wastewaters to Stonehouse Cove via the filled inlet. Several of the wells in this area exhibit high Total Dissolved Solids and Total Organic Carbon, as well as several organics.

36. UNIT NAME: Inactive Disposal Site I (Former Fermentation Area)

This unit includes the foundations of demolished buildings north of Patapsco Avenue. They are concrete foundation walls about 5 feet high, covered with vegetation.

The buildings had been involved in the fermentation of molasses to various intermediate and end products. After demolition, the foundation of one of the buildings was used for open burning of trash and waste materials from offices and manufacturing. The foundation has since been filled with debris and rubble.

Groundwater data indicates the presence of organic priority pollutants in wells in the area.

37. UNIT NAME: Research and Development Area, Tank

This was a subsurface steel tank that was excavated and removed. The area is located north of Patapsco Avenue near the railroad tracks on the west side of the property.

Spent solvents from R&D activities were stored in the tank and pumped out for disposal. The tank was removed in the early 1970s.

High levels of total dissolved solids, sulfates, calcium, benzene, chlorobenzene, and methylene chloride have been found in water samples from shallow monitoring well 26 in this area. Data from intermediate monitoring well 1A suggests that deeper groundwater has not been impacted.

38. UNIT NAME: Tedion Pond

The pond was located in the vicinity of the present 7-OH manufacturing process area and the storm water retention basin.

It received spent hydrochloric acid waste from the manufacturing of Tedion (acaricide). It was removed in the late 1970s. The pond was excavated at closure and the residues disposed offsite. Wells near this area, (10, 32, 35) are likely to be influenced by other units, including the sluiceway, Storm Water Retention Basin, and French Drain.

ORIGINAL
(Red)

39. UNIT NAME: Incinerator II

This oil-fueled incinerator burned approximately 1,500 tons per year of industrial plant wastes, including tars and chlorinated organics. It was operated for eight years and is presently inactive.

40. UNIT NAME: Sluiceway

This concrete sluiceway was located south of Patapsco Avenue, and was used until 1972 to transport wastewater from the manufacturing processes to Curtis Bay.

The sluiceway has been backfilled with unclassified fill material.

It appears from the groundwater data that the sluiceway may be a source of contaminants to groundwater.

41. UNIT NAME: Sodium Bromide Waste Storage Tanks

These are three 10,000-gallon tanks located inside Building 6. They contain waste sodium bromide (not hazardous) from the Ethion manufacturing process. The waste sodium bromide is disposed offsite.

42. UNIT NAME: Phosphorous Pentasulfide Waste Storage Area "Still House"

This is a concrete, roofed storage shelter located in the South Plant area.

Phosphorous pentasulfide P_2S_5 tote bins (raw material in Ethion manufacturing process) and floor sweepings, are stored in this area.

43. UNIT NAME: Diversion Box T-4244

This unit is a below-grade concrete diversion box located at the northwest corner of the Storm Water Retention Basin. The southern portion of the FMC facility has combined sewers which converge at the diversion box. On the inlet side of the box, a 400 gpm pump transfers the flow to the settling basins downstream. If flow exceeds the pump capacity, and the water level in the box exceeds 2.5 feet (FMC datum), then water overflows to the northwestern cell of the Storm Water Retention Basin. If the northwestern cell is filled to an elevation of 4.5 feet, then the diversion box overflows to the southeastern cell.

ORIGINAL
(Red)

44. UNIT NAME: Research and Development Areas

These are the same as Inactive Disposal Site I, SWMU 36.

45. UNIT NAME: Other Pounce Plant Units

Another tank, T-8102, was located southwest of the Pounce Surge tank, within the containment curbs. It contains DV acid chloride brine, an alkaline saline process solution of 16-17% salinity. This waste is too saline to discharge to the wastewater system, so it is disposed offsite.

Inside the Pounce building was a hooded grate for warming materials in drums that are to be blended back into the production process.

Another tank, T-8104, located within the Pounce area, stored waste oils generated from the process, prior to onsite incineration.

Tank T-8504, located next to the brine tank, T-8102, stores steam condensate prior to discharge.

46. UNIT NAME: "Duck Pond" Deluge Retention Pond

This is a round above-ground steel structure approximately 30 feet in diameter and four feet high, located southeast of the Pounce plant. Its purpose is to collect large volumes of water from the fire deluge system or a flood event. Wastewater would be retained in the "Duck Pond" until it could be analyzed for Pounce, then discharged or treated.

47. UNIT NAME: French Drain

The French Drain was constructed as a dewatering trench for the construction of 7-Hydroxy Plant III. It surrounds Plant III and extends along the east and west sides of the incinerator and the south side of 7-Hydroxy Plant II. It appears to be a gravel-filled trench of unspecified dimensions with perforated vitrified clay drainage pipe placed in some sections.

It is designed to discharge to the Storm Water Retention Basin, for treatment in FMC's wastewater treatment system.

Samples from the French Drain taken in 1973 contained chloroform, benzenes, chlorobenzene, and 7-Hydroxy constituents. This drain has the capacity to transport contaminated water from any point in the drain system to any other point. Also, since it is in direct contact with soils underlying the site, it can release contaminants at any point.

ORIGINAL
(Red)

APPENDIX D

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME FMC CORPORATION
ADDRESS 1701 E. PATAPSCO AVENUE
BALTIMORE MD 21226
FACILITY
LOCATION
ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004
Approval expires 6-30-88

(2-16) MD0000299 PERMIT NUMBER
(17-19) 002 A DISCHARGE NUMBER

F - FINAL
OUTFALL 002

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	04	01	TO	89	04	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Minor
~~MAJOR~~ (SUBR 02)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (4 Card Only) (38-45) MINIMUM	QUALITY OR CONCENTRATION (46-53) AVERAGE	QUALITY OR CONCENTRATION (54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
PH	SAMPLE MEASUREMENT	******	******		8.2	******	8.4		0	Twice/ Month	Grab
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	**** ****	6.0	******	9.0	SU		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	0.0447	0.0547		******	******	******	SU	0	Twice/ Month	Grab
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	**** ****		TWICE/ MONTH	MEASRD
Total Organic Carbon (TOC)	SAMPLE MEASUREMENT					42	68	MG/L	0	Twice/ ~~Month~~	~~Grab~~
	PERMIT REQUIREMENT				Monitor	without limits					
FMC Product No. 33297 (Pounce)	SAMPLE MEASUREMENT					<0.00071	0.0014	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.003	MG/L		"	"
FMC Product No. 39338 Methyl DV Ester	SAMPLE MEASUREMENT					<0.0016	0.0031	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.07	MG/L		"	"
FMC Product No. 30953 (Phenoxybenzyl Alcohol)	SAMPLE MEASUREMENT					<0.01 (ND)	0.01 (ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		2.0	MG/L		"	"
FMC Product No. 30062 (Methyl DV Acid)	SAMPLE MEASUREMENT					0.25	0.46	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.83	MG/L		"	"

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
F. G. Solecki
Plant Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

Frank G. Solecki
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
301	355-6400	89	07	05
AREA CODE	NUMBER	YEAR	MO	DAY

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

TREATMENT IS CARRIED OUT WHEN LIMITATIONS ARE EXCEEDED IN SAMPLES TAKEN AT MONITORING PT. 201.
THERE SHOULD BE NO DISCHARGE OF FLOATING SOLIDS OR PERSISTENT FOAM IN OTHER THAN TRACE AMOUNTS.
~~PERSISTENT FOAM IS FOAM THAT DOESN'T DISSIPATE WITHIN 1/2 HOUR OF TRAVEL FROM POINT OF DISCHARGE.~~

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME FMC Corporation

ADDRESS 1701 E. Patapsco Avenue
Baltimore, Maryland 21226

FACILITY

LOCATION
Attn: F. G. Solecki, Plant Manager

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No 2040 0004
Approval expires 9 30 88

(2-16) PERMIT NUMBER: MDD0000299

(17-19) DISCHARGE NUMBER: 002

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	04	01	TO	89	04	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
2-NITROPHENOL	SAMPLE MEASUREMENT					<0.01 (ND)	< 0.01(ND)	MG/L	0	Twice/ Month	24 Hr. Comp
	PERMIT REQUIREMENT				N/A		0.33	MG/L		Twice/ Month	24 Hr. Comp.
CHLORINATED BENZENES	SAMPLE MEASUREMENT					0.063	0.066	MG/L	0	Twice/ Month	24 Hr. Comp.
	PERMIT REQUIREMENT				N/A		0.26	MG/L		Twice/ Month	24 Hr. Comp.
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Frank G. Solecki
Plant Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 4 years).

Frank G. Solecki

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
AREA CODE	NUMBER	YEAR	MO	DAY
301	355-6400	89	07	05

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachment here)

ORIGINAL (Red)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME FMC CORPORATION
ADDRESS 1701 E. PATAPSCO AVENUE
BALTIMORE MD 21226

FACILITY
LOCATION
ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004
Approval expires 6-30-88

(2-16) MD0000299 — PERMIT NUMBER
(17-19) 002 A — DISCHARGE NUMBER

F - FINAL
OUTFALL 002

Minor
~~MAJOR~~ (SUBR 02)

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	05	01	TO	89	05	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (4 Card Only) (38-45) MINIMUM	QUALITY OR CONCENTRATION (46-53) AVERAGE	QUALITY OR CONCENTRATION (54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
PH	SAMPLE MEASUREMENT	******	******		7.3	******	7.6		0	Twice/ Month	Comp. Grab
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	**** ****	6.0	******	9.0	SU		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT 50050 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	0.0180	0.0288		******	******	******		0	Twice/	Meas.
	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	**** ****		TWICE/ MONTH	MEASRD
Total Organic Carbon (TOC)	SAMPLE MEASUREMENT					22	24	MG/L	0	Twice/ Month	24 Hr. Comp.
	PERMIT REQUIREMENT				Monitor Without Limits					"	"
FMC Product NO. 33297 (Pounce)	SAMPLE MEASUREMENT					< 0.00001(ND)	< 0.00001(ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.003	MG/L		"	"
FMC Product No. 39338 (Methyl DV Ester)	SAMPLE MEASUREMENT					0.016	0.020	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.07	MG/L		"	"
FMC Product No. ~~39338~~ 30953 (Phenoxybenzyl Alcohol)	SAMPLE MEASUREMENT					< 0.01(ND)	< 0.01 (ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		2.0	MG/L		"	"
FMC Product No. 30062 (Methyl DV Acid)	SAMPLE MEASUREMENT					0.32	0.32	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.83	MG/L		"	"

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Frank G. Solecki
Plant Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

Frank G. Solecki
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
301	355-6400	89	07	05
AREA CODE	NUMBER	YEAR	MO	DAY

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

TREATMENT IS CARRIED OUT WHEN LIMITATIONS ARE EXCEEDED IN SAMPLES TAKEN AT MONITORING PT. 201.
TREATMENT IS CARRIED OUT WHEN VISIBLE SOLIDS OR PERSISTENT FOAM IN OTHER THAN TRACE AMOUNTS.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME FMC CORPORATION
ADDRESS 1701 E. PATAPSCO AVENUE
BALTIMORE MD 21226

FACILITY
LOCATION
ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

PERMIT NUMBER (2-16)	DISCHARGE NUMBER (17-19)
MD0000299	002 A

F - FINAL
OUTFALL 002

Form Approved
OMB No. 2040-0004
Approval expires 6-30-88

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
89	06	01	89	06	30

Minor
~~MAJOR~~ (SUBR 02)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	QUALITY OR CONCENTRATION (4 Card Only) MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
PH	SAMPLE MEASUREMENT	******	******		8.0	******	8.2	SU	0	Twice/ Month	Grab
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	**** ****	6.0	******	9.0	SU		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	0.088	0.089		******	******	******		0	Twice/ Month	Meas.
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	**** ****		TWICE/ MONTH	MEASRD
Total Organic Carbon (TOC)	SAMPLE MEASUREMENT					19	20	MG/L	0	Twice/ Month	24 Hr. Comp.
	PERMIT REQUIREMENT				MONITOR WITHOUT LIMITS					"	"
FMC Product NO. 33297 (Pounce)	SAMPLE MEASUREMENT					< 0.0001(ND)	<0.00001(ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.003	MG/L		"	"
FMC Product No. 39338 (Methyl DV Ester)	SAMPLE MEASUREMENT					0.0030	0.0031	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.07	MG/L		"	"
FMC Product No. 30953 (Phenylbenzyl Alcohol)	SAMPLE MEASUREMENT					< 0.01(ND)	< 0.01(ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		2.0	MG/L		"	"
FMC Product No. 30062 (Methyl DV Acid)	SAMPLE MEASUREMENT					0.29	0.32	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.83	MG/L		"	"

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
F. G. Solecki Plant Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Frank G. Solecki SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	301	355-6400	89	07	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

TREATMENT IS CARRIED OUT WHEN LIMITATIONS ARE EXCEEDED IN SAMPLES TAKEN AT MONITORING PT. 201.
THERE SHOULD BE NO DISCHARGE OF FLOATING SOLIDS OR PERSISTENT FOAM IN OTHER THAN TRACE AMOUNTS.
~~PERSISTENT FOAM IS FOAM THAT DOESN'T DISSIPATE WITHIN 1/2 HOUR OF TRAVEL FROM POINT OF DISCHARGE.~~

ORIGINAL (Red)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME [illegible]

ADDRESS [illegible] AVENUE [illegible] MD 21225

FACILITY

LOCATION

ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved. OMB No. 2040-0004 Approval expires 6-30-88

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
[illegible]	[illegible]

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)

Minor xxxxxx ([illegible])

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
[illegible]	SAMPLE MEASUREMENT	[illegible]	[illegible]		8.0	[illegible]	8.2	SU	0	Twice/ Month	Grab
[illegible]	PERMIT REQUIREMENT	[illegible]	[illegible]	[illegible]	6.0	[illegible]	9.0	[illegible]		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT [illegible]	SAMPLE MEASUREMENT	0.088	0.089		[illegible]	[illegible]	[illegible]		0	Twice/ Month	Meas.
[illegible]	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		TWICE/ MONTH	MEASRD
Total Organic Carbon (TOC)	SAMPLE MEASUREMENT					19	20	MG/L	0	Twice/ Month	24 Hr. Comp.
	PERMIT REQUIREMENT				MONITOR WITHOUT LIMITS					"	"
FMC Product NO. 33297 (Pounce)	SAMPLE MEASUREMENT					< 0.0001(ND)	<0.00001(ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.003	MG/L		"	"
FMC Product No. 39338 (Methyl DV Ester)	SAMPLE MEASUREMENT					0.0030	0.0031	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.07	MG/L		"	"
FMC Product No. 30953 (Phenylbenzyl Alcohol)	SAMPLE MEASUREMENT					< 0.01(ND)	< 0.01(ND)	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		2.0	MG/L		"	"
FMC Product No. 30062 (Methyl DV Acid)	SAMPLE MEASUREMENT					0.29	0.32	MG/L	0	"	"
	PERMIT REQUIREMENT				N/A		0.83	MG/L		"	"

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

F. G. Solecki
Plant Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION. I BELIEVE 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE AREA CODE	NUMBER	DATE YEAR	MO	DAY
301	355-6400	89	07	05

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

TREATMENT IS CARRIED OUT WHEN LIMITATIONS ARE EXCEEDED IN SAMPLES TAKEN AT MONITORING PT. 2[illegible].
THERE SHOULD BE NO DISCHARGE OF FLOATING SOLIDS OR PERSISTENT FOAM IN [illegible] THAN TRACE AMOUNTS.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: FMC Corporation

ADDRESS: 1701 E. Patapsco Avenue
Baltimore, Maryland 21226

FACILITY

LOCATION

Attn: F. G. Solecki, Plant Manager

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No 2040 0004
Approval expires 9 30 88

PERMIT NUMBER (2-16)	DISCHARGE NUMBER (17-19)
MDD0000299	002

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	06	01	TO	89	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(I Card Only) (46-53) QUANTITY OR LOADING (54-61) AVERAGE	MAXIMUM	UNITS	(I Card Only) (38-45) QUALITY OR CONCENTRATION (46-53) MINIMUM	AVERAGE	MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
2-Nitrophenol	SAMPLE MEASUREMENT					<0.01 (ND)	< 0.01 (ND)	MG/L	0	Twice/ Month	24 Hr. Comp.
	PERMIT REQUIREMENT						0.33	MG/L		Twice/ Month	24 Hr. Comp.
Chlorinated Benzenes	SAMPLE MEASUREMENT					<0.080	<0.095	MG/L	0	Twice/ Month	24 Hr. Comp.
	PERMIT REQUIREMENT						0.26	MG/L		Twice/ Month	24 Hr. Comp.
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

F. G. Solecki
Plant Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE 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 SEE 18 USC 1001 AND 33USC 1319 (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
AREA CODE	NUMBER	YEAR	MO	DAY
301	355-6400	89	07	05

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME FMC CORPORATION
ADDRESS 1701 E. PATAPSCO AVENUE
BALTIMORE MD 21226

FACILITY
LOCATION
ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: MD0000299
(17-19) DISCHARGE NUMBER: 003 A

F - FINAL
OUTFALL 003

Form Approved
OMB No. 2040-0004
Approval expires 6-30-8

MONITORING PERIOD
FROM YEAR 89 (20-21) MO 05 (22-23) DAY 01 (24-25) TO YEAR 89 (26-27) MO 05 (28-29) DAY 31 (30-31)

Minor
~~MAJOR~~ (SUBR 02)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (4 Card Only) (38-45) MINIMUM	QUALITY OR CONCENTRATION (46-53) AVERAGE	QUALITY OR CONCENTRATION (54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
PH	SAMPLE MEASUREMENT	******	******			******	7.7	SU	o	Once/ Month	Grab
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	**** ****	6.0	******	9.0	SU		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT		0.00144		******	******	******		0	Once/ Month	Est.
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	**** ****		ONCE/ MONTH	ESTIMA
Total Organic Carbon	SAMPLE MEASUREMENT						24	MG/L	0	Once/ Month	Grab
						Monitor without limits				Once/	Grab

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME FMC CORPORATION
ADDRESS 1701 E. PATAPSCO AVENUE
BALTIMORE MD 21226

FACILITY
LOCATION
ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: MD0000299
(17-19) DISCHARGE NUMBER: 003 A

F - FINAL
OUTFALL 003

Form Approved
OMB No. 2040-0004
Approval expires 6-30-88

MONITORING PERIOD
FROM YEAR 89 (20-21) MO 04 (22-23) DAY 01 (24-25) TO YEAR 89 (26-27) MO 04 (28-29) DAY 30 (30-31)

Minor
~~MAJOR~~ (SUBR 02)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (4 Card Only) (38-45) MINIMUM	QUALITY OR CONCENTRATION (46-53) AVERAGE	QUALITY OR CONCENTRATION (54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
PH	SAMPLE MEASUREMENT	******	******			******	7.9	SU	0	ONCE/ Month	Grab
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	**** ****	6.0	******	9.0	SU		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT		0.00144		******	******	******			Once/ Month	Est.
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	**** ****		ONCE/ MONTH	ESTIMA
Total Organic Carbon (TOC)	SAMPLE MEASUREMENT						35	MG/L	0	Once/ Month	Grab
	PERMIT REQUIREMENT					Monitor without limits				Once/ Month	Grab
	SAMPLE MEASUREMENT										
	PERMIT										

ORIGINAL (Red)

[redacted]TEE NA[redacted]DRES[redacted]
Facility Name/Location (if different)

NAME FMC CORPORATION
ADDRESS 1701 E. PATAPSCO AVENUE
BALTIMORE MD 21226

FACILITY
LOCATION
ATTN: F.G. SOLECKI, PLANT MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (D[redacted])

(2-16)	(17-19)
MD0000299	003 A
PERMIT NUMBER	DISCHARGE NUMBER

F - FINAL
OUTFALL 003

Form Approved
OMB No. 2040-0004
Approval expires 6-30-88

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	06	01	TO	89	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Minor
~~MAJOR~~ (SUBR 02)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
PH	SAMPLE MEASUREMENT	******	******			******	7.6	SU	0	Once/ Month	Grab
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	**** ****	6.0	******	9.0	SU		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT		0.00144		******	******	******			Once/ Month	Est.
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	**** ****		ONCE/ MONTH	ESTIMA
Total Organic Carbon (TOC)	SAMPLE MEASUREMENT						29	MG/L	0	Once/ Month	Grab
	PERMIT REQUIREMENT				Monitor without limits					Once/ Month	Grab
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
F. G. Solecki Plant Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION. I BELIEVE 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Frank G. Solecki SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	301	355-6400	89	07	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR PERSISTENT FOAM IN OTHER THAN TRACE AMOUNTS. PERSISTENT FOAM IS FOAM THAT DOESN'T DISSIPATE WITHIN 1/2 HOUR OF TRAVEL FROM POINT OF DISCHARGE.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME FMC Corporation

ADDRESS 1701 E. Patapsco Avenue
Baltimore, Md. 21226

FACILITY

LOCATION
Attn: F. G. Solecki

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No 2040-0004
Approval expires 9 30 88.

PERMIT NUMBER (1-10)	DISCHARGE NUMBER (11-14)
MDD0000299	005

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	04	30	TO	89	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	QUALITY OR CONCENTRATION (38-45) MINIMUM	QUALITY OR CONCENTRATION (46-53) AVERAGE	QUALITY OR CONCENTRATION (54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Flow	SAMPLE MEASUREMENT	No Discharge		MGD					0		
	PERMIT REQUIREMENT		Report		N/A		N/A			1	Est. Discharge
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

F. G. Solecki
Plant Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE 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 SEE 18 USC 1001 AND 33 USC 1319 (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 4 years.)

Frank G. Solecki

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE AREA CODE	NUMBER	DATE YEAR	MO	DAY
301	355-6400	89	07	07

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: FMC Corporation

ADDRESS: 1701 E. Patapsco Avenue
Baltimore, Maryland 21226

FACILITY

LOCATION
Attn: F. G. Solecki

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No 2040 0004
Approval expires 9 30 88

(2-16) PERMIT NUMBER: MDD0000299

(17-19) DISCHARGE NUMBER: 004

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	89	04	89	TO	89	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(I Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(II Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-65)	FREQUENCY OF ANALYSIS (66-68)	SAMPLE TYPE (69-70)
Flow	SAMPLE MEASUREMENT	One overflow into Stonehouse Cove							1*		
	PERMIT REQUIREMENT		Report	MGD	N/A		N/A			i	Est.
	SAMPLE MEASUREMENT									Discharge	
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
F. G. Solecki
Plant Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 4 years)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
301	355-6400	89	07	0[illegible]
AREA CODE	NUMBER	YEAR	MO	DAY

ORIGINAL (Red)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

* 1 Overflow into Stonehouse Cove reported in letter dated 6/9/89.

ORIGINAL
(Red)

APPENDIX E

FMC Corporation
Agricultural Chemical Division
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

FIGURE 4

ORIGINAL
(Red)

FMC

December 19, 1978

State of Maryland
Water Resources Administration
Industrial and Hazardous Substances Division
Tawes State Office Building
Annapolis, Maryland 21401

Attention: Mr. William E. Chicca

Dear Mr. Chicca:

As required by the Special Conditions section of the FMC Baltimore plant Facility Permit No. A023, a report on the quantity and nature of materials disposed in the abandoned dump site is submitted.

Sometime prior to 1925, this landfill area was dug out to form a holding area for molasses slop. This molasses slop was a material of process under U. S. Industrial Alcohol Co., Inc., resulting from the manufacture of alcohol from Cuban molasses. The slop was stored in tanks and in this reservior, unitl it could be processed into a potash type fertilizer.

After USI went out of this alcohol-from-molasses business during World War II, this pond was dried up leaving a low spot in the land. During the middle 1940's, landfilling of this area began. This landfill operation had continued sporadically until mid 1975. At this time, dumping operations were terminated.

The wastes generated from operations that no longer exist, and the estimated amounts that were dumped in this area are listed below.

Material	Estimated Amount, lbs.
Acetoacetarylides dryer scrap	1,000,000
Carbamate residues	400,000
Pyrethrum flower residues	20,000
Pilot Plant wastes	10,000

In addition, the following wastes that are currently generated, but now disposed via contract waste and the estimated amounts that were dumped in this area are listed below.

Material	Estimated Amount, lbs.
7-Hydroxy Tar	3,000,000
7-Nitro Centrifuge bottoms	3,000,000
Ethion® filter aids and filter tubes	40,000
Butacide® tar	2,000,000
Dapon® gel and polymerized monomers	2,000,000
General trash and debris	30,000,000

ORIGINAL
(Red)

It should be noted that above lists are the best estimates of the materials which constitute the major proportion of the present dump. In the fifty years of plant operation which have included numerous small production campaigns, small amounts of material may have been dumped at this location which are not included in the above estimate.

It should also be noted that the 7-OH plant III is located on one segment of the former dump site. Materials excavated during the construction of 7-OH plant III were removed to the Solley Road landfill in 1975 and 1976. The plant dump was formally closed in July 1975 and earth fill placed atop it. Surface waters from this former dump site now flow into the plant waste water systems using outfall 001. A "french drain" system just southwest of the former dump site was installed in 1976 to collect any leachate in this area. This drainage system ties into the 7-Hydroxy sewer system.

Please call if there are any questions.

Sincerely,

J. H. Convey

J. H. Convey
Environmental Manager

cc - R. T. Sebrosky
M. J. Gross
R. N. Mesiah - Phila.

ORIGINAL
(Red)

APPENDIX F

ORIGINAL
(Red)

HYDROGEOLOGIC ASSESSMENT
FMC, BALTIMORE

- SITE HISTORY
- HYDROGEOLOGY AND GROUNDWATER QUALITY
- POTENTIAL ENVIRONMENTAL IMPACT
- SUMMARY AND CONCLUSIONS

SITE HISTORY

1915 ETHANOL BASED CHEMICAL MANUFACTURING BEGUN

1925* MOLASSES SLOP STORAGE IN HOLDING POND

1945* LANDFILLING BEGUN IN HOLDING POND

1946 RESEARCH FACILITIES CONSTRUCTED

1954 FMC PURCHASES PROPERTY

1973 RESEARCH FACILITIES DEMOLISHED

1975 ON-SITE LANDFILLING CEASED

1977 STORMWATER RETENTION BASIN CONSTRUCTED

1982 GROUNDWATER MONITORING PROGRAM BEGUN

* - APPROXIMATE

ORIGINAL
(Red)

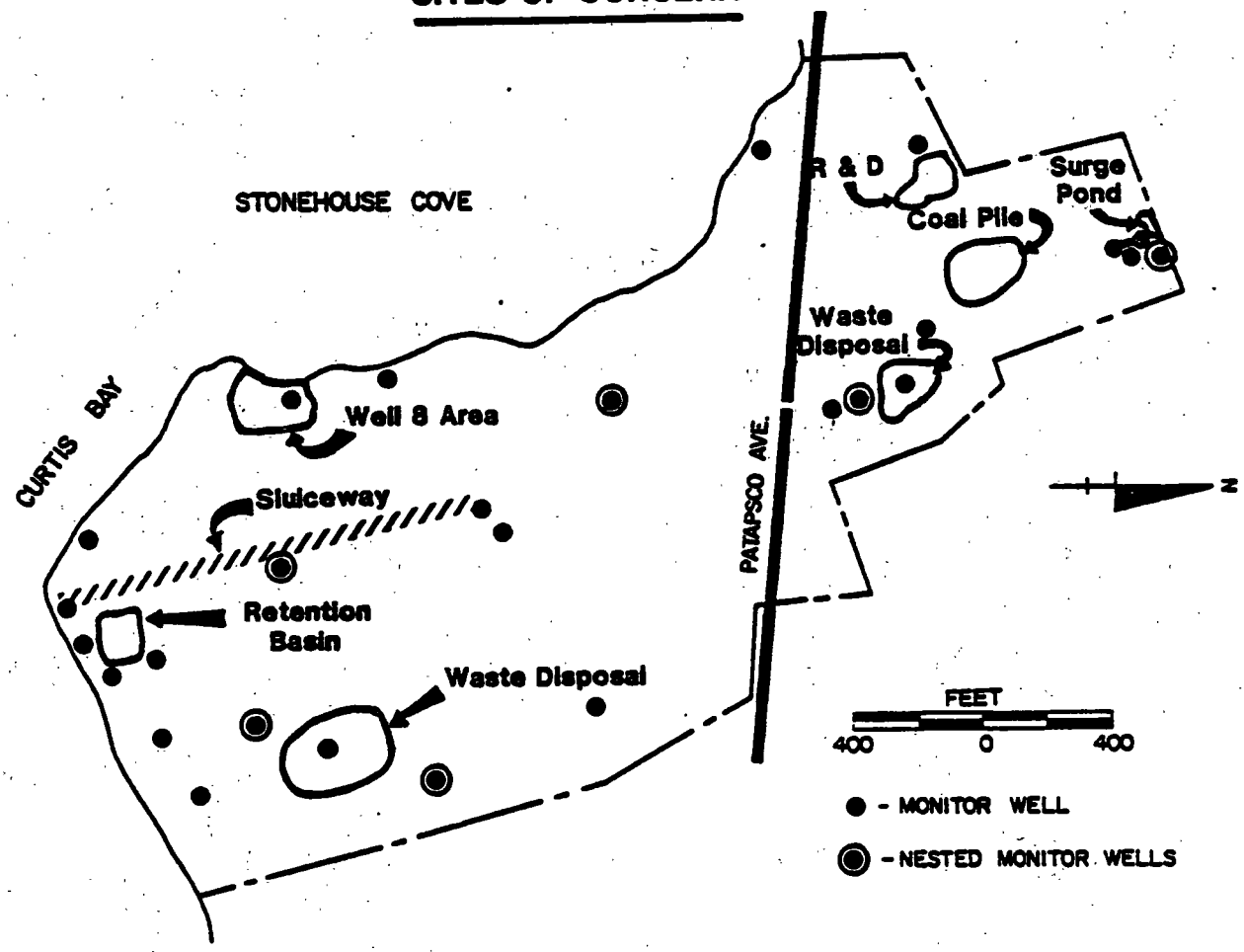
REPORTED ON SITE DISPOSAL

MATERIAL

- ACETOACETARYLIDES DRYER SCRAP
- CARBAMATE RESIDUES
- PYRETHRUM FLOWER RESIDUES
- PILOT PLANT WASTES
- 7-HYDROXY TAR
- 7-NITRO CENTRIFUGE BOTTOMS
- ETHION FILTER AIDS AND FILTER TUBES
- BUTACIDE TAR
- DAPON GEL AND POLYMERIZED MONOMERS
- GENERAL TRASH AND DEBRIS

ORIGINAL
(Red)

SITES OF CONCERN



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CONCLUSIONS

1. FMC SITE IN RECHARGE ZONE OF PATAPSCO AQUIFER.

   REGIONAL FLOW TO THE SOUTH EAST .

CONCLUSIONS

2. LOCAL HYDROGEOLOGY :

   DISCONTINUOUS LAYERS - FINE & COARSE SEDIMENTS.

   LOCAL CLAY AQUITARD RETARDS VERTICAL FLOW.

   BEHAVE AS SINGLE HYDRAULIC UNIT

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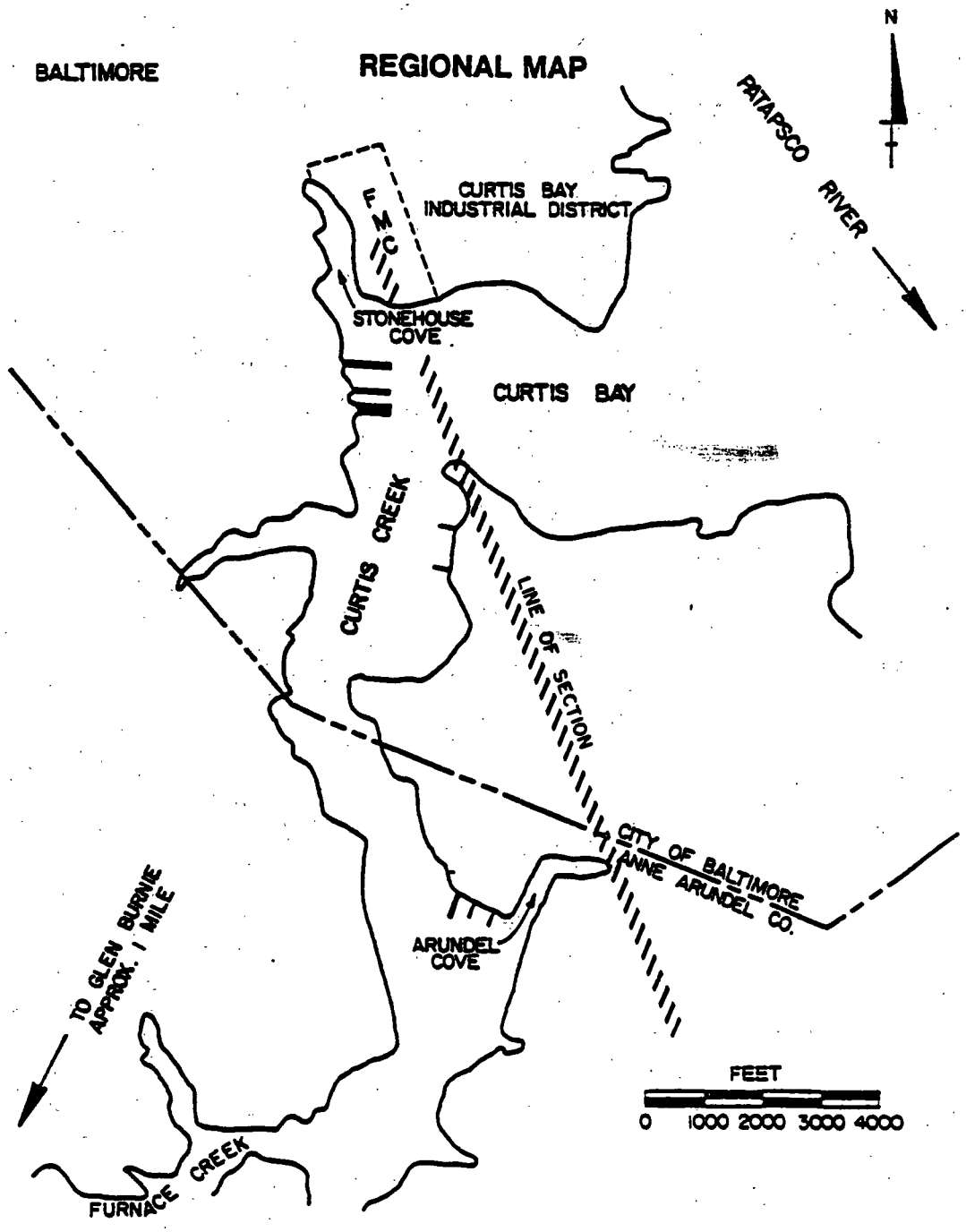
(Red)



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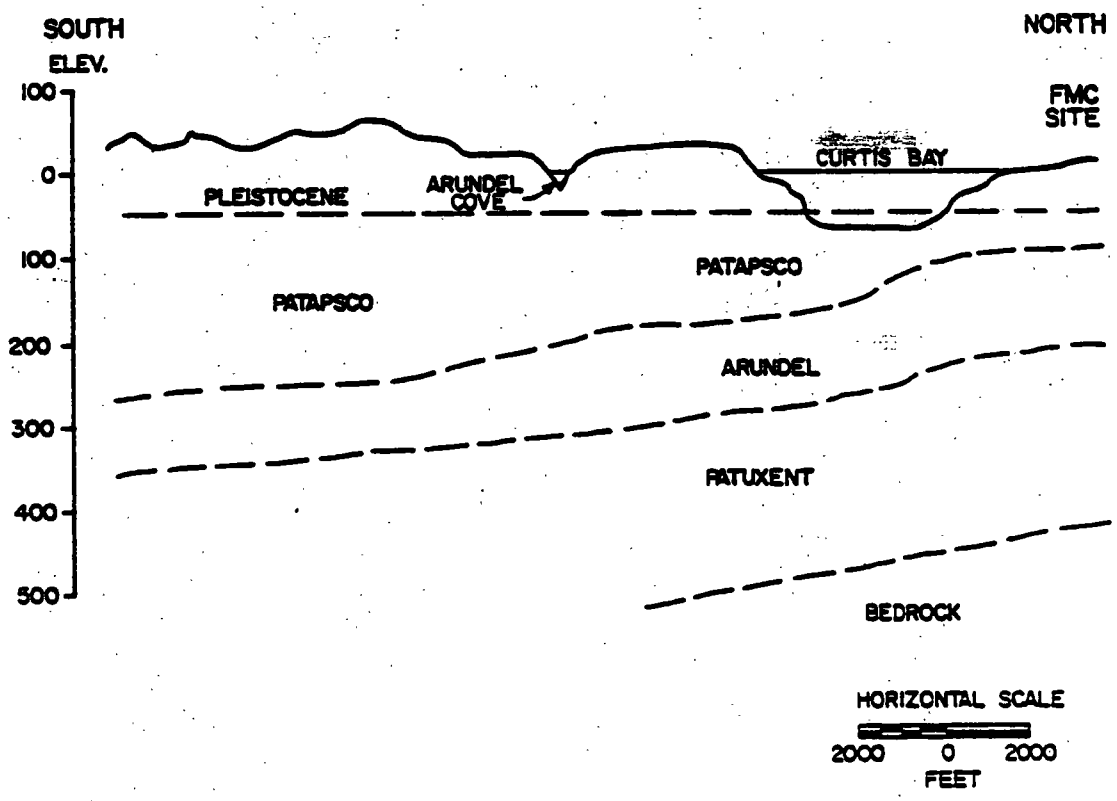
REGIONAL GEOLOGIC CROSS SECTION



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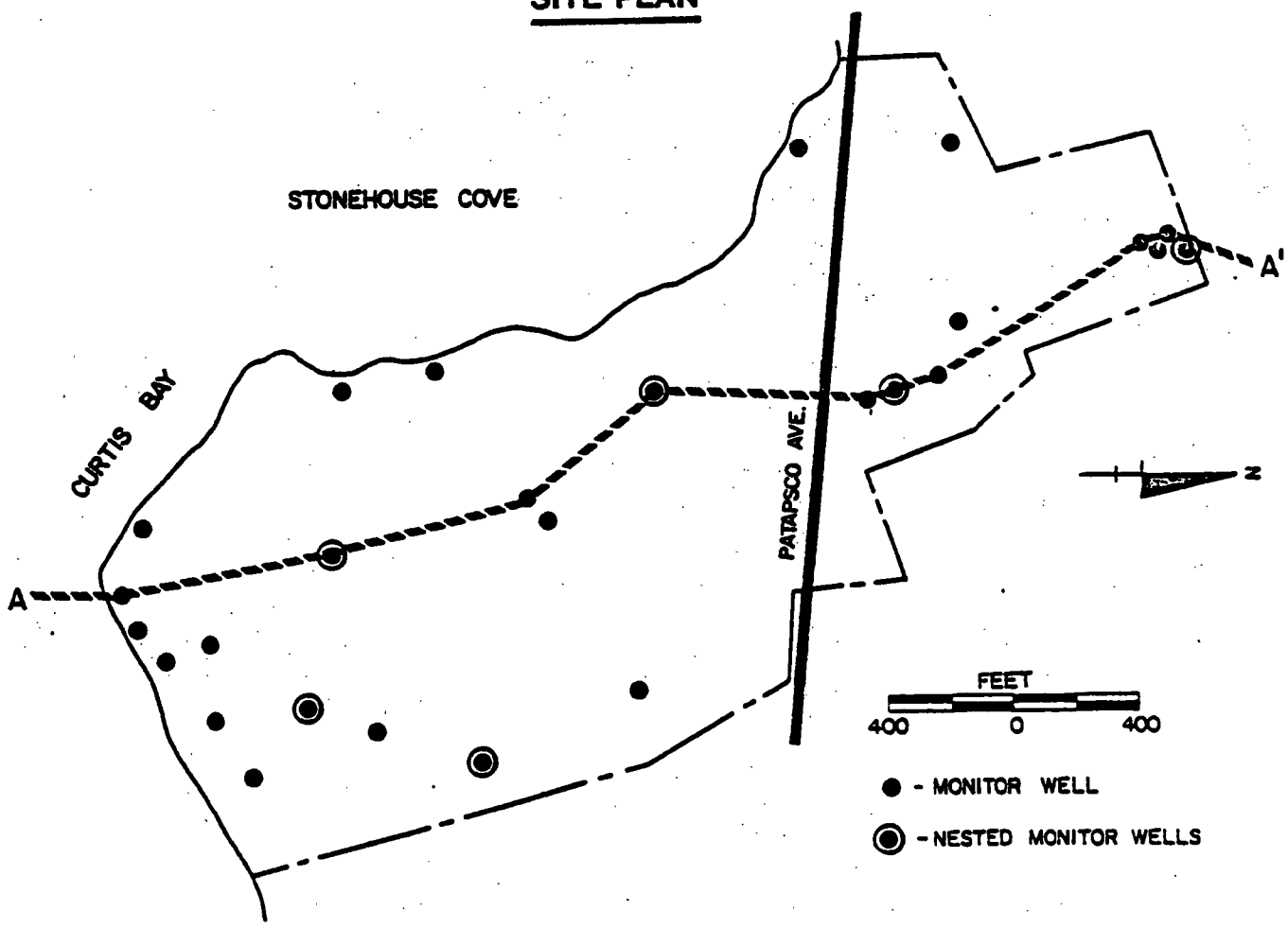
SITE PLAN



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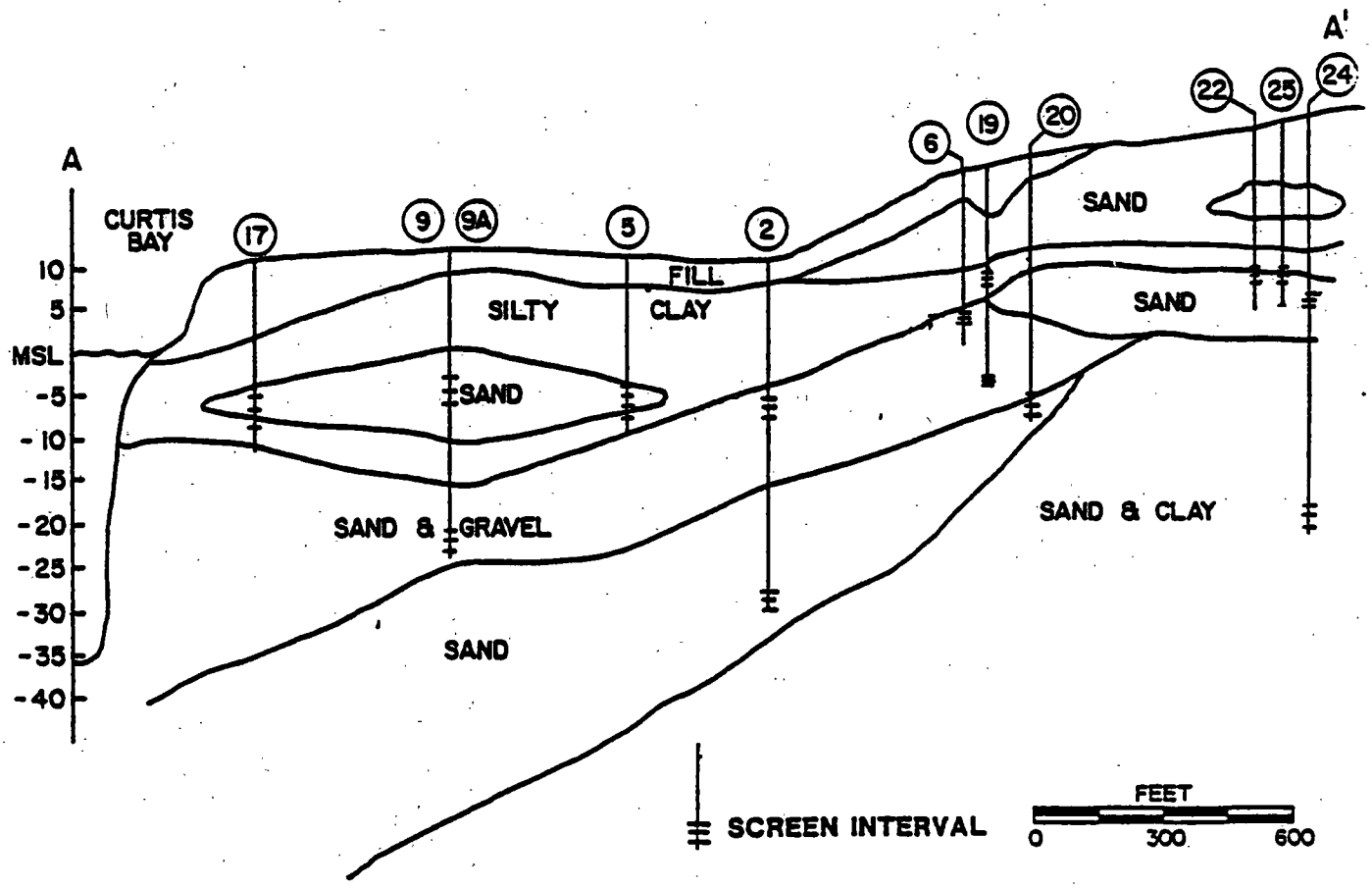
SITE LITHOLOGIC CROSS SECTION



ORIGINAL
(Red)

CONCLUSIONS

3.,4.,5. SHALLOW GROUNDWATER DISCHARGES TO CURTIS BAY AND STONEHOUSE COVE

CLAY LENSES, etc. MAY AFFECT LOCAL FLOW DIRECTIONS

FRENCH DRAINS ROUTE SOME GROUNDWATERS TO SRB.

DEEPER PORTION OF PATAPSCO MAY UNDERFLOW SURFACE WATERS

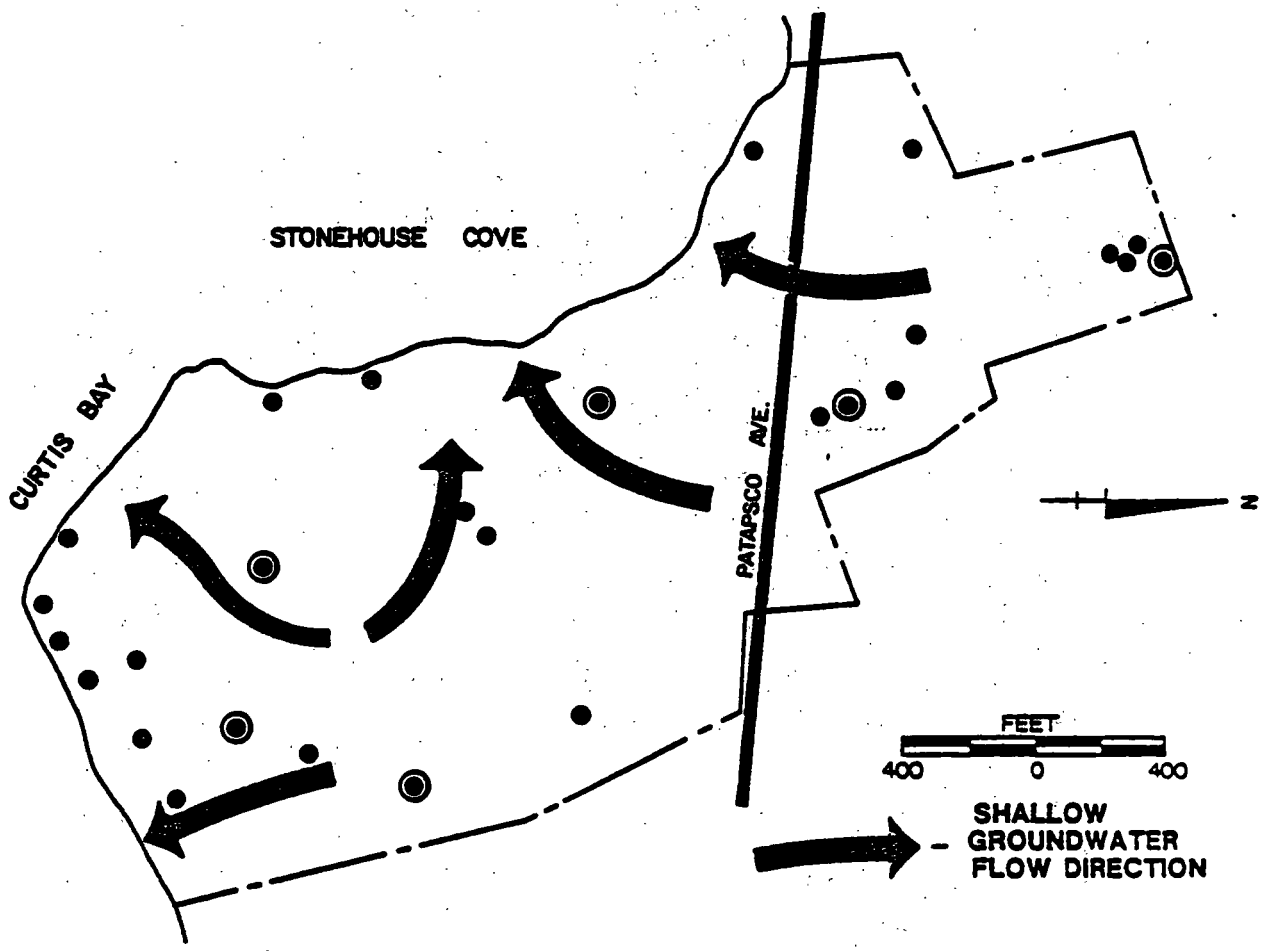
CONCLUSIONS

6. SOME CONTAMINANTS DERIVE FROM UPGRADIENT SOURCES

NO KNOWN ADJACENT USES OF PATAPSCO GROUNDWATER

ORIGINAL
(Red)

GROUNDWATER FLOW MAP



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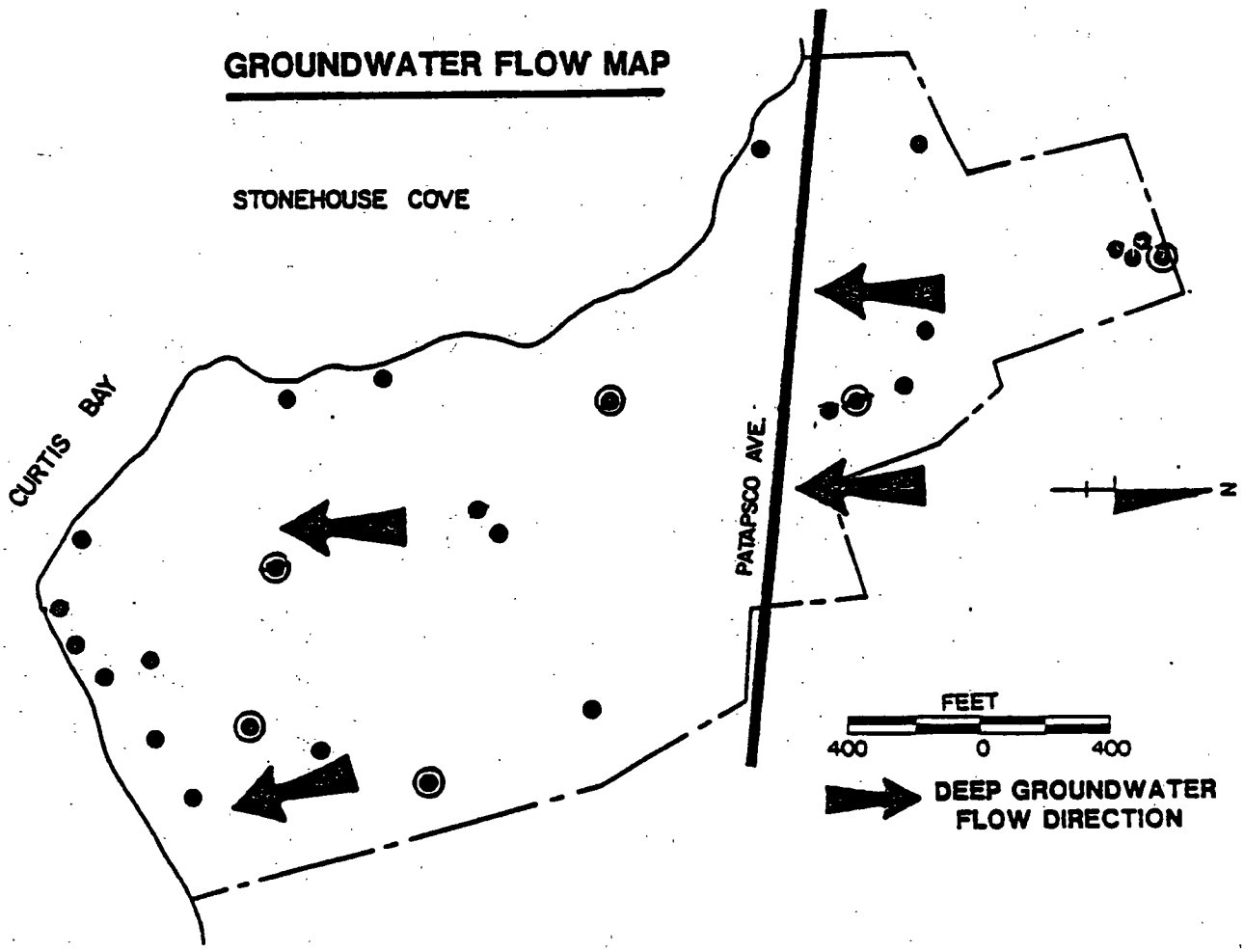

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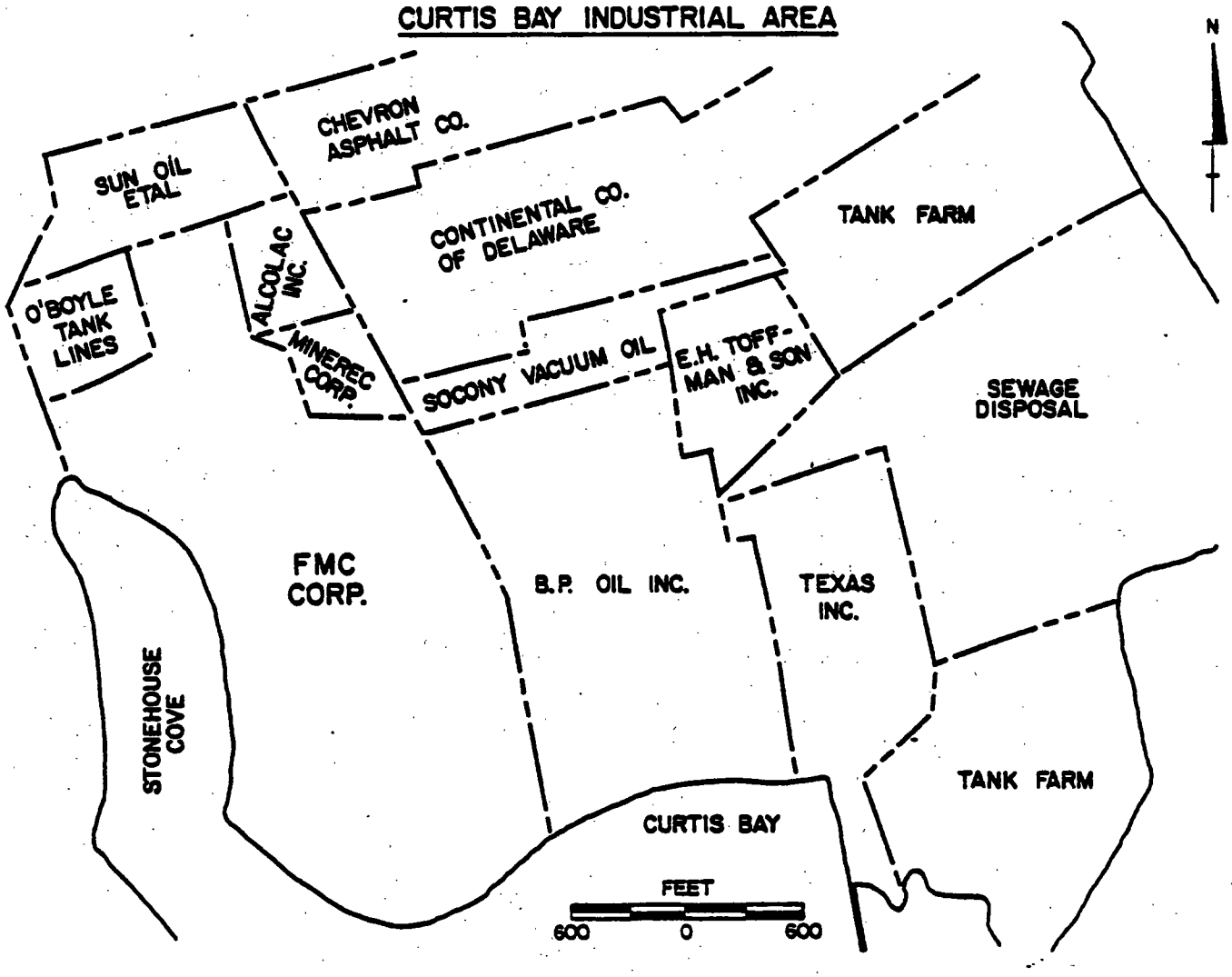
CURTIS BAY INDUSTRIAL AREA



ORIGINAL
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CONCLUSIONS

7. AREAS OF POTENTIAL IMPACT

- SURGE POND
- COAL PILE
- DISPOSAL SITE II
- WELL 8 AREA

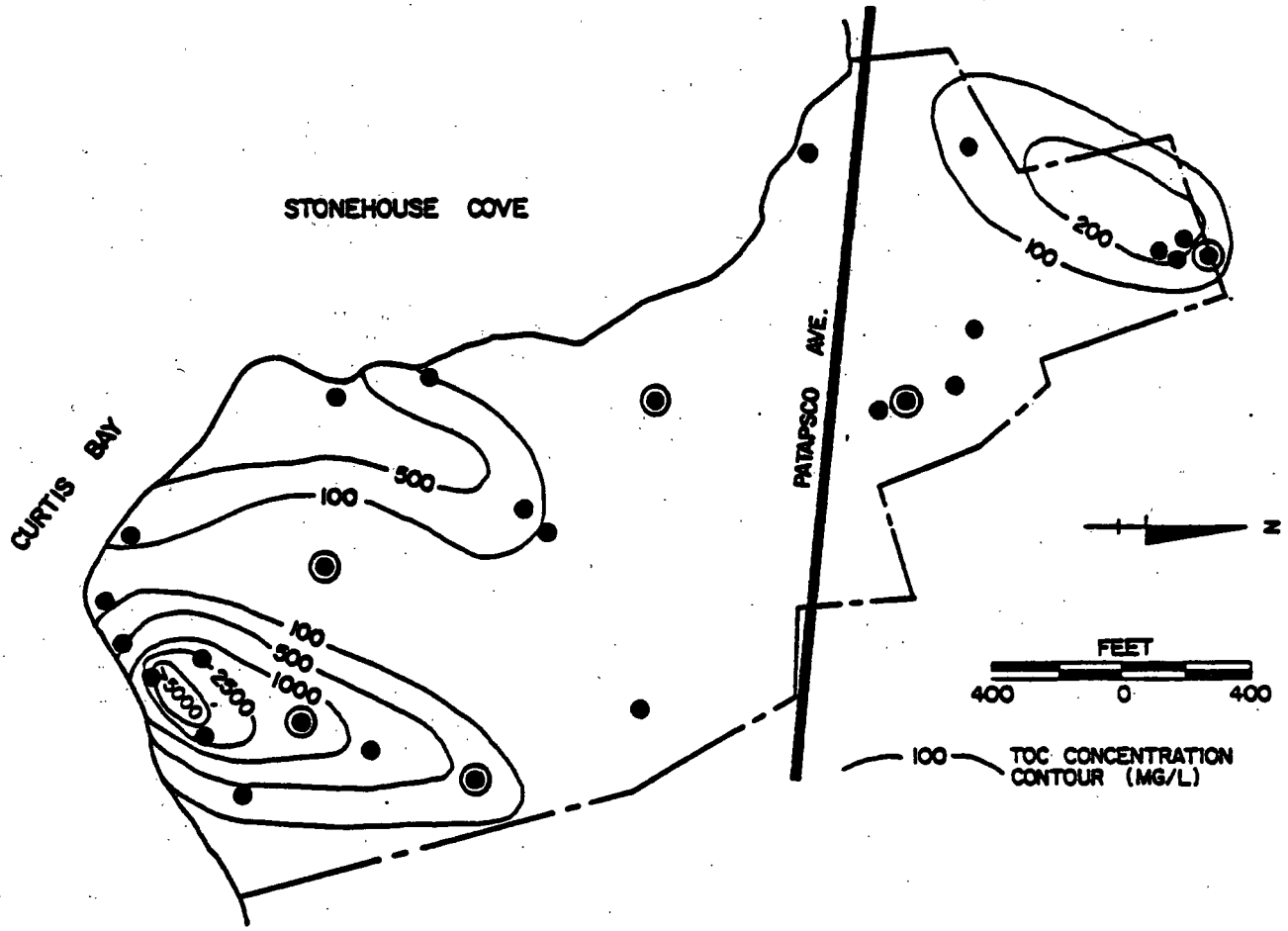
CONCLUSIONS

8. AREAS OF QUESTIONABLE IMPACT

- RETENTION BASIN
- R & D AREA

ORIGINAL
(Red)

GENERALIZED TOC CONCENTRATION MAP



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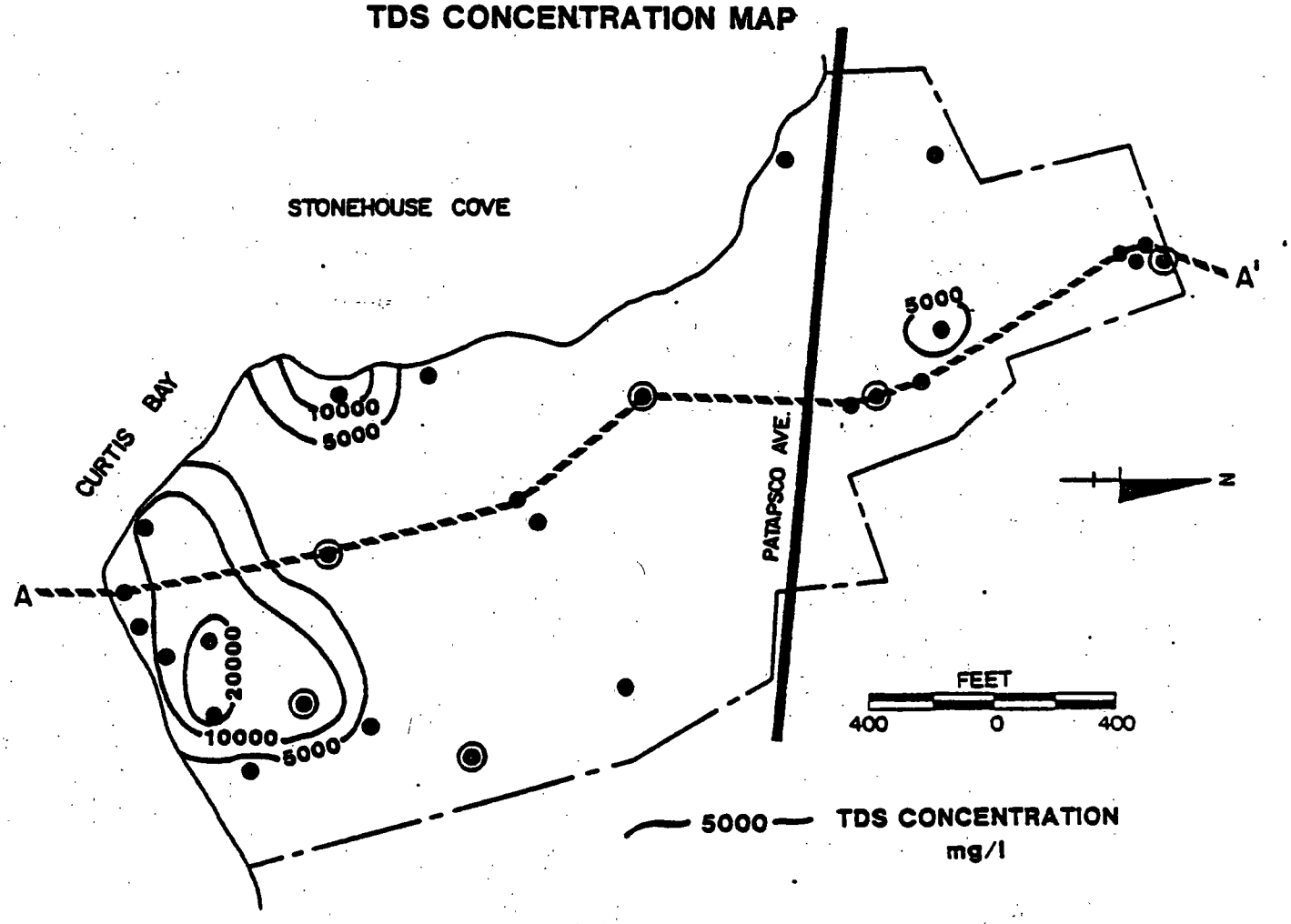
(Red)

TDS CONCENTRATION MAP



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CONCLUSIONS

9. AREAS OF UNLIKELY IMPACT

- DISPOSAL SITE I
- SLUICEWAY

CONCLUSIONS

10. SOME CONTAMINANTS HAVE MOVED TO UPPER PORTION OF PATAPSCO

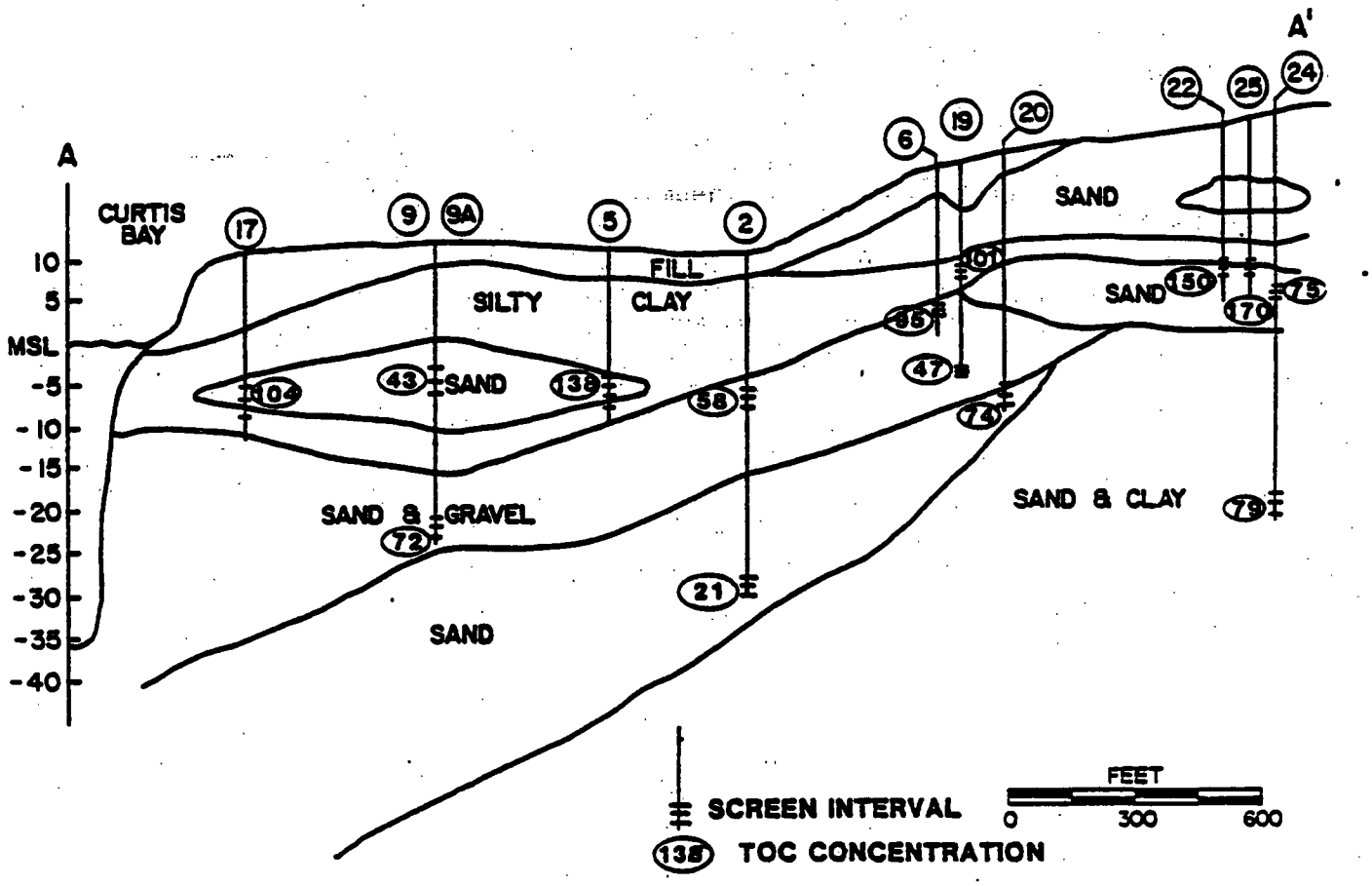
CONCLUSIONS

11. IMPACTS TO SURFACE WATER:

INORGANICS - UNLIKELY
ORGANICS - POTENTIAL

ORIGINAL
(Red)

SITE LITHOLOGIC CROSS SECTION



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CONCLUSIONS

12. ANALYSES CONDUCTED DO NOT CHARACTERIZE THE ORGANICS

CONCLUSIONS

13. CURTIS BAY USES:

- COMMERCIAL SHIPPING
- CONTACT RECREATION
- RECREATIONAL FISHING

CONCLUSIONS

14. BOTH PATAPSCO AND PATUXENT AQUIFERS USED AS WATER SUPPLIES SOUTH OF FMC

ORIGINAL
(Red)

DEVELOPMENT OF
SITE REMEDIAL ACTION PLAN

1- WASTE CHARACTERIZATION
2- HYDROGEOLOGIC INVESTIGATIONS
3- RISK ASSESSMENT
4- COST - EFFECTIVENESS STUDIES
5- REMEDIAL ACTION PLAN

TASK ONE
GROUNDWATER CHARACTERIZATION

1.01 ANALYZE NEW PERIMETER MONITORING WELLS
1.02 ANALYZE TEMPORAL TRENDS
1.03 DETERMINE GROUNDWATER CHARACTERISTICS
1.04 ANALYZE SITE - SPECIFIC COMPOUNDS

ORIGINAL
(Red)

APPENDIX G

ORIGINAL
(Red)

TABLE II

FMC Corporation - Baltimore, Maryland
Third Quarter - 1982

Groundwater Monitoring Data
(Surge Pond)

Total Organic Halogen Species Analysis (ug/l)

Well #24

methylene chloride	55.7
chloroform	2.9
1,1,2,2-tetrachlorethene	3.4
chlorobenzene	430.8

Well #25

methylene chloride	55.4
chloroform	336.9
1,2-dichloropropane	349.2
1,1,2-trichloroethane	12.5
1,1,2,2-tetrachloroethene	27.1
chlorobenzene	>3276.7

Well #23

methylene chloride	54.9
chloroform	10.9
1,1,2,2-tetrachloroethene	4.5
chlorobenzene	>3276.7

Well #22

methylene chloride	77.6
chloroform	151.6
1,2-dichloropropane	311.9
1,1,2-trichloroethane	12.6
1,1,2,2-tetrachloroethene	9.0
1,1,2,2-tetrachloroethane	6.2
chlorobenzene	>3276.7

ORIGINAL
(Red)

TABLE III

FMC Corporation - Baltimore, Maryland
Third Quarter - 1982

Groundwater Monitoring Data
(Retention Basin)

Total Organic Halogen Species Analysis (ug/l)

Well #10

methylene chloride	520.7
chloroform	5.5
1,1,2,2-tetrachloroethene	3.5
chlorobenzene	109.4

Well #16

methylene chloride	48.5
chloroform	2.4
trans-1,3-Dichloropropene	48.6
1,1,2,2-tetrachloroethene	3.7
chlorobenzene	1204.0

Well #27

methylene chloride	12.9
chloroform	5.1
chlorobenzene	6.4

Well #17

methylene chloride	120.6
trans-1,2-dichloroethylene	8.2
chloroform	33.0
trans-1,3,dichloropropene	241.8
cis-1,3-dichloropropene	37.0
1,1,2-trichloroethane	46.1
1,1,2,2-tetrachloroethene	6.5
chlorobenzene	7.8

ORIGINAL
(Red)

FMC 27

elev. 11.5

Boring depth: 20.5 feet
Screen setting: 15.5 - 20.5 feet

Depth (ft)	Thickness (ft)	Description
0.0- 3.0	3.0	Fill, sand, fine to medium and gravel, grayish brown
3.0- 5.0	2.0	Sand, fine, silty, little clay, black
5.0-10.0	5.0	Sand, fine, little tan and brown silt, black, odor
10.0-13.5	3.5	Silt, little fine sand, black, gray, tan, and orange, odor, moist
13.5-20.5	7.0	Silt, some clay, brown and gray, trace reddish brown

ORIGINAL
(Red)

FMC 25

Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 7.5	7.5	Sand, fine to medium, micaceous, silty, odor, brown and gray, wet
7.5-12.5	5.0	Silt and fine sand, very clayey, lot of iron stains, odor, reddish-brown to gray
12.5-16.5	4.0	Clay, saturated, very plastic, gray
16.5-21.0	4.5	Sand, fine to coarse, silty, clayey, micaceous, gray to dark gray, wet

ORIGINAL
(Red)

FMC 24

elev. 30.58

Boring depth: 26 feet
Screen setting: 21 - 26 feet

Depth (ft)	Thickness (ft)	Description
0.0-12.5	12.5	Sand, fine to medium, silty, some clay, some layering, coarse sand lens, iron stains, reddish-brown and gray, damp to moist
12.5-17.5	5.0	Clay, silty, soft, very plastic, gray
17.5-26.0	8.5	Sand, medium to coarse, poorly sorted, silty, some fine sand, dark gray, wet

ORIGINAL
(Red)

FMC 23

elev. 29.31

Boring depth: 21 feet
Screen setting: 17 - 22 feet

Depth (ft)	Thickness (ft)	Description
0.0- 4.5	4.5	Silt, sandy, clayey, some gravel, some vegetation, micaceous, brown and gray
4.5- 7.5	3.0	Sand, medium, well sorted, brown with some black and gray streaks,, wet
7.5-12.5	5.0	Silt, sandy, clayey, micaceous, slight odor, gray and reddish-brown, damp
12.5-14.5	2.0	Sand, medium, well sorted, dark gray, wet
14.5-17.5	3.0	Clay, saturated, soft, plastic, gray
17.5-21.0	3.5	Sand, coarse, poorly sorted, off white to gray, wet

ORIGINAL
(Red)

FMC 22

elev. 26.06
Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 6.5	6.5	Sand, fine to medium, silty, some gravel, micaceous, slight odor, brown to reddish-brown with some gray, wet
6.5- 9.5	3.0	Silt, clayey, some fine sand, micaceous, gray with brown swirls, wet
9.5-12.5	3.0	Silt and fine sand, coarse sand lens, clayey, layered, micaceous, iron stains, reddish-brown with gray swirls, moist to wet
12.5-14.5	2.0	Clay, soft, plastic, gray
14.5-21.0	6.5	Sand, fine , silty, micaceous, gray to dark gray, wet

ORIGINAL
(Red)

FMC 17

10.82

Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 7.5	7.5	Sand and gravel, tan to brown
7.5- 9.0	1.5	Sand, medium, odor, grayish-black
9.0-15.0	6.0	Clay, silty, gray with reddish-brown swirls
15.0-17.5	2.5	Sand, fine, reddish-brown
17.5-21.0	3.5	Clay, medium dense, gray with reddish-brown lenses, moist

ORIGINAL
(Red)

FMC 16

elev. 11.08
Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 1.5	1.5	Gravel and sand, gray
1.5- 7.5	6.0	Clay, medium dense, some sand lenses, red with white swirls
7.5-16.0	8.5	Sand, fine, silty, some gravel, odor, brown to black, wet
16.0-21.0	5.0	Clay, silty, medium dense, plastic, micaceous, gray to black, wet

ORIGINAL
(Red)

FMC 15

Nov. 14.83

Boring depth: 21 feet
Screen setting: 15.5 - 20.5 feet

Depth (ft)	Thickness (ft)	Description
0.0- 2.5	2.5	Silt, gravel, surface debris, brown, wet
2.5- 7.5	5.0	Sand, medium, some gravel, piece of brick, odor, black, wet
7.5-21.0	13.5	Clay, silty, medium dense, plastic, odor, reddish-brown to gray

ORIGINAL
(Red)

FMC 14

elev: 16.13

Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 2.5	2.5	Silt, gravel, surface debris, pieces of wood
2.5- 7.5	5.0	Silt, very clayey, some sand and gravel, brown with gray
7.5- 9.0	1.5	Clay, soft, gravel, gray, moist
9.0-17.5	8.5	Sand, medium to coarse, some odor, dark gray, reddish-brown and brown, wet
17.5-21.0	3.5	Clay, slightly silty, brown organic lenses, some iron stains, medium dense, gray

ORIGINAL
(Red)

FMC 13

elev. 17.45

Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 2.5	2.5	Silt, sand, some gravel, brown
2.5- 7.5	5.0	No recovery
7.5-12.5	5.0	Clay and silt, some gravel, sandy, odor, black, wet
12.5-14.0	1.5	Sand, medium, brown and gray, wet
14.0-23.0	9.0	Clay, sand lens, medium dense, odor, gray with brown swirls, moist

ORIGINAL
(Red)

FMC 12A

elev. 19.56

Boring depth: 40.5 feet
Screen setting: 34 - 39 feet

Depth (ft)	Thickness (ft)	Description
23.0-32.5*	9.5	Clay, silty, few white cinder-like blebs, dark gray
32.5-34.0	1.5	Sand, fine, very silty, few black blebs, light gray, damp
34.0-37.5	3.5	Silt, clayey, white sand lenses, brown
37.5-40.5	3.0	Gravel, clay, sand and silt, brown and white, moist

*Note: See log of FMC 12 for descriptions from 0 to 23 feet.

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(Red)

FMC 12

Elev. 19.56

Boring depth: 21 feet
Screen setting: 14 - 19 feet

Depth (ft)	Thickness (ft)	Description
0.0- 7.5	7.5	Silt and clay, some vegetation, brown to black
7.5-10.0	2.5	Clay, silty, medium dense, micaceous, brown and gray with reddish streaks
10.0-12.5	2.5	Sand, fine to medium, some silt, iron stains, micaceous, wet
12.5-14.5	2.0	Silt and fine sand, light brown, moist
14.5-23.0	8.5	Clay, silty, micaceous, lenses of platy iron running horizontally, medium dense, some layering, plastic, off white to dark gray, some reddish swirls

ORIGINAL
(Red)

FMC 11

20.11

Boring depth: 21 feet
Screen setting: 14.5 19.5 feet

Depth (ft)	Thickness (ft)	Description
0.0- 2.5	2.5	Sand, gravel, silt and clay, odor, brown
2.5- 7.5	5.0	Clay, silty, black
7.5-12.5	5.0	Silt, clayey, odor, black, moist
12.5-17.5	5.0	Sand, fine, silty, clayey, odor, black, wet
17.5-21.0	3.5	Silt and clay, micaceous, sludge-like lens, some vegetation stringers, few iron stains, gray with brown splotches

ORIGINAL
(Red)

FMC 10

elev. 10.7

Boring depth: 21 feet
Screen setting: 15 - 20 feet

Depth (ft)	Thickness (ft)	Description
0.0- 7.5	7.5	Sand, silt and clay, some gravel, piece of wood, odor, gray and black
7.5-12.5	5.0	Sand, medium to coarse, little silt, odor, black, wet
12.5-17.5	5.0	Silt, sandy, clayey, soft, lot of vegetation and wood, odor, dark gray to black, moist
17.5-21.0	3.5	Sand, fine, silty, clayey, micaceous, odor, soft, dark gray, moist to wet

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JUL 1 1982
Hazardous Waste Division

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(Red)

APPENDIX H

ORIGINAL
(Red)

STATE OF MARYLAND — DEPARTMENT OF HEALTH AND MENTAL HYGIENE

MEMORANDUM

Copies

THRU William E. Chicca
Fredric L. Sachs

TO John Koontz

From Lou Martino

Date 3/11/83

Subject FMC Corp. (A023)

Please find with this memo an attachment titled Table 1 which summarizes TOTAL ORGANIC HALOGEN (TOH) monitoring well data from groundwater at FMC. The table reports data from 3 separate hazardous waste handling areas. Two of these areas, the Retention Pond and the Surge Pond are CHS surface impoundments. The remaining area is a disposal site last used in 1975 termed the Inactive Disposal Site. Figures 1, 2 and 3 show these hazardous waste handling areas and the relative position of the wells used to monitor groundwater in each area. Figure 4 is the only information I have concerning the wastes which were disposed in the Inactive Disposal Site.

A comparison of TOH levels in the upgradient and downgradient wells for each site strongly suggests that constituents are being introduced to the groundwater by the Inactive Disposal Site and Surge Pond. The TOH levels from MW10 (upgradient well) and MW16 for the Retention Basin approach the levels recorded in MW13, while corresonpondingly high levels of TOH were not detected in other wells that parallel the shoreline downgradient from the Inactive Disposal Site and Retention Basin (MW15, 14, 17 and 27). This strongly suggests that constituents are migrating from the Inactive Disposal Site to Curtis Bay along the line MW13, 10 and 16. I have discounted the data from MW15 because 4 quarters of groundwater surface elevation (GWSE) determinations have consistently shown this well to have higher GWSE than the upgradient well - MW13. However, this anamolous water level and the TOH values detected in MW15 raises questions concerning the groundwater quality and hydrogeology of that portion of the FMC plant.

My major concern is with the Inactive Disposal site. FMC is forced by regulation to retrofit the Surface Impoundments with leachate detection collection and removal systems or provide a double liner system. Compliance with the Surface Impoundment regulations will remove the groundwater contamination source. I am not confident that the CHS regulatory framework exists to adequately address the potential contamination resulting from the Inactive Disposal site. I requested FMC to conduct a samling and analyses study for the 2 Surface Impoundments to identify the individual chemical species which are expressed as TOH. Some of this data has been submitted and is included with this memo as Tables 2 and 3. More data is forthcoming; however, FMC has indicated that they are experiencing difficulty in accounting for the TOH levels observed. Though I did not include the Inactive Disposal site in this TOH assessment, it is likely that FMC would experience difficulty in accounting for the TOH levels in MW12 through 15 as well. FMC has made a commitment (telephone communication - Palmer/Martino, 2/25/83) to continue to attempt to identify the TOH chemical species.

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I recommend that the WMA Support Services initiate a sampling and analyses plan to identify priority pollutants, Appendix V hazardous consituents (COMAR 10.51) and or other pollutants. This assessment should be performed for all the wells listed in Table 1. However, I would prioritize the sites to be examined as follows: Inactive Disposal Site, Retention Basin, and Surge Pond. Data generated by this assessment should be used by the WMA to establish an administrative position concerning the Inactive Disposal Site, the Surge Pond, and the Retention Basin.

Please be aware that the Groundwater Plan for the FMC Inactive Disposal site indicates the following: "details regarding the location and/or type of future monitoring, if necessary, must be left unresolved at present and await the completion of this study." The study is completed so a notification of further activities pertaining to the Inactive Disposal Site is expected. Please contact me for any additional information.

sml

RECEIVED
MAR 27 1983
ENFORCEMENT DIVISION

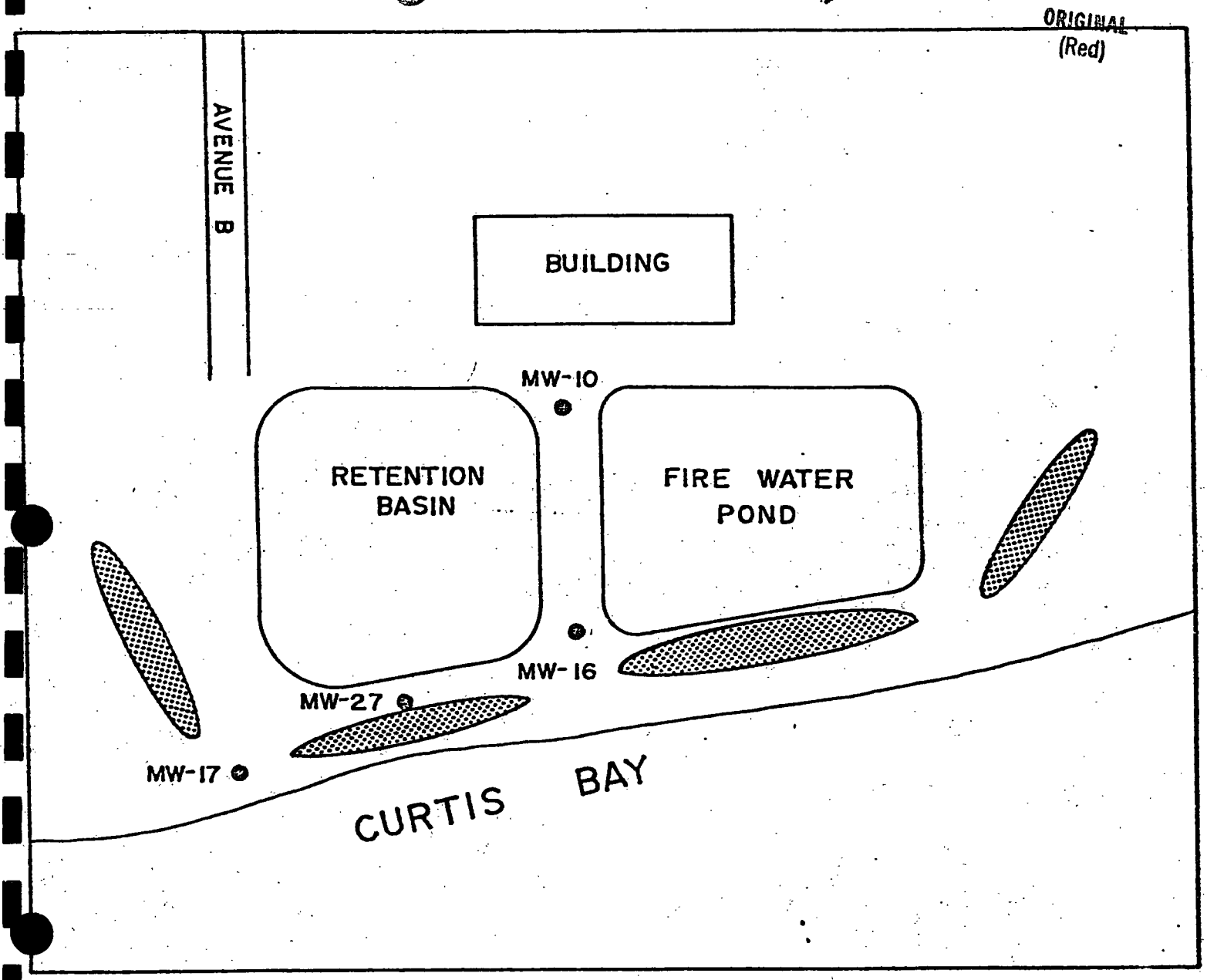
TABLE I

TOH Reported in mg/l

Retention Basin	1st quarter	2nd quarter	3rd quarter	4th quarter
UGMW10	91, 96, 110, 113	89, 95, 96, 98	77.7, 77.5, 81.3, 75.2	84.1, 89.8, 79.8 72.8 - 85.2
MW16	16	100	113	114
MW27	7.9	12	11.2	12.2
MW17	22	25	14.4	29.9
Surge Pond				
UGMW24	.04, .05, .03, .06	.04, .05, .03, .03	.32, .20, .08, .20	.033, .027, .024, .033
MW25	33	32	13.9	48.9
MW23	6.0	4.7	3.8	4.9
MW22	19	12	12.8	27.3
Inactive Disposal Site				
UGMW12	3.9 - 3.3, 3.7 - 3.8	3.5	1.91 - 3.77, 2.10 - 3.86	2.58, 2.79, 2.55 2.94
UGMW12A	4.5	4.7	6.80	5.24
MW13	170	210	152	194
MW13A	2.2	2.0	3.65	1.57
MW14	9.7	6.9	7.38	5.07
questionable well MW15	54	120	9.89	9.23

sml

ORIGINAL (Red)



Potential location for additional monitor wells

MW-10 Monitor well

Figure 1. Monitor-well locations

GERAGHTY MILLER GW PLAN MARCH 82

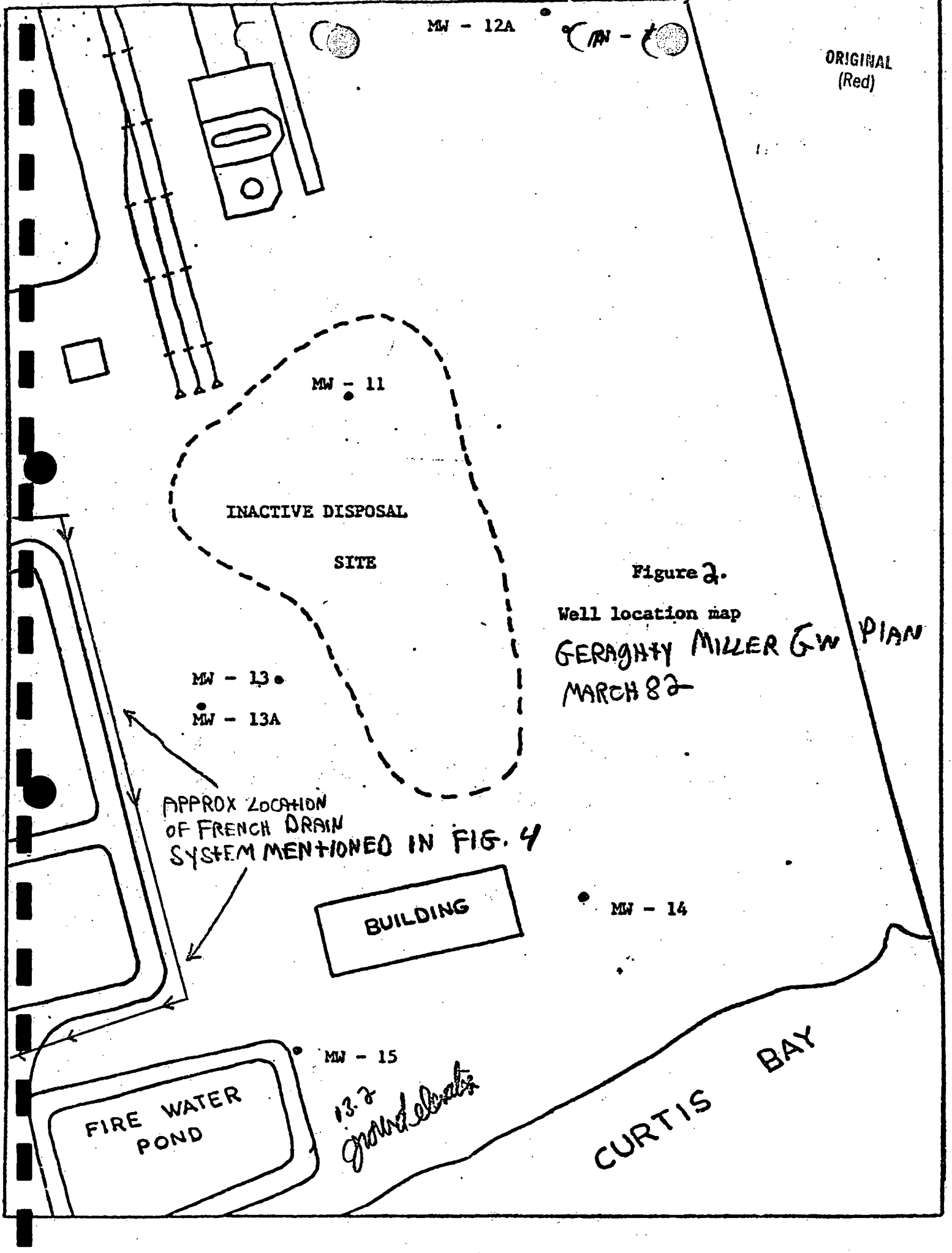
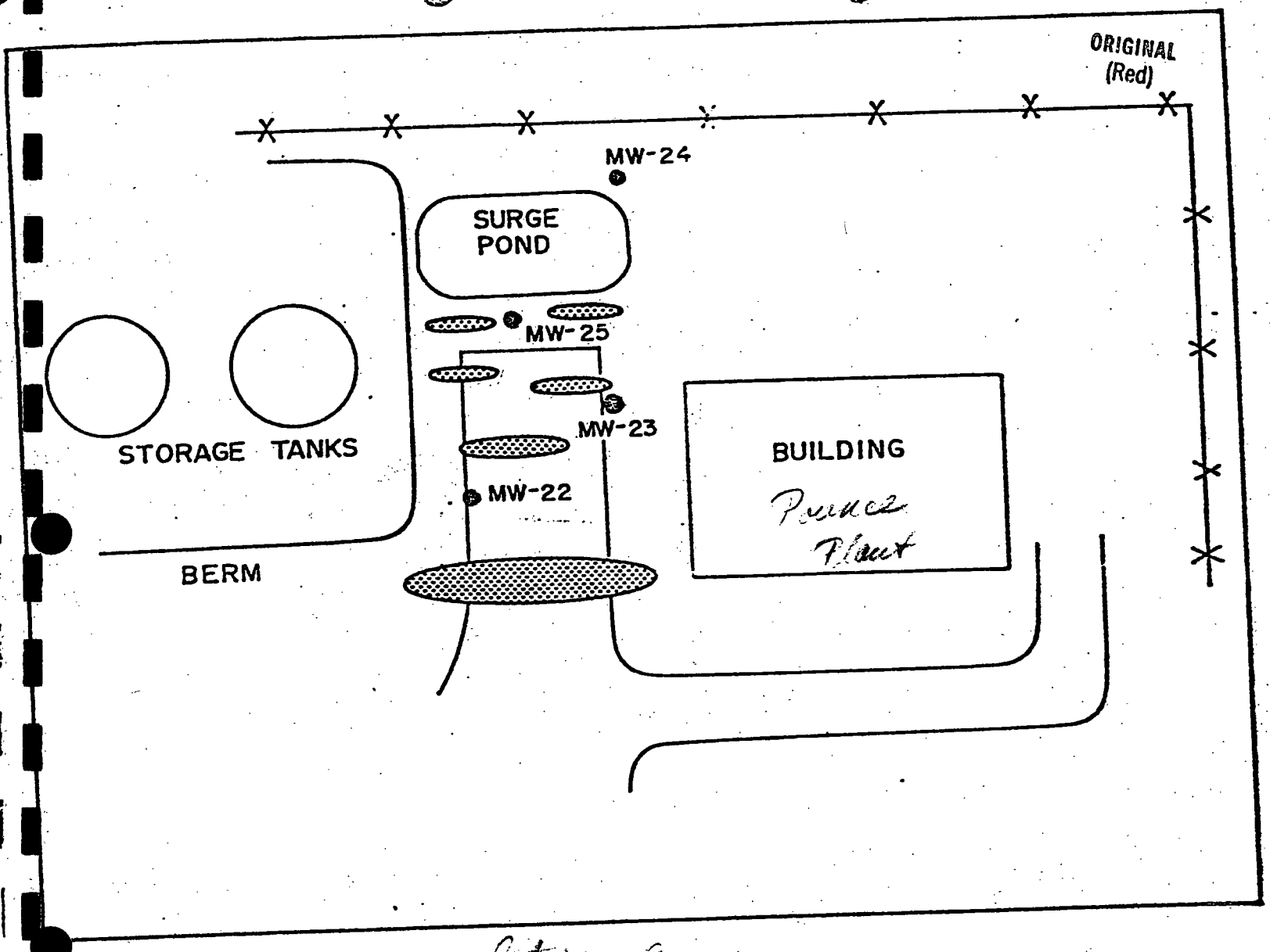


Figure 2.

Well location map

GERAGHTY MILLER GW PLAN
MARCH 82



Across Potomac Avenue

Potential location for additional monitor wells

MW-22 Monitor well

Figure 3. Monitor-well locations

GERAGHTY MILLER GW PLAN MARCH 82

ORIGINAL
(Red)

APPENDIX I

1-13-86
ORIGINAL
(Red)

IN THE MATTER OF:

FMC CORPORATION

* DEPARTMENT OF HEALTH AND MENTAL HYGIENE
*
Waste Management Administration
* 201 West Preston Street
Baltimore, Maryland 21201
*

C-O-85-498

CONSENT ORDER

1. Whereas, the Department of Health and Mental Hygiene, Office of Environmental Programs, on behalf of the State of Maryland, pursuant to the powers, duties and responsibilities vested in the Secretary of Health and Mental Hygiene by Health-Environmental Article Section 1-301, 7-201 through 7-268, inclusive, and 9-301 through 9-344, inclusive, Annotated Code of Maryland, and delegated to the Director, Waste Management Administration (the "Administration"), alleges it has reasonable grounds to believe that FMC has violated Maryland laws regarding controlled hazardous substances and water pollution control with respect to the agricultural chemical facility property owned and operated by FMC at 1701 East Patapsco Avenue (the "Property"); and

2. Whereas, FMC has stated that the Property (which consists of approximately ~~90 acres~~) has been a ~~site of chemical~~ and ~~industrial operations since 1915~~, and that ~~it purchased the Property in or about 1954 from National Distillers Products~~ Company; and

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3. Whereas, FMC must comply with all applicable statutory and regulatory requirements regarding controlled hazardous substances and water pollution; and

4. Whereas, on or about November 16, 1981, FMC Corporation was issued a Controlled Hazardous Substance Facility Permit Number A023 for its facility, located at 1701 East Patapsco Avenue, Baltimore, Maryland 21226; and

5. Whereas, in or about 1981 or 1982, FMC, with the assistance of Geraghty and Miller, Incorporated, consulting ground water geologists and hydrologists, as required by COMAR 10.51.05.06, designed and installed ground water monitoring wells for FMC's CHS surface impoundments. In addition, FMC, on its own initiative, designed and installed ground water monitoring wells on the property and specifically at the inactive landfill; and

6. Whereas, in or about 1983, the data collected as a result of the first and second ground water statistical analyses for the ground water monitoring program indicated contamination of the shallow ground water under the Property; and

7. Whereas, laboratory results received by the Administration pertinent to samples taken by it on or about May 23-25, 1983, indicated ground water contamination under the Property, including, but not limited to the presence in monitoring wells in the parts per million range (ppm) of the following wastes listed under COMAR 10.51.02.17: Trichloroethene, Benzene, Chlorobenzene, Trans-1,2-Dichloroethene, Toluene, Xylene, Chloroform, Ethyl Ether, Methylene Chloride, Phenol; and

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8. Whereas, commencing on or about September 21, 1983, FMC, with the assistance of its consultants, O'Brien and Gere Engineers Incorporated, began a ground water investigation to collect additional data needed to determine the causes of contamination, impact on the environment, and whether or not any remedial action is called for; and

9. Whereas, background information, the findings of the initial study and the rationale for the ground water investigation were presented to the Administration on or about January 13, 1984 by FMC; and

10. Whereas, FMC has met with the Administration during the course of the ground water investigation to review findings, progress, and future courses of action; and

11. Whereas, the Administration has reviewed the scope and design of FMC's ground water investigation and has requested that FMC formalize its program by incorporating it into this Consent Order; and

12. Whereas, FMC and the Administration acknowledge that the purpose of the ground water investigation and this Consent Order is to:

a) determine the horizontal and vertical dimensions and distribution of the ground water contamination relating to the Property;

b) identify the sources which are or may be contributing to the ground water contamination relating to the Property;

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c) determine the extent and the impact, or potential impact, of the ground water contamination on the environment, the waters of the State and the public health and welfare;

d) determine, based on the information derived from the ground water investigation, what remedial action, if any, is appropriate, and to provide for the development of appropriate remedial action.

NOW, THEREFORE, before the taking of any testimony and before the adjudication or determination of any issue or fact, and without any admission as to the existence of any violation of law, breach of duty, or any liability or responsibility, it is Ordered by the Director, of the Administration and consented to by FMC Corporation that FMC shall do the following concerning the Property:

1. FMC has begun to conduct a ground water investigation and shall continue to conduct a ground water investigation that includes, but is not limited to, the following:

   a. FMC has begun and concluding no later than December 31, 1985, FMC shall characterize and assess the ground water quality under the Property and evaluate the mobility and toxicity of the ground water by means of a characterization and assessment program. This characterization and assessment must include, but is not limited to:

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i) analysis of samples from the wells specified in Appendix I for those hazardous constituents listed in COMAR 10.51.02.17F Appendix V; performance of a bioassay test on samples from those wells specified in Appendix 2, and analysis of samples from the wells specified in Appendix 3 for the compounds listed in Property Specific Compounds List A. Appendices 1, 2, and 3 and Property Specific Compounds List A are attached hereto and incorporated herein by reference.

ii) a determination of the horizontal and vertical dimensions as well as distribution of any contamination existing on or under the Property;

iii) a determination of the horizontal and vertical dimensions as well as distribution of any aquitards existing on or under the Property; and

iv) an identification of any and all the sources which are or may be contributing to on-site contamination.

b. Within 15 days of the effective date of this Consent Order, FMC shall submit to the Administration for its approval procedures and

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protocols for sampling, analysis, quality control and quality assurance regarding those hazardous constituents listed in COMAR 10.51.02.17.F Appendix V, the bioassay procedure to be utilized, and those compounds listed in Property Specific Compounds List A.

c. Immediately upon approval by the Administration, FMC shall implement the approved Procedures and Protocols. In the event that the Procedures and Protocols submitted by FMC are not acceptable to the Administration, FMC shall implement the Procedures and Protocols as modified and approved by the Administration.

d. FMC shall continue to conduct a hydrogeologic investigation to determine direction, rate and extent of ground water movement including, but not limited to, an assessment of the subsurface clay/silt aquitards, if any, and the hydraulic connections between aquifers underlying the Property and or intersecting surrounding surface waters and FMC shall complete this investigation by no later than December 31, 1985.

e. FMC shall determine the extent to which any contamination from on or under the Property is migrating off-site and the extent to which any

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such off-site migration poses a risk to the environment, public health or welfare or waters of the State. This determination shall incorporate information regarding the chemistry, environmental fate, toxicology, and transport rates and mechanisms of those compounds listed in "Property Specific Compounds List A", those hazardous constituents found on or under the Property which are listed in COMAR 10.51.02.17F Appendix V, and the results of the bioassay tests. FMC shall complete this determination by no later than December 31, 1985.

2. Subsequent to the execution of this Consent Order, within twenty-eight (28) days following the end of each quarter, FMC shall provide the Administration with a written status report which describes in detail progress of the ground water investigation, including, but not limited to, any changes that may be needed in the scope of the investigation and any sampling or analytic data collected during the 90-day period being reported.

3. On or before January 31, 1986, FMC shall submit to the Administration a written ground water report (the "Ground Water Report") which shall include a detailed summary and analysis regarding all data or information gathered pursuant to the ground water

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investigation, including, but not limited to the characterization and assessment program, the hydrogeologic investigation, and the off-site migration assessment set forth in 1(a), (d), and (e), above. Within five months of the date of receipt of the Administration's approval or disapproval of the Ground Water Report, or such later date as may be determined pursuant to Paragraph 4 below, FMC shall submit to the Administration a new report that identifies and assesses remedial action alternatives (the "Remedial Action Report").

4. After receipt and review of the reports in Paragraph 3 above, the Administration shall notify FMC in writing of its approval or disapproval of the reports, or the need for additional information.

   a. If the Administration requests additional information, FMC and the Administration shall establish appropriate time frames for submission based upon the nature and the scope of the Administration's request.

   b. If the Administration disapproves of all or a portion of the reports, the written notice of disapproval shall include a detailed statement of the reasons for such disapproval.

   c. If, as a result of the Administration's

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request for additional information or disapprovals under Subparagraphs a. and b. above, FMC reasonably requires additional time in which to prepare the Remedial Action Report, in Paragraph 3 above, or the Remedial Action Plan in Paragraph 5 below, a reasonable extension of time, as determined by the Administration shall be granted to FMC.

d. If FMC and the Administration cannot agree (1) on a time frame for the submission of additional information, (2) whether additional information is needed, (3) whether said reports are acceptable, or (4) on additional time to prepare said reports, the parties may exercise any rights they may have pursuant to Paragraphs 10 and 11 below. However, the exercise of any such rights or any rights under Paragraphs 10 and 11 below, shall not excuse FMC from its obligations to comply with the terms of this Consent Order.

5. Within six months of the date of receipt of the Administration's notice of approval or disapproval of the Remedial Action Report, or of such later date as may have been determined pursuant to Paragraph 4 above, FMC shall submit to the Administration a detailed remedial action plan (the "RAP"). The RAP shall include, but not limited to:

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a. a specification of the remedial alternative recommended by FMC;

b. the rationale for such recommendation;

c. how the selected alternative will:

(i) remove, stabilize, or otherwise deactivate source(s) of pollutants;

(ii) eliminate or contain contamination; and

(iii) prevent present and future migration of the contamination;

d. the time frames for implementation of each phase of the RAP; and

e. a detailed description of the engineering and construction methodology and recommendations for reporting to the Administration.

The Administration shall notify FMC in writing of its approval or disapproval of the RAP. If the RAP is disapproved, the Administration shall include a detailed statement of the reasons therefore in its notice of disapproval.

6. If any event occurs which causes or may cause a delay in the achievement of any requirement set forth in this Consent Order, FMC shall notify the Director in writing within ten (10) calendar days of knowledge of the occurrence of such event, of the precise cause(s) of the delay, the measures taken and to be taken by FMC to prevent or minimize the

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delay, and an estimate of the date by which such measures will be completed. FMC shall promptly implement all reasonable measures to prevent or minimize any such delay and to comply with all requirements of this Consent Order as soon as possible. Failure by FMC to comply with the notice requirements of this paragraph may, within the discretion of the Administration, render this paragraph void and of no effect as to the particular incident involved and constitute a waiver of FMC's right to request an extension of its obligations under this Consent Order based on such incident.

If the Director of the Administration determines that the event or anticipated event which has or will cause the delay has been caused by circumstances beyond the reasonable control of FMC, the time for performance hereunder will be extended for an appropriate period of time as determined by the Director of the Administration, but not less than a period of time substantially equal to the length of the necessary delay. All subsequent deadlines affected by such delay shall be extended for a like period of time. In such event, the parties shall stipulate to such extension of time. Any such extension shall not be binding upon the Administration unless signed by the

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Administration. Events beyond the reasonable control of FMC include, but are not limited to, strikes and acts of God, or war or similar events, but do not include increased costs or expenses associated with implementation of the actions required by this Consent Order. If the parties cannot agree on whether FMC is entitled to an extension pursuant to this paragraph or the length of any such extension, the matter shall be resolved in accordance with Paragraphs 10 and 11 of this Consent Order.

7. This Consent Order may be amended by a written agreement between FMC and the Administration. If, for any reason, FMC desires that any provision of this Consent Order be amended, FMC shall make timely written application to the Administration setting forth reasonable grounds for the relief sought. The Administration shall review the application expeditiously and notify FMC in writing of its approval or disapproval.

8. The effective date of this Consent Order shall be the date it is last signed by either party hereto.

9. This Consent Order is not and shall not be construed to be a permit or a modification of an existing permit under applicable rules and regulations.

10. Nothing in this Consent Order shall preclude or

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shall be construed to preclude the Administration from requiring further action to rectify any pollution or ground water contamination problems relating to the Property or from exercising any powers, duties or responsibilities vested in it or delegated to it under applicable law. FMC reserves all rights and defenses that it may have with respect to any such actions.

11. If any dispute arises with respect to the reasonable interpretation of the various provisions of this Consent Order or with respect to Paragraphs 3, 4, 5, and 6 hereof, the Administration may exercise any of its rights under Paragraph 10 above and FMC may exercise any administrative or judicial rights and remedies available to it to resolve the dispute. However, unless the Administration determines that immediate action is necessary to protect public health, safety or the environment, the Administration shall notify FMC fifteen (15) days prior to taking administrative or judicial action against FMC which is based on this Consent Order. Except as otherwise expressly provided in this Consent Order, by signing this Consent Order, FMC waives its right to a hearing concerning the terms of this Consent Order.

12. The provisions of this Consent Order shall be deemed satisfied upon FMC's receipt of written

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notice from the Administration that the terms of this Consent Order have been fulfilled.

"PROPERTY SPECIFIC COMPOUNDS LIST A"

1. Aniline
2. Chloroaniline
3. O-Toluidine
4. Chlorobenzene
5. Methallyl Chloride (MAC)
6. (1,2-Dichloro-2-Methylpropane)
7. Morocide
8. (2,4-Dinitro-6-Sec-Butylphenol)
9. Ethion
10. 0,0,0-Triethylthiophosphate
11. Tedion
12. Diphenylsulfone
13. Parachloro Phenyl Phenyl Sulfone
14. 3-Dihydro-2,2-Dimethyl-7-Benzofuranol
15. 2,3-Dihydro-2,2-Dimethyl-7-Aminobenzofuran
16. 2-(2-Methyl-2-Propenyl)-6-Nitrophenol
17. 2-(2-Methyl-1-Propenyl)-6-Nitrophenol
18. 2-Methallyl-Ortho-Nitrophenyl Ether
19. 2,3-Dihydro-2,2-Dimethyl-7-Nitrobenzofuran
20. Nitrophenol

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APPENDIX 1

Wells to be sampled for Hazardous Constituents listed in COMAR 10.51.02.17.F. Appendix V.

MW-16
MW-10
MW-17
MW-27

APPENDIX 2

Wells from which samples to be taken and a bioassay test on the sample is to be performed.

MW-1	MW-16
MW-7	MW-17
MW-8	MW-18
MW-13	MW-27
MW-14	MW-28
MW-15	MW-29

APPENDIX 3

Wells to be samples for compounds listed in Property Specific Compounds List A.

MW-1	MW-16
MW-1A	MW-16A
MW-7	MW-16C
MW-7A	MW-17
MW-8	MW-18
MW-8A	MW-18A
MW-13	MW-27
MW-13A	MW-28
MW-13C	MW-28A
MW-14	MW-29
MW-14A	MW-29A
MW-14C	
MW-15	

CONSENTED TO:
DEPARTMENT OF HEALTH AND MENTAL HYGIENE

ORIGINAL
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January 14, 1986
DATED

Ronald Nelson, Director
Waste Management Administration

FMC Corporation

1/10/86
DATED

By: Robert J. Jones

Title: Director of Manufacturing

Approved as to form and legal

sufficiency this 13th day of

January
~~December~~ 1986

Stephen H. Sachs
Attorney General for Maryland

Kathie A. Stein

Kathie A. Stein, Esquire
Assistant Attorney General

Approved as to form:

1/10/86
DATED

Attorney, FMC Corporation

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APPENDIX J

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FMC CORPORATION - BALTIMORE, MARYLAND
THIRD QUARTER - 1989 REPORT

Permit No. A023
EPA I.D. No. MDD003071875
Special Condition A

MATERIALS INCINERATED ON-SITE	QUANTITY (TONS)
Plant 4 Waste	969
Basin Oils	44
Methallyl Chloride (MAC) Waste	523
DV Ester Waste Methanol	631
Herbicide Bottoms	69
Waste Oil	0

MATERIALS STORED ON-SITE	QUANTITY (TONS)
Glassware	2.1
Phosphorous Pentasulfide	0.4
Hazardous Waste	242

Gascoyne Laboratories, Inc.

ORIGINAL (Red)

Baltimore, MD 21224-6697

BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 1 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #10

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	8900	50	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	0.05	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	6.8	NA	NA	TS/SC	08/09/89
Iron (Fe) *	202	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.007	EPA 8080	GD/RJ	08/22/89
pH (field)	6.4	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	6.5	NA	EPA 150.1	CM	08/09/89
pH (lab B)	6.5	NA	EPA 150.1	CM	08/09/89
pH (lab C)	6.5	NA	EPA 150.1	CM	08/09/89
pH (lab D)	6.5	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	1.4	0.5	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	1600	10	EPA 258.1	KG	08/21/89
Specific Conductance (field)	20900	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	25500	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	24500	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	25900	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	24700	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	4200	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	20.4	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	18000	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 2 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #10

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	820	10	EPA 415.1	MM	08/11/89
Total Organic Carbon (B) *	800	10	EPA 415.1	MM	08/11/89
Total Organic Carbon (C) *	820	10	EPA 415.1	MM	08/11/89
Total Organic Carbon (D) *	800	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	64	5	EPA 9020	CL/CM	08/22/89
Total Organic Halogen (B)	78	5	EPA 9020	CL/CM	08/22/89
Total Organic Halogen (C)	75	5	EPA 9020	CL/CM	08/22/89
Total Organic Halogen (D)	71	5	EPA 9020	CL/CM	08/22/89
Toxaphene	ND	0.04	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.02	EPA 8150	GD	08/17/89
2,4,5-TP (Silvex)	ND	0.01	EPA 8150	GD	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 3 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	560	10	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/21/89
Ground Water Elevation (field)	8.6	NA	NA	MA/SC	08/08/89
Iron (Fe) *	26.0	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/21/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.003	EPA 8080	GD/RJ	08/22/89
Nickel (Ni)	0.15	0.02	EPA 249.1	KG	08/21/89
pH (field)	5.6	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	5.8	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.07	0.005	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	5.7	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	2070	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	2260	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	490	100	EPA 375.4	SW	08/25/89
Temperature, °C (field)	16.5	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	1490	1	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

Irving M. Kipnis
Laboratory Director
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Please see reverse side for explanations and other information.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 4 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	50	1	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	2.8	0.1	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/21/89
Zinc (Zn)	0.12	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.005	EPA 8150	GD/JS	08/21/89
2,4,5-TP (Silvex)	ND	0.002	EPA 8150	GD/JS	08/21/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 5 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	310	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	4.8	NA	NA	MA/SC	08/08/89
Iron (Fe) *	209	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.002	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.01	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	ND	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.1	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.2	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	1.8	0.05	EPA 420.1	TS/MM	08/18/89
Potassium (K) *	60.1	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	1680	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	1670	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	960	200	EPA 375.4	SW	08/25/89
Temperature, °C (field)	15.5	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	1330	1	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

Irving M. Kipnis
Laboratory Director
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REPORT OF ANALYSIS

Report No. 9-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 6 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	53	1	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	3.4	0.2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.07	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.04	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.005	EPA 8150	GD/RJ	08/18/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/18/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	1500	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	0.05	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.01	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.003	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	7.2	NA	NA	MA/SC	08/08/89
Iron (Fe) *	45.9	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.003	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.02	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	0.03	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.6	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.7	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	2.1	0.05	EPA 420.1	TS/MM	08/18/89
Potassium (K) *	680	1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	7140	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	9250	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	3900	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	16.5	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	7500	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	1200	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	65	10	EPA 9020	CM	08/19/89
Toxaphene	ND	0.06	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.06	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.03	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	1900	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	3.6	NA	NA	MA/SC	08/08/89
Iron (Fe) *	1400	10	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.003	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	0.20	0.02	EPA 249.1	KG	08/21/89
pH (field)	5.8	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	5.7	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.08	0.005	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	45.8	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	4930	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	6830	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	3200	500	EPA 375.4	SW	08/25/89
Temperature, °C (field)	15.8	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	5100	2	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	250	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	3.8	0.2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.09	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0005	EPA 8150	GD/RJ	08/16/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #14

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	420	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	2.1	NA	NA	MA/SC	08/08/89
Iron (Fe) *	78.0	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.008	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	ND	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.5	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.5	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.05	0.005	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	63.3	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	2330	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	1920	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	1300	200	EPA 375.4	SW	08/25/89
Temperature, °C (field)	17.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	1500	2	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #14

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	100	1	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	4.4	0.2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.05	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #15

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	6300	50	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.02	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	10.9	NA	NA	MA/SC	08/08/89
Iron (Fe) *	0.18	0.01	EPA 236.1	KG	08/21/89
Lindane	ND	0.002	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.01	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	0.04	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.4	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.5	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	21	0.3	EPA 420.1	TS	08/18/89
Potassium (K) *	2300	10	EPA 258.1	KG	08/21/89
Specific Conductance (field)	12020	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	17890	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	4500	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	17.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	11000	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #15

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	1200	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	26	2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.07	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.02	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.03	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/16/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #16

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	4200	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	0.67	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	3.6	NA	NA	TS/SC	08/09/89
Iron (Fe) *	0.72	0.01	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.005	EPA 8080	GD/RJ	08/22/89
pH (field)	7.0	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	7.1	NA	EPA 150.1	CM	08/09/89
pH (lab B)	7.5	NA	EPA 150.1	CM	08/09/89
pH (lab C)	7.0	NA	EPA 150.1	CM	08/09/89
pH (lab D)	7.0	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	0.42	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	2700	10	EPA 258.1	KG	08/21/89
Specific Conductance (field)	18400	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	20200	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	20400	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	20500	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	20500	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	4300	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	22.1	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	16000	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #16

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	2300	100	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	2300	100	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	2300	100	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	2400	100	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	179	20	EPA 9020	CM	08/22/89
Total Organic Halogen (B)	190	20	EPA 9020	CM	08/22/89
Total Organic Halogen (C)	183	20	EPA 9020	CM	08/22/89
Total Organic Halogen (D)	176	20	EPA 9020	CM	08/22/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.02	EPA 8150	GD/RJ	08/17/89
2,4,5-TP (Silvex)	ND	0.01	EPA 8150	GD/RJ	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #17

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	710	5	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	2.6	NA	NA	TS/SC	08/09/89
Iron (Fe) *	209	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.007	EPA 8080	GD/RJ	08/22/89
pH (field)	4.6	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	4.3	NA	EPA 150.1	CM	08/09/89
pH (lab B)	4.5	NA	EPA 150.1	CM	08/09/89
pH (lab C)	4.3	NA	EPA 150.1	CM	08/09/89
pH (lab D)	4.3	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	0.37	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	12.9	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	2480	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	3040	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	2930	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	3030	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	3020	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	400	10	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.2	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	2400	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #17

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	64	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	60	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	76	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	87	1	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	35	5	EPA 9020	CM	08/22/89
Total Organic Halogen (B)	42	3	EPA 9020	CM	08/22/89
Total Organic Halogen (C)	41	3	EPA 9020	CM	08/22/89
Total Organic Halogen (D)	40	5	EPA 9020	CM	08/22/89
Toxaphene	ND	0.04	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.001	EPA 8150	GD/RJ	08/17/89
2,4,5-TP (Silvex)	ND	0.001	EPA 8150	GD/RJ	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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Laboratory Director
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Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #22

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	260	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD	08/21/89
Ground Water Elevation (field)	15.6	NA	NA	MA/SC	08/08/89
Iron (Fe) *	19.3	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.003	EPA 8080	GD	08/21/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.03	EPA 8080	GD	08/18/89
pH (field)	5.7	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	5.8	NA	EPA 150.1	MM	08/08/89
pH (lab B)	5.9	NA	EPA 150.1	MM	08/08/89
pH (lab C)	5.8	NA	EPA 150.1	MM	08/08/89
pH (lab D)	5.8	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.18	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	0.8	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	800	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	885	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	866	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	871	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	947	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	650	100	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.6	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	589	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #22

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	49	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	54	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	48	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	49	1	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	36	5	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	35	5	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	42	5	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	38	5	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0006	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	230	5	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.003	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	15.5	NA	NA	MA/SC	08/08/89
Iron (Fe) *	61.5	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.003	EPA 8080	GD	08/21/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.03	EPA 8080	GD/RJ	08/18/89
pH (field)	5.9	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.0	NA	EPA 150.1	MM	08/08/89
pH (lab B)	6.0	NA	EPA 150.1	MM	08/08/89
pH (lab C)	6.0	NA	EPA 150.1	MM	08/08/89
pH (lab D)	6.0	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.17	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	0.8	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	638	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	743	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	738	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	738	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	745	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	1500	200	EPA 375.4	SW	08/25/89
Temperature, °C (field)	19.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	487	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	32	1	EPA 415.1	RAH	08/16/89
Total Organic Carbon (B) *	31	1	EPA 415.1	RAH	08/16/89
Total Organic Carbon (C) *	29	1	EPA 415.1	RAH	08/16/89
Total Organic Carbon (D) *	30	1	EPA 415.1	RAH	08/16/89
Total Organic Halogen (A)	73	2	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	57	10	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	73	5	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	66	5	EPA 9020	CM	08/19/89
Toxaphene	ND	0.1	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0005	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #24

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	120	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	15.4	NA	NA	MA/SC	08/08/89
Iron (Fe) *	52.9	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.002	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.02	EPA 8080	GD/RJ	08/18/89
pH (field)	6.0	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.1	NA	EPA 150.1	MM	08/08/89
pH (lab B)	6.2	NA	EPA 150.1	MM	08/08/89
pH (lab C)	6.1	NA	EPA 150.1	MM	08/08/89
pH (lab D)	6.2	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.02	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	0.6	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	479	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	474	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	481	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	482	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	477	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	800	100	EPA 375.4	SW	08/25/89
Temperature, °C (field)	17.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	347	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #24

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	0.46	0.02	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	0.18	0.04	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	0.24	0.02	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	0.17	0.02	EPA 9020	CM	08/19/89
Toxaphene	ND	0.06	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0005	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	120	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	26.9	NA	NA	MA/SC	08/08/89
Iron (Fe) *	0.39	0.01	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.01	EPA 8080	GD/RJ	08/18/89
pH (field)	6.7	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	7.9	NA	EPA 150.1	MM	08/08/89
pH (lab B)	6.8	NA	EPA 150.1	MM	08/08/89
pH (lab C)	7.2	NA	EPA 150.1	MM	08/08/89
pH (lab D)	7.1	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.20	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	19.4	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	684	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	821	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	810	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	808	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	806	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	360	50	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.4	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	761	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	65	1	EPA 415.1	MM	08/15/89
Total Organic Carbon (B) *	61	1	EPA 415.1	MM	08/15/89
Total Organic Carbon (C) *	60	1	EPA 415.1	MM	08/15/89
Total Organic Carbon (D) *	62	1	EPA 415.1	MM	08/15/89
Total Organic Halogen (A)	160	2.0	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	1.08	20	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	134	10	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	129	10	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.007	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.004	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	1900	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	2.4	NA	NA	TS/SC	08/09/89
Iron (Fe) *	916	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.005	EPA 8080	GD/RJ	08/22/89
pH (field)	5.3	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	5.4	NA	EPA 150.1	CM	08/09/89
pH (lab B)	5.4	NA	EPA 150.1	CM	08/09/89
pH (lab C)	5.3	NA	EPA 150.1	CM	08/09/89
pH (lab D)	5.3	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	0.04	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	190	1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	8200	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	8490	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	8530	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	8490	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	8450	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	4000	500	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.8	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	6900	2	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	430	10	EPA 415.1	MM	08/16/89
Total Organic Carbon (B) *	430	10	EPA 415.1	MM	08/16/89
Total Organic Carbon (C) *	420	10	EPA 415.1	MM	08/16/89
Total Organic Carbon (D) *	420	10	EPA 415.1	MM	08/16/89
Total Organic Halogen (A)	6.7	1	EPA 9020	CM	08/22/89
Total Organic Halogen (B)	7.2	1	EPA 9020	CM	08/22/89
Total Organic Halogen (C)	6.7	1	EPA 9020	CM	08/22/89
Total Organic Halogen (D)	7.8	1	EPA 9020	CM	08/22/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.001	EPA 8150	GD/RJ	08/17/89
2,4,5-TP (Silvex)	ND	0.001	EPA 8150	GD/RJ	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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July 14, 1989

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Baltimore, Maryland 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. English:

As per the requirement of Section I, Special Condition A of the Baltimore Plant's CHS Permit No. A-023 (EPA I.D. No. MDD003071875), attached is the second quarter, 1989 listing the quantities of materials stored and incinerated on site.

Also, per the General Conditions of the CHS Permit and our Consent Order of January 13, 1986, attached are the sampling and analytical results of the groundwater monitoring program for the second quarter.

Also, pursuant to Part III G of the Permit, attached are descriptions of deviations from the incinerator operating conditions specified in Part III C of the Permit for the second quarter.

If you have any questions about the report, please do not hesitate to contact me.

Sincerely yours,

Kurt Krammer

Kurt Krammer
Environmental Engineer

KK:jp

cc: Michael Freiheiter - Federal Environmental Protection Agency
[redacted] - Maryland Department of the Environment
James F. Xavier - Maryland Department of the Environment

ORIGINAL
(Red)

FMC - Baltimore, Maryland
Second Quarter, 1989 Report

CHS FACILITY PERMIT A-023

In accordance with Part III. G. of the subject permit, listed below are descriptions of deviations from permit conditions which occurred from April 1 to June 30, 1989.

1) 4/12 While burning MAC heels, caustic flow to the scrubber was cut off while the caustic line was being repaired. This caused the scrubber pH to drop below the permit condition. The incinerator was shut down during the remainder of the caustic line repairs.

Start 07:23
Duration 11m 33s
Min. pH 2.5

2) 5/25 While manually adjusting caustic flow to the pH adjustment tank, the flow of caustic was reduced excessively and the scrubber pH dropped below the permit condition.

Start 15:13
Duration 11m 52s
Min. pH 2.7

3) 6/8 While burning Plant 4 tar, the WESP make-up water flow dropped below the permit condition. The incinerator was then shut down. The problem was due to a malfunctioned flow controller, which was repaired prior to resuming operations.

Start 02:23
Duration 1m 32s
Min. flow 12 gpm

4) 6/17 While burning a mixture of MAC heels and Basin Oils, the flowrate become erratic and exceeded the flow condition. The erratic flow was due to the variable viscosity of the non-homogeneous mixture. The feed was switched while the waste was better mixed.

Start 14:33
Duration 1m 59s
Max. flow 3700 lb/hr.

ORIGINAL
(Red)

5) 6/19 The same problem and remedy as occurred on 6/17. The flow controller was also cleaned.

Start	14:33
Duration	3m 3s
Max. flow	4200 lb/hr.

6) 6/24 While burning a mixture of MAC heels and Basin Oil, the flow spiked upward for unknown reasons. The flow controller setpoint was lowered to remedy the problem.

Start	09:54
Duration	1m 4s
Max. Flow	3100 lb/hr.

ORIGINAL
(Red)

FMC - Baltimore, Maryland
Second Quarter, 1989 Report

CHS FACILITY PERMIT A-023

Special Condition A

Materials Incinerated On-Site

	Quantity (Tons)
7-Hydroxy Tar (Plant 3)	0
Claisen Tar	0
Plant 4 Waste	1,219
Methallyl Chloride Waste	471
DV Ester Methanol & Chloroacetylenics	795
Basin Oil	64

Materials Stored On-Site

P_2S_5	.360 Tons
Glassware	1.9 Tons
Hazardous Waste	176 Tons

Gascoyne Laboratories Inc.

Baltimore, MD 21224-6697

BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

ORIGINAL (Red)

REPORT OF ANALYSIS

Report No. 89-05-087 Report Date: June 20, 1989

Report To: FMC Corporation Page: 1 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 5/3/89 at the Patapsco Avenue location: Well #10

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	0.006	0.005	206.2	BH	05/17/89
Barium (Ba)	ND	0.5	208.1	KG	05/23/89
Cadmium (Cd)	ND	0.01	213.1	KG	05/22/89
Calcium (Ca)	1000	10	215.1	KG	05/23/89
Chloride (Cl)	7600	50	325.3	SW	05/08/89
Chromium (Cr), Total	ND	0.05	218.1	KG	05/22/89
Coliform Bacteria	ND	2	908A	MM	05/05/89
Endrin	ND	0.0005	8080	GD	05/24/89
Fluoride (F)	0.07	0.05	340.2	RAH	05/08/89
Gross Alpha, pCi/liter	205	2	SC	SC	SC
Gross Beta, pCi/liter	794	2	SC	SC	SC
Ground Water Elevation	6.4	NA	NA	MA/SJ	05/02/89
Iron (Fe)	230	1	236.1	KG	05/22/89
Lead (Pb)	0.12	0.05	239.1	KG	05/22/89
Lindane	ND	0.0005	8080	GD	05/24/89
Magnesium (Mg)	900	10	242.1	KG	05/23/89
Manganese (Mn)	3.09	0.01	243.1	KG	05/22/89
Mercury (Hg)	ND	0.005	245.1	FK	05/19/89
Methoxychlor	ND	0.005	8080	GD	05/24/89
Nitrate (N)	ND	10	353.2	MM	05/11/89
pH (field)	6.2	NA	150.1	SJ/EH	05/03/89
pH (lab A)	6.6	NA	150.1	MM	05/03/89
pH (lab B)	6.6	NA	150.1	MM	05/03/89
pH (lab C)	6.6	NA	150.1	MM	05/03/89
pH (Lab D)	6.5	NA	150.1	MM	05/03/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted.
(5) Coliform results expressed as organisms per 100 ml.
(6) Analysis performed on filtered (0.45 micron) sample where appropriate.

Laboratory Manager
William L. Lock

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

ORIGINAL (Red)

Baltimore, MD 21224-6697

BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

REPORT OF ANALYSIS

Report No. 89-05-087 Report Date: June 20, 1989

Report To: FMC Corporation Page: 2 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 5/3/89 at the Patapsco Avenue location: Well #10

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols	1.7	0.05	420.1	MM/SW	05/10/89
Potassium (K)	1000	1	258.1	KG	05/23/89
Radium	47	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	FK	05/16/89
Silver (Ag)	ND	0.01	272.1	KG	05/22/89
Sodium (Na)	520	10	273.1	KG	05/23/89
Specific Conduct. (field)	19700	NA	120.1	SJ/EH	05/03/89
Specific Conduct. (lab A)	19600	NA	120.1	MM	05/03/89
Specific Conduct. (lab B)	19900	NA	120.1	MM	05/03/89
Specific Conduct. (lab C)	19400	NA	120.1	MM	05/03/89
Specific Conduct. (lab D)	19500	NA	120.1	MM	05/03/89
Sulfate (SO_4)	ND	1	375.1	MM	05/08/89
Temperature, °C	17.0	NA	170.1	MA/JJ	05/03/89
Total Dissolved Solids	15000	10	160.1	SW/RAH	05/23/89
Total Organic Carbon (A)	710	0.1	415.1	SC	05/31/89
Total Organic Carbon (B)	720	0.1	415.1	SC	05/31/89
Total Organic Carbon (C)	710	0.1	415.1	SC	05/31/89
Total Organic Carbon (D)	710	0.1	415.1	SC	05/31/89
Total Organic Halogen (A)	60	1	9020	BR	05/11/89
Total Organic Halogen (B)	60	1	9020	BR	05/11/89
Total Organic Halogen (C)	57	1	9020	BR	05/11/89
Total Organic Halogen (D)	61	1	9020	BR	05/11/89
Toxaphene	ND	0.02	8080	GD	05/24/89
2,4-D	ND	0.002	8150	GD	05/19/89
2,4,5-TP (Silvex)	ND	0.001	8150	GD	05/19/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted.
(5) Coliform results expressed as organisms per 100 ml.
(6) Analysis performed on filtered (0.45 micron) sample where appropriate.

Laboratory Manager
William L. Lock

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

ORIGINAL (Red)

REPORT OF ANALYSIS

Report No. 89-05-087 Report Date: June 20, 1989

Report To: FMC Corporation Page: 3 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 5/3/89 at the Patapsco Avenue location: Well #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	05/17/89
Barium (Ba)	ND	0.5	208.1	KG	05/23/89
Cadmium (Cd)	ND	0.01	213.1	KG	05/22/89
Calcium (Ca)	120	1	215.1	KG	05/23/89
Chloride (Cl)	550	10	325.3	SW	05/08/89
Chromium (Cr), Hexavalent	ND	10	312B	CL	05/24/89
Chromium (Cr), Total	ND	0.05	218.1	KG	05/22/89
Coliform Bacteria	ND	2	908A	MM	05/06/89
Copper (Cu)	0.01	0.01	220.1	KG	05/22/89
Fluoride (F)	0.07	0.05	340.2	RAH	05/08/89
Gross Alpha, pCi/liter	ND	2	SC	SC	SC
Gross Beta, pCi/liter	ND	3	SC	SC	SC
Ground Water Elevation	8.3	NA	NA	MA/SJ	05/02/89
Iron (Fe)	21.2	0.1	236.1	KG	05/22/89
Lead (Pb)	0.06	0.05	239.1	KG	05/22/89
Magnesium (Mg)	130	1	242.1	KG	05/23/89
Manganese (Mn)	9.41	0.01	243.1	KG	05/22/89
Mercury (Hg)	ND	0.005	245.1	FK	05/19/89
Nickel (Ni)	0.17	0.02	249.1	KG	05/22/89
Nitrate (N)	ND	0.1	353.2	MM	05/11/89
Palladium (Pd)	ND	0.03	253.1	KG	05/22/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted.
(5) Coliform results expressed as organisms per 100 ml.
(6) Analysis performed on filtered (0.45 micron) sample where appropriate.

Laboratory Manager
William L. Lock

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

ORIGINAL (Red)

BALTIMORE, M.D.
(301) 285-8510
FAX #
(301) 285-0815

REPORT OF ANALYSIS

Report No. 89-05-087 Report Date: June 20, 1989

Report To: FMC Corporation Page: 4 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 5/3/89 at the Patapsco Avenue location: Well #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
pH (field)	5.8	NA	150.1	SJ/EH	05/03/89
pH (lab A)	6.0	NA	150.1	MM	05/03/89
pH (lab B)	6.0	NA	150.1	MM	05/03/89
pH (lab C)	6.0	NA	150.1	MM	05/03/89
pH (lab D)	5.9	NA	150.1	MM	05/03/89
Phenols	0.18	0.005	420.1	MM/SW	05/10/89
Potassium (K)	5.5	0.1	258.1	KG	05/23/89
Radium, pCi/liter	2	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	FK	05/16/89
Silver (Ag)	ND	0.01	272.1	KG	05/22/89
Sodium (Na)	120	1	273.1	KG	05/23/89
Specific Conduct. (field)	2060	NA	120.1	SJ/EH	05/03/89
Specific Conduct. (lab A)	2370	NA	120.1	MM	05/03/89
Specific Conduct. (lab B)	2380	NA	120.1	MM	05/03/89
Specific Conduct. (lab C)	2320	NA	120.1	MM	05/03/89
Specific Conduct. (lab D)	2380	NA	120.1	MM	05/03/89
Sulfate (SO_4)	270	10	375.4	MM	05/08/89
Temperature, °C	13.7	NA	170.1	MA/SJ	05/03/89
Total Dissolved Solids	1500	1	160.1	SW/RAH	05/23/89
Total Organic Carbon (A)	47	0.1	415.1	SC	05/31/89
Total Organic Carbon (B)	47	0.1	415.1	SC	05/31/89
Total Organic Carbon (C)	46	0.1	415.1	SC	05/31/89
Total Organic Carbon (D)	46	0.1	415.1	SC	05/31/89
Total Organic Halogen (A)	3.5	0.5	9020	BR	05/11/89
Total Organic Halogen (B)	4.5	0.5	9020	BR	05/11/89
Total Organic Halogen (C)	3.7	0.5	9020	BR	05/11/89
Total Organic Halogen (D)	4.0	0.5	9020	BR	05/11/89
Zinc (Zn)	0.13	0.01	289.1	KG	05/22/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted.
(5) Coliform results expressed as organisms per 100 ml.
(6) Analysis performed on filtered (0.45 micron) sample where appropriate.

Laboratory Manager
William L. Lock

Please see reverse side for explanations and other information.

STATE OF MARYLAND
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Laboratories Administration
201 W. Preston St.
P.O. Box 2355, Baltimore, Maryland 21203
J. Mehsen Joseph, Ph.D., Director

ORIGINAL (Red)

LAB NO. [illegible]

HAZARDOUS WASTE LABORATORY
Metals Analysis Report Form

PRIORITY ASAP

Collector [illegible] 1330 [illegible]/23/89 (Name/Time/Date)

Sample Source FMC TANK T-3571

Sample ID No. FMC [illegible]

Preservative Used NONE

Sample Alert PH < 13 ORGANICS

Specify Program:
RCRA: ✓ NPDES: ____ OTHER: ____

Chain of Custody Sample Possession:

From: [illegible] 1440 3/23/89 (Name/Time/Date) To: [illegible] 14:40 3-23-89 (Name/Time/Date)

From: ____ (Name/Time/Date) To: ____ (Name/Time/Date)

Circle Type of Analysis:

1. EP Toxicity 2. Priority Pollutant 3. Total Metals 4. Dissolved Metals

Indicate Type of Sample:

Liquid ____ Solid ✓ Percent Solids 61.6 %

Metals in ppm (Totals as is)

	Element	EP	Total		Element	EP	Total
	Antimony				Aluminum		
X	Arsenic	<0.001	2.65		Calcium		
	Barium				Cobalt		
	Beryllium				Magnesium		
X	Cadmium	0.09	2.7		Manganese		
X	Chromium	<0.5	92		Potassium		
X	Copper	320	40,260		Sodium		
	Iron				Vanadium		
X	Lead	<0.5	43				
X	Mercury	<0.001	0.25				
	Nickel						
	Selenium						
	Silver						
	Thallium						
	Zinc						
	Chromium Cr+6						

SELECT OTHER ELEMENTS FROM REVERSE SIDE OF THIS FORM

Section Chief: [illegible] Date: 3-25-89 Verified By: [illegible] Authorized By: ____

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

January 13, 1989

Ms. Monica Satrape
Maryland Department of the Environment
Waste Management Administration
2500 Broening Highway
Baltimore, Maryland 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Ms. Satrape:

As per the requirement of Section I, Special Condition A of the Baltimore Plant's CHS Permit No. A-023 (EPA I.D. No. MDD003071875), attached is the fourth quarter, 1988 report listing the quantities of materials stored and incinerated on site.

Also, per the General Conditions of the CHS Permit and our Consent Order of January 13, 1986, attached are the sampling and analytical results of the groundwater monitoring program for the forth quarter.

Also, pursuant to Part III G of the Permit, attached are descriptions of deviations from the incinerator operating conditions specified in Part III C of the Permit for the fourth quarter.

If you have any questions about the report, please do not hesitate to contact me.

Sincerely yours,

John J. Giblin

John J. Giblin
Environmental Engineer

JJG:ct

cc: Sherry L. Gallagher - Federal Environmental Protection Agency
Joseph S. Stang - Maryland Department of the Environment
James F. Xavier - Maryland Department of the Environment

ORIGINAL
(Red)

FMC CORPORATION - BALTIMORE, MD
FOURTH QUARTER, 1988 REPORT

Permit No. A-023
EP ID No. MDD003071875
Special Condition A

Materials Incinerated On-Site	Quantity (Tons)
7-Hydroxy Tar (Plant 3)	372
Claisen Tar	134
Plant 4 Waste	1,142
Methallyl Chloride Waste	914
DV Ester Waste Methanol & Chloroacetylenics	224
Basin Oil	4

Materials Stored on Site	Quantity (Tons)
Waste Phosporus Pentasulfide	3.2
Contaminated Glassware	7.5
Hazardous Waste	260

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

ORIGINAL (Red)
BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 1 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	120	1	215.1	KG	10/31/88
Chloride (Cl)	570	10	325.3	SW	11/09/88
Chromium (Cr), Hexavalent	ND	0.01	SM 312B	MM	11/07/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	23	2	SM 908A	CL	10/22/88
Copper (Cu)	0.02	0.01	220.1	KG	10/31/88
Fluoride (F)	0.11	0.05	340.2	SW	10/31/88
Gross Alpha, (pCi/liter)	ND	2	SC	SC	SC
Gross Beta, (pCi/liter)	ND	3	SC	SC	SC
Ground Water Elevation	7.16	NA	NA	MA	10/17/88
Iron (Fe)	22.9	0.1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Magnesium (Mg)	120	1	242.1	KG	10/31/88
Manganese (Mn)	8.81	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Nickel (Ni)	0.16	0.02	249.1	KG	10/31/88
Nitrate (N)	ND	0.1	353.2	MM	11/11/88
Palladium (Pd)	ND	0.03	253.1	KG	10/31/88

Notes:
(1) Results are expressed in mg/liter (ppm).
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

ORIGINAL
BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 2 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
pH (field)	5.6	NA	150.1	MA	10/19/88
pH (lab A)	5.8	NA	150.1	RAH	10/21/88
pH (lab B)	5.7	NA	150.1	RAH	10/21/88
pH (lab C)	5.8	NA	150.1	RAH	10/21/88
pH (lab D)	5.7	NA	150.1	RAH	10/21/88
Phenols (4-AAP)	0.044	0.005	140.1	TS/MM	11/04/88
Potassium (K)	6.7	0.1	258.1	KG	10/31/88
Radium (pCi/Liter)	ND	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	110	1	273.1	KG	10/31/88
Specific Conduct. (field)	2120	NA	120.1	MA	10/19/88
Specific Conduct. (lab A)	2350	NA	120.1	RAH	10/21/88
Specific Conduct. (lab B)	2380	NA	120.1	RAH	10/21/88
Specific Conduct. (lab C)	2370	NA	120.1	RAH	10/21/88
Specific Conduct. (lab D)	2373	NA	120.1	RAH	10/21/88
Sulfate (SO_4)	130	5	375.4	TG	11/09/88
Temperature, Degrees C	17.8	NA	170.1	MA	10/19/88
Total Dissolved Solids	1380	2	160.1	SW	10/31/88
Total Organic Carbon (A)	61	3	415.1	TS	11/02/88
Total Organic Carbon (B)	66	3	415.1	TS	11/02/88
Total Organic Carbon (C)	65	3	415.1	TS	11/02/88
Total Organic Carbon (D)	65	3	415.1	TS	11/02/88
Total Organic Halogen (A)	18	0.2	9020	AD	12/12/88
Total Organic Halogen (B)	20	0.2	9020	AD	12/12/88
Total Organic Halogen (C)	21	0.2	9020	AD	12/12/88
Total Organic Halogen (D)	21	0.2	9020	AD	12/12/88
Zinc (Zn)	0.14	0.01	289.1	KG	10/31/88

Notes:
(1) Results are expressed in mg/liter (ppm).
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.
Baltimore, MD 21224-6697
BALTIMORE, M.D.
(301) 285-8510
FAX #
(301) 285-0815

ORIGINAL (Red)

REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #12A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	0.015	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	45.9	0.1	215.1	KG	10/31/88
Chloride (Cl)	310	2	325.3	SW	11/09/88
Chromium (Cr), Hexavalent	ND	0.01	SM 312B	MM	11/07/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	27	2	SM 908A	CL	10/22/88
Copper (Cu)	0.02	0.01	220.1	KG	10/31/88
Fluoride (F)	0.06	0.05	340.2	SW	10/31/88
Gross Alpha, (pCi/liter)	11	2	SC	SC	SC
Gross Beta, (pCi/liter)	42	3	SC	SC	SC
Ground Water Elevation	3.71	NA	NA	MA	10/17/88
Iron (Fe)	214	1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Magnesium (Mg)	36.3	0.1	242.1	KG	10/31/88
Manganese (Mn)	2.37	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Nickel (Ni)	ND	0.02	249.1	KG	10/31/88
Nitrate (N)	ND	0.1	353.2	MM	11/11/88
Palladium (Pd)	ND	0.03	253.1	KG	10/31/88

Notes:
(1) Results are expressed in mg/liter (ppm).
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

REPORT OF ANALYSIS

ORIGINAL (Red)

Report No. 88-10-291 Report Date: January 9, 198

Report To: FMC Corporation Page: 22 of 2

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratori Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #24

	Results	Detection Limits	Method	Analyst
Phenols (4-AAP)	0.027	0.005	140.1	TS/MM
Potassium (K)	1.1	0.1	258.1	KG
Radium, pCi/liter	ND	1	SC	SC
Selenium (Se)	ND	0.005	270.2	BH
Silver (Ag)	ND	0.01	272.1	KG
Sodium (Na)	34.6	0.1	273.1	KG
Specific Conduct. (field)	195	NA	120.1	MA
Specific Conduct. (lab A)	461	NA	120.1	RAH
Specific Conduct. (lab B)	477	NA	120.1	RAH
Specific Conduct. (lab C)	450	NA	120.1	RAH
Specific Conduct. (lab D)	471	NA	120.1	RAH
Sulfate (SO_4)	14	1	375.4	TG
Temperature, Degrees C	17.0	NA	170.1	MA
Total Dissolved Solids	232	2	160.1	SW
Total Organic Carbon (A)	20	1	415.1	TS
Total Organic Carbon (B)	22	1	415.1	TS
Total Organic Carbon (C)	21	1	415.1	TS
Total Organic Carbon (D)	20	1	415.1	TS
Total Organic Halogen (A)	0.16	0.02	9020	GD
Total Organic Halogen (B)	0.23	0.02	9020	GD
Total Organic Halogen (C)	0.35	0.02	9020	GD
Total Organic Halogen (D)	0.41	0.02	9020	GD
Toxaphene	ND	0.02	608	GD
2,4-D	ND	0.001	8150	GD
2,4,5-TP (Silvex)	ND	0.01	8150	GD

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis

Laboratory Direc

Irving M. Kipnis,

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 23 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	25.8	0.1	215.1	KG	10/31/88
Chloride (Cl)	110	2	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	ND	2	SM 908A	CL	10/22/88
Endrin	ND	0.05	608	GD	12/12/88
Fluoride (F)	0.12	0.05	340.2	SW	10/31/88
Ground Water Elevation	-	NA	NA	MA	10/20/88
Iron (Fe)	1.85	0.01	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.05	608	GD	12/12/88
Magnesium (Mg)	14.7	0.1	242.1	KG	10/31/88
Manganese (Mn)	0.32	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.5	608	GD	12/12/88
Nitrate (N)	ND	1	353.2	MM	11/11/88
pH (field)	6.2	NA	150.1	MA	10/20/88
pH (lab A)	6.6	NA	150.1	MM	10/27/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 24 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.249	0.005	140.1	TS/MM	11/04/88
Potassium (K)	9.0	0.1	258.1	KG	10/31/88
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	62	1	273.1	KG	10/31/88
Specific Conduct. (field)	434	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	605	NA	120.1	MM	10/27/88
Sulfate (SO_4)	28	1	375.4	TG	11/09/88
Temperature, Degrees C	18.4	NA	170.1	MA	10/20/88
Total Dissolved Solids	406	1	160.1	SW	10/28/88
Total Organic Carbon (A)	200	10	415.1	TS	11/09/88
Total Organic Carbon (B)	220	10	415.1	TS	11/09/88
Total Organic Carbon (C)	220	10	415.1	TS	11/09/88
Total Organic Carbon (D)	210	10	415.1	TS	11/09/88
Total Organic Halogen (A)	110	0.2	9020	GD	12/29/88
Total Organic Halogen (B)	120	0.2	9020	GD	12/29/88
Total Organic Halogen (C)	120	0.2	9020	GD	12/29/88
Total Organic Halogen (D)	120	0.2	9020	GD	12/29/88
Toxaphene	ND	0.05	608	GD	11/02/88
2,4-D	ND	0.01	8150	TM	11/22/88
2,4,5-TP (Silvex)	ND	0.003	8150	TM	11/22/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #27

	Results	Detection Limits	Method	Analyst	Date Tes Complete
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	110	1	215.1	KG	10/31/88
Chloride (Cl)	3400	25	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	2	2	SM 908A	CL	10/22/88
Endrin	ND	0.001	608	GD	11/08/88
Fluoride (F)	0.07	0.05	340.2	SW	10/31/88
Gross Alpha, (pCi/liter)	ND	2	SC	SC	SC
Gross Beta, (pCi/liter)	125	3	SC	SC	SC
Ground Water Elevation	1.70	NA	NA	MA	10/20/88
Iron (Fe)	829	1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.001	608	GD	11/08/88
Magnesium (Mg)	270	1	242.1	KG	10/31/88
Manganese (Mn)	3.40	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.01	608	GD	11/08/88
Nitrate (N)	ND	0.1	353.2	MM	11/11/88
pH (field)	5.3	NA	150.1	MA	10/20/88
pH (lab A)	5.3	NA	150.1	RAH	10/21/88
pH (lab B)	5.4	NA	150.1	RAH	10/21/88
pH (lab C)	5.4	NA	150.1	RAH	10/21/88
pH (lab D)	5.4	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.047	0.005	140.1	TS/MM	11/04/88
Potassium (K)	170	1	258.1	KG	10/31/88
Radium, pCi/liter	3	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	530	10	273.1	KG	10/31/88
Specific Conduct. (field)	5750	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	8570	NA	120.1	RAH	10/20/88
Specific Conduct. (lab B)	8100	NA	120.1	RAH	10/20/88
Specific Conduct. (lab C)	8050	NA	120.1	RAH	10/20/88
Specific Conduct. (lab D)	8570	NA	120.1	RAH	10/20/88
Sulfate (SO_4)	ND	10	375.4	TG	11/09/88
Temperature, Degrees C	18.8	NA	170.1	MA	10/20/88
Total Dissolved Solids	6040	2	160.1	SW	10/28/88
Total Organic Carbon (A)	410	50	415.1	TS	11/09/88
Total Organic Carbon (B)	380	50	415.1	TS	11/09/88
Total Organic Carbon (C)	400	50	415.1	TS	11/09/88
Total Organic Carbon (D)	410	50	415.1	TS	11/09/88
Total Organic Halogen (A)	8.3	0.5	9020	GD	12/30/88
Total Organic Halogen (B)	8.6	0.5	9020	GD	12/30/88
Total Organic Halogen (C)	9.0	0.5	9020	GD	12/30/88
Total Organic Halogen (D)	10	0.5	9020	GD	12/30/88
Toxaphene	ND	0.02	608	GD	11/08/88
2,4-D	ND	0.01	8150	GD	11/07/88
2,4,5-TP (Silvex)	ND	0.001	8150	GD	11/07/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

ORIGINAL
(Red)

FMC - Baltimore, MD
Fourth Quarter, 1988 Report
CHS Facility Permit A-023

As required in Part III G. of the subject permit, listed below are descriptions of deviations from permit conditions from October 1 to December 31, 1988.

1) 10/6: While burning MAC heels, the scrubber pH rose above the permit limit. The operator couldn't hear the alarm because he was in a noisy area. Acid was added manually to correct.
Start: 11:49
Duration: 12m 52s
Max pH: 9.7

2) 10/7: The secondary air flow rose above the permit limit, reason unknown. Remedied by manually reducing the air flow rate.
Start: 08:05
Duration: 2m 21s
Max air flow rate: 5200 acfm

3) 10/10: While switching from MAC heels to 7-OH tar feed, lost flow due to a plugged 7-OH line, causing combustion temperature to drop below the permit limit. Corrected by feeding fuel oil.
Start: 14:20
Duration: 9m 09s
Min. temperature: 480°C

4) 10/14: While switching feeds, the primary air flow rate rose above the permit limit. Remedied by manually reducing the air flow.
Start: 00:33
Duration: 2m 36s
Max. air flow: 5150 acfm

5) 10/19: The scrubber pH rose above permit limits due to mechanical problems with its controller. Feed was shut down and an instrument mechanic repaired the controller.
Start: 14:56
Duration: 13m 46s
Max pH: 10.9

6) 10/20: After completing a burn of herbicide bottoms, the pH controller overshot the addition of caustic causing a pH rise above the permit limit. Remedied by readjusting the pH controller setpoint.
Start: 10:16
Duration: 11m 0s
Max. pH 11.5

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7) 10/23: While switching feeds, the secondary air flow rose for unknown reasons. The problem was corrected automatically.
Start 03:16
Duration: 1m 06s
Max air flow: 5000 acfm

8) 10/25: The primary air flow increased for unknown reasons. The operator was working in the process and could not respond immediately. The air flow rate was decreased manually.
Start: 10:44
Duration: 2m 52s
Max air flow rate: 5400 acfm

9) 11/1: When switching feeds, the WESP voltage dropped below the permit limit. Waste methanol feed was successfully interlocked. Waste methanol feed was resumed without problems.
Start: 04:06
Duration: 4m 08s
Min voltage: 10.9 KV

10) 11/2: Due to a leaking valve on the Waste Methanol storage tank, about 4,000 pounds of waste methanol were unknowingly incinerated with MAC heels. The storage tank contents were transferred to a trailer and the valve was repaired.

11) 11/3: While burning Waste Methanol and Super Tar, and while the operator was out of the area on other duties, the Super Tar flow kicked out, causing the temperature to drop. The Waste Methanol flow was successfully interlocked, but xylene emissions continued to be fed.
Start: 00:43
Duration: 19m 31s
Min. temp. 260°C

12) 11/25: The secondary air flow rose for unknown reasons. Remedied by manually reducing the flow rate.
Start: 00:16
Duration: 4m 49s
Max air flow rate: 5500 acfm

13) 12/4: The WESP voltage dropped below the permit limit for unknown reasons. It returned to normal before any manual action was taken.
Start: 05:54
Duration: 1m 54s
Min. voltage: 18.5 KV

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14) 12/5: The WESP voltage dropped below the permit limit four times. The cause was believed to be an internal ground. Arrangements with the vendor were made to repair on 12/7.
Start: 07:33
Duration: 4m 01s
Min. voltage: 19 KV

15) 12/6 The WESP voltage dropped below the permit limit twice. See the description on 12/5. The voltage returned to normal without any manual action taken.
Start: 01:14
Duration: 1m 34s
Min. voltage: 18.6V

16) 12/12 The automatic valve in the Waste Methanol feed line failed internally in the open position, exceeding the permit limits on Waste Methanol feed rate, on the total BTU rate, and burning Waste Methanol without the auto shutoff system in operation. The flow was stopped by closing a manual valve. The automatic valve was replaced the same day.
Start: 06:15
Duration: about 1 hr. 30 min
Max. Waste Methanol feed rate: 7870 lbs/hr
Max. BTU rate 7.5×10^7 BTU/hr

17) 12/26 While burning MAC heels and herbicide bottoms, the scrubber pH dropped below the permit limit due to herbicide bottom flowrate fluctuations. Remedied by increasing the caustic flowrate to the scrubber.
Start: 22:33
Duration: 10m 32s
Min. pH: 3.6

18) 12/31 While burning Waste Methanol, the flowrate spiked above the permit limit. The flowrate was reduced manually to correct.
Start: 08:24
Duration: 1m 05s
Max flowrate: 2160 lbs/hr

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #15

	Results	Detection Limits	Method	Analyst	Date Test Completed
pH (field)	6.6	NA	150.1	MA	10/19/88
pH (lab A)	6.8	NA	150.1	RAH	10/21/88
pH (lab B)	6.8	NA	150.1	RAH	10/21/88
pH (lab C)	6.8	NA	150.1	RAH	10/21/88
pH (lab D)	6.8	NA	150.1	RAH	10/21/88
Phenols (4-AAP)	33	0.3	140.1	TS/MM	11/04/88
Potassium (K)	1600	10	258.1	KG	10/31/88
Radium (pCi/Liter)	ND	1	SC	SC	SC
Selenium (Se)	ND	0.05	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	420	1	273.1	KG	10/31/88
Specific Conduct. (field)	15720	NA	120.1	MA	10/19/88
Specific Conduct. (lab A)	24000	NA	120.1	RAH	10/21/88
Specific Conduct. (lab B)	24100	NA	120.1	RAH	10/21/88
Specific Conduct. (lab C)	24000	NA	120.1	RAH	10/21/88
Specific Conduct. (lab D)	23900	NA	120.1	RAH	10/21/88
Sulfate (SO_4)	ND	10	375.4	TG	11/09/88
Temperature, Degrees C	15.7	NA	170.1	MA	10/19/88
Total Dissolved Solids	16300	4	160.1	SW	10/28/88
Total Organic Carbon (A)	2100	100	415.1	TS	11/07/88
Total Organic Carbon (B)	2000	100	415.1	TS	11/07/88
Total Organic Carbon (C)	1900	100	415.1	TS	11/07/88
Total Organic Carbon (D)	1900	100	415.1	TS	11/07/88
Total Organic Halogen (A)	29	2	9020	GD	12/30/88
Total Organic Halogen (B)	31	2	9020	GD	12/30/88
Total Organic Halogen (C)	33	2	9020	GD	12/30/88
Total Organic Halogen (D)	37	2	9020	GD	12/30/88
Zinc (Zn)	0.09	0.01	289.1	KG	10/31/88

Notes:
(1) Results are expressed in mg/liter (ppm).
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
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Please see reverse side for explanations and other information.

Subject: Fourth Quarter Groundwater Results

Compound	Well 12	Well 12A	Well 13	Well 13A	Well 14	Well 15
Aniline	ND	ND	4122	ND	ND	ND
Ethyl carbamate	ND	ND	ND	ND	ND	ND
Methyl carbamate	ND	ND	ND	ND	ND	ND
DAP	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND
Ethion	ND	ND	ND	ND	ND	ND
Lindane	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND
ONP	ND	ND	ND	ND	ND	ND
Pyrethrum	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND
Xylenes	116	47	642	20	928	ND
Toluidine	ND	ND	3758	ND	ND	ND
2,4-D	ND	ND	ND	ND	ND	ND
Silvex	ND	ND	ND	ND	ND	ND

All results are in ug/L (ppb)

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Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 13 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #16

	Results	Detection Limits	Method	Analyst	Date Tes Complete
Arsenic (As)	0.11	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	94	1	215.1	KG	10/31/88
Chloride (Cl)	2100	25	325.3	SW	11/09/88
Chromium (Cr), Total	0.20	0.05	218.1	KG	10/31/88
Coliform Bacteria	≥1600	2	SM 908A	CL	10/22/88
Endrin	ND	0.01	608	GD	11/02/88
Fluoride (F)	0.24	0.05	340.2	SW	10/31/88
Gross Alpha, pCi/liter	ND	2	SC	SC	SC
Gross Beta, pCi/liter	ND	3	SC	SC	SC
Ground Water Elevation	2.68	NA	NA	MA	10/17/88
Iron (Fe)	0.49	0.01	236.1	KG	10/31/88
Lead (Pb)	0.06	0.05	239.1	KG	10/31/88
Lindane	ND	0.05	608	GD	12/12/88
Magnesium (Mg)	390	1	242.1	KG	10/31/88
Manganese (Mn)	1.20	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.1	608	GD	11/02/88
Nitrate (N)	ND	10	353.2	MM	11/11/88
pH (field)	7.0	NA	150.1	MA	10/19/88
pH (lab A)	7.1	NA	150.1	RAH	10/21/88
ph (lab B)	7.2	NA	150.1	RAH	10/21/88
ph (lab C)	7.1	NA	150.1	RAH	10/21/88
pH (lab D)	7.3	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #16

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.65	0.05	140.1	TS/MM	11/04/88
Potassium (K)	1000	10	258.1	KG	10/31/88
Radium, pCi/liter	3	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	360	1	273.1	KG	10/31/88
Specific Conduct. (field)	12550	NA	120.1	MA	10/19/88
Specific Conduct. (lab A)	15920	NA	120.1	RAH	10/21/88
Specific Conduct. (lab B)	15520	NA	120.1	RAH	10/21/88
Specific Conduct. (lab C)	16970	NA	120.1	RAH	10/21/88
Specific Conduct. (lab D)	17560	NA	120.1	RAH	10/21/88
Sulfate (SO_4)	ND	10	375.4	TG	11/09/88
Temperature, Degrees C	20.1	NA	170.1	MA	10/19/88
Total Dissolved Solids	7180	4	160.1	SW	10/28/88
Total Organic Carbon (A)	200	5	415.1	MM	11/07/88
Total Organic Carbon (B)	240	10	415.1	MM	11/07/88
Total Organic Carbon (C)	240	10	415.1	MM	11/07/88
Total Organic Carbon (D)	250	10	415.1	MM	11/07/88
Total Organic Halogen (A)	150	2	9020	AD	12/21/88
Total Organic Halogen (B)	200	2	9020	AD	12/21/88
Total Organic Halogen (C)	200	2	9020	AD	12/21/88
Total Organic Halogen (D)	240	2	9020	AD	12/21/88
Toxaphene	ND	0.2	608	GD	11/02/88
2,4-D	ND	0.01	8150	GD	11/30/88
2,4,5-TP (Silvex)	ND	0.01	8150	GD	11/30/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information

Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 15 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #17

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	27.8	0.1	215.1	KG	10/31/88
Chloride (Cl)	680	5	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	ND	2	SM 908A	CL	10/22/88
Endrin	ND	0.001	608	GD	11/11/88
Fluoride (F)	0.34	0.05	340.2	SW	10/31/88
Gross Alpha, pCi/liter	ND	2	SC	SC	SC
Gross Beta, pCi/liter	11	3	SC	SC	SC
Ground Water Elevation	2.27	NA	NA	MA	10/17/88
Iron (Fe)	201	1	236.1	KG	10/31/88
Lead (Pb)	0.05	0.05	239.1	KG	10/31/88
Lindane	ND	0.01	608	GD	11/11/88
Magnesium (Mg)	96	1	242.1	KG	10/31/88
Manganese (Mn)	3.90	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.01	608	GD	11/11/88
Nitrate (N)	ND	0.1	353.2	MM	11/11/88
pH (field)	4.4	NA	150.1	MA	10/19/88
pH (lab A)	4.6	NA	150.1	RAH	10/21/88
pH (lab B)	4.6	NA	150.1	RAH	10/21/88
pH (lab C)	4.6	NA	150.1	RAH	10/21/88
pH (lab D)	4.6	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/19/88 at the Patapsco Avenue, Location: Well #17

	Results	Detection Limits	Method	Analyst	Date Tes Complete
Phenols (4-AAP)	0.406	0.005	140.1	TS/MM	11/04/88
Potassium (K)	10.4	0.1	258.1	KG	10/31/88
Radium, pCi/liter	3	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	300	1	273.1	KG	10/31/88
Specific Conduct. (field)	2510	NA	120.1	MA	10/19/88
Specific Conduct. (lab A)	3040	NA	120.1	RAH	10/21/88
Specific Conduct. (lab B)	3130	NA	120.1	RAH	10/21/88
Specific Conduct. (lab C)	3170	NA	120.1	RAH	10/21/88
Specific Conduct. (lab D)	3140	NA	120.1	RAH	10/21/88
Sulfate (SO_4)	610	10	375.4	TG	11/09/88
Temperature, Degrees C	17.2	NA	170.1	MA	10/19/88
Total Dissolved Solids	2660	4	160.1	SW	10/28/88
Total Organic Carbon (A)	97	5	415.1	MM	11/07/88
Total Organic Carbon (B)	93	5	415.1	MM	11/07/88
Total Organic Carbon (C)	95	5	415.1	MM	11/07/88
Total Organic Carbon (D)	93	5	415.1	MM	11/07/88
Total Organic Halogen (A)	36	1	9020	GD	12/30/88
Total Organic Halogen (B)	42	1	9020	GD	12/30/88
Total Organic Halogen (C)	43	1	9020	GD	12/30/88
Total Organic Halogen (D)	47	1	9020	GD	12/30/88
Toxaphene	ND	0.02	608	GD	11/11/88
2,4-D	ND	0.02	8150	GD	11/30/88
2,4,5-TP (Silvex)	ND	0.01	8150	GD	11/30/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #22

	Results	Detection Limits	Method	Analyst	Date Tes Complete
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	29.0	0.1	215.1	KG	10/31/88
Chloride (Cl)	290	2	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	170	2	SM 908A	CL	10/22/88
Endrin	ND	0.001	608	GD	11/02/88
Fluoride (F)	0.08	0.05	340.2	SW	10/31/88
Gross Alpha, pCi/liter	22	2	SC	SC	SC
Gross Beta, pCi/liter	27	3	SC	SC	SC
Ground Water Elevation	12.31	NA	NA	MA	10/17/88
Iron (Fe)	22.3	0.1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.001	608	GD	11/02/88
Magnesium (Mg)	38.8	0.1	242.1	KG	10/31/88
Manganese (Mn)	0.78	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.01	608	GD	11/02 88
Nitrate (N)	ND	0.1	353.2	MM	11/11/88
pH (field)	5.7	NA	150.1	MA	10/20/88
pH (lab A)	6.0	NA	150.1	RAH	10/21/88
pH (lab B)	5.9	NA	150.1	RAH	10/21/88
pH (lab C)	5.9	NA	150.1	RAH	10/21/88
pH (lab D)	6.0	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #22

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.338	0.005	140.1	TS/MM	11/04/88
Potassium (K)	1.7	0.1	258.1	KG	10/31/88
Radium, pCi/liter	ND	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	79	1	273.1	KG	10/31/88
Specific Conduct. (field)	774	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	898	NA	120.1	RAH	10/20/88
Specific Conduct. (lab B)	951	NA	120.1	RAH	10/20/88
Specific Conduct. (lab C)	915	NA	120.1	RAH	10/20/88
Specific Conduct. (lab D)	958	NA	120.1	RAH	10/20/88
Sulfate (SO_4)	26	10	375.4	TG	11/09/88
Temperature, Degrees C	18.5	NA	170.1	MA	10/20/88
Total Dissolved Solids	602	1	160.1	SW	10/28/88
Total Organic Carbon (A)	170	10	415.1	TS	11/08/88
Total Organic Carbon (B)	170	10	415.1	TS	11/08/88
Total Organic Carbon (C)	180	10	415.1	TS	11/08/88
Total Organic Carbon (D)	170	10	415.1	TS	11/08/88
Total Organic Halogen (A)	33	0.2	9020	GD	12/22/88
Total Organic Halogen (B)	38	0.2	9020	GD	12/22/88
Total Organic Halogen (C)	42	0.2	9020	GD	12/22/88
Total Organic Halogen (D)	44	0.2	9020	GD	12/22/88
Toxaphene	ND	0.03	608	GD	11/02/88
2,4-D	ND	0.01	8150	GD	11/30/88
2,4,5-TP (Silvex)	ND	0.001	8150	GD	11/30/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	22.2	0.1	215.1	KG	10/31/88
Chloride (Cl)	220	5	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	500	2	SM 908A	CL	10/22/88
Endrin	ND	0.001	608	GD	11/02/88
Fluoride (F)	0.07	0.05	340.2	SW	10/31/88
Gross Alpha, pCi/liter	8	2	SC	SC	SC
Gross Beta, pCi/liter	8	3	SC	SC	SC
Ground Water Elevation	13.41	NA	NA	MA	10/20/88
Iron (Fe)	58.7	0.1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.001	608	GD	11/02/88
Magnesium (Mg)	21.7	0.1	242.1	KG	10/31/88
Manganese (Mn)	0.57	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.01	608	GD	11/02 88
Nitrate (N)	ND	1	353.2	MM	11/11/88
pH (field)	6.0	NA	150.1	MA	10/20/88
pH (lab A)	6.1	NA	150.1	RAH	10/21/88
pH (lab B)	6.2	NA	150.1	RAH	10/21/88
pH (lab C)	6.2	NA	150.1	RAH	10/21/88
pH (lab D)	6.3	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.234	0.005	140.1	TS/MM	11/04/88
Potassium (K)	1.2	0.1	258.1	KG	10/31/88
Radium, pCi/liter	ND	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	40.9	0.1	273.1	KG	10/31/88
Specific Conduct. (field)	604	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	685	NA	120.1	RAH	10/20/88
Specific Conduct. (lab B)	674	NA	120.1	RAH	10/20/88
Specific Conduct. (lab C)	686	NA	120.1	RAH	10/20/88
Specific Conduct. (lab D)	693	NA	120.1	RAH	10/20/88
Sulfate (SO_4)	ND	10	375.4	TG	11/09/88
Temperature, Degrees C	18.2	NA	170.1	MA	10/20/88
Total Dissolved Solids	447	1	160.1	SW	10/28/88
Total Organic Carbon (A)	120	5	415.1	TS	11/08/88
Total Organic Carbon (B)	110	5	415.1	TS	11/08/88
Total Organic Carbon (C)	130	5	415.1	TS	11/08/88
Total Organic Carbon (D)	120	5	415.1	TS	11/08/88
Total Organic Halogen (A)	30	0.5	9020	GD	12/30/88
Total Organic Halogen (B)	32	0.5	9020	GD	12/30/88
Total Organic Halogen (C)	32	0.5	9020	GD	12/30/88
Total Organic Halogen (D)	35	0.5	9020	GD	12/30/88
Toxaphene	ND	0.03	608	GD	11/02/88
2,4-D	ND	0.01	8150	GD	11/07/88
2,4,5-TP (Silvex)	ND	0.003	8150	GD	11/07/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #24

	Results	Detection Limits	Method	Analyst	Date Tes Complete
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	10.5	0.1	215.1	KG	10/31/88
Chloride (Cl)	110	2	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	30	2	SM 908A	CL	10/22/88
Endrin	ND	0.001	608	GD	11/02/88
Fluoride (F)	0.06	0.05	340.2	SW	10/31/88
Gross Alpha, pCi/liter	ND	2	SC	SC	SC
Gross Beta, pCi/liter	ND	3	SC	SC	SC
Ground Water Elevation	13.38	NA	NA	MA	10/20/88
Iron (Fe)	48.2	0.1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.002	608	GD	11/02/88
Magnesium (Mg)	7.1	0.1	242.1	KG	10/31/88
Manganese (Mn)	0.32	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.01	608	GD	11/02 88
Nitrate (N)	ND	0.01	353.2	MM	11/11/88
pH (field)	6.1	NA	150.1	MA	10/20/88
pH (lab A)	6.2	NA	150.1	RAH	10/21/88
pH (lab B)	6.1	NA	150.1	RAH	10/21/88
pH (lab C)	6.1	NA	150.1	RAH	10/21/88
pH (lab D)	6.2	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #24

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.027	0.005	140.1	TS/MM	11/04/88
Potassium (K)	1.1	0.1	258.1	KG	10/31/88
Radium, pCi/liter	ND	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	34.6	0.1	273.1	KG	10/31/88
Specific Conduct. (field)	195	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	461	NA	120.1	RAH	10/20/88
Specific Conduct. (lab B)	477	NA	120.1	RAH	10/20/88
Specific Conduct. (lab C)	450	NA	120.1	RAH	10/20/88
Specific Conduct. (lab D)	471	NA	120.1	RAH	10/20/88
Sulfate (SO_4)	14	1	375.4	TG	11/09/88
Temperature, Degrees C	17.0	NA	170.1	MA	10/20/88
Total Dissolved Solids	232	2	160.1	SW	10/28/88
Total Organic Carbon (A)	20	1	415.1	TS	11/09/88
Total Organic Carbon (B)	22	1	415.1	TS	11/09/88
Total Organic Carbon (C)	21	1	415.1	TS	11/09/88
Total Organic Carbon (D)	20	1	415.1	TS	11/09/88
Total Organic Halogen (A)	0.16	0.02	9020	GD	12/30/88
Total Organic Halogen (B)	0.23	0.02	9020	GD	12/30/88
Total Organic Halogen (C)	0.35	0.02	9020	GD	12/30/88
Total Organic Halogen (D)	0.41	0.02	9020	GD	12/30/88
Toxaphene	ND	0.02	608	GD	11/02/88
2,4-D	ND	0.001	8150	GD	12/01/88
2,4,5-TP (Silvex)	ND	0.01	8150	GD	12/01/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	25.8	0.1	215.1	KG	10/31/88
Chloride (Cl)	110	2	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	ND	2	SM 908A	CL	10/22/88
Endrin	ND	0.05	608	GD	12/12/88
Fluoride (F)	0.12	0.05	340.2	SW	10/31/88
Ground Water Elevation	-	NA	NA	MA	10/20/88
Iron (Fe)	1.85	0.01	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.05	608	GD	12/12/88
Magnesium (Mg)	14.7	0.1	242.1	KG	10/31/88
Manganese (Mn)	0.32	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.5	608	GD	12/12/88
Nitrate (N)	ND	1	353.2	MM	11/11/88
pH (field)	6.2	NA	150.1	MA	10/20/88
pH (lab A)	6.6	NA	150.1	MM	10/27/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

ORIGINAL

REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 24 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.249	0.005	140.1	TS/MM	11/04/88
Potassium (K)	9.0	0.1	258.1	KG	10/31/88
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	62	1	273.1	KG	10/31/88
Specific Conduct. (field)	434	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	605	NA	120.1	MM	10/27/88
Sulfate (SO_4)	28	1	375.4	TG	11/09/88
Temperature, Degrees C	18.4	NA	170.1	MA	10/20/88
Total Dissolved Solids	406	1	160.1	SW	10/28/88
Total Organic Carbon (A)	200	10	415.1	TS	11/09/88
Total Organic Carbon (B)	220	10	415.1	TS	11/09/88
Total Organic Carbon (C)	220	10	415.1	TS	11/09/88
Total Organic Carbon (D)	210	10	415.1	TS	11/09/88
Total Organic Halogen (A)	110	0.2	9020	GD	12/29/88
Total Organic Halogen (B)	120	0.2	9020	GD	12/29/88
Total Organic Halogen (C)	120	0.2	9020	GD	12/29/88
Total Organic Halogen (D)	120	0.2	9020	GD	12/29/88
Toxaphene	ND	0.05	608	GD	11/02/88
2,4-D	ND	0.01	8150	TM	11/22/88
2,4,5-TP (Silvex)	ND	0.003	8150	TM	11/22/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 25 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Arsenic (As)	ND	0.005	206.2	BH	10/28/88
Barium (Ba)	ND	0.5	208.1	KG	10/31/88
Cadmium (Cd)	ND	0.01	213.1	KG	10/31/88
Calcium (Ca)	110	1	215.1	KG	10/31/88
Chloride (Cl)	3400	25	325.3	SW	11/09/88
Chromium (Cr), Total	ND	0.05	218.1	KG	10/31/88
Coliform Bacteria	2	2	SM 908A	CL	10/22/88
Endrin	ND	0.001	608	GD	11/08/88
Fluoride (F)	0.07	0.05	340.2	SW	10/31/88
Gross Alpha, (pCi/liter)	ND	2	SC	SC	SC
Gross Beta, (pCi/liter)	125	3	SC	SC	SC
Ground Water Elevation	1.70	NA	NA	MA	10/20/88
Iron (Fe)	829	1	236.1	KG	10/31/88
Lead (Pb)	ND	0.05	239.1	KG	10/31/88
Lindane	ND	0.001	608	GD	11/08/88
Magnesium (Mg)	270	1	242.1	KG	10/31/88
Manganese (Mn)	3.40	0.01	243.1	KG	10/31/88
Mercury (Hg)	ND	0.005	245.1	FK/BH	11/15/88
Methoxychlor	ND	0.01	608	GD	11/08/88
Nitrate (N)	ND	0.1	353.2	MM	11/11/88
pH (field)	5.3	NA	150.1	MA	10/20/88
pH (lab A)	5.3	NA	150.1	RAH	10/21/88
pH (lab B)	5.4	NA	150.1	RAH	10/21/88
pH (lab C)	5.4	NA	150.1	RAH	10/21/88
pH (lab D)	5.4	NA	150.1	RAH	10/21/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 88-10-291 Report Date: January 9, 1989

Report To: FMC Corporation Page: 26 of 26

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 10/20/88 at the Patapsco Avenue, Location: Well #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Phenols (4-AAP)	0.047	0.005	140.1	TS/MM	11/04/88
Potassium (K)	170	1	258.1	KG	10/31/88
Radium, pCi/liter	3	1	SC	SC	SC
Selenium (Se)	ND	0.005	270.2	BH	10/28/88
Silver (Ag)	ND	0.01	272.1	KG	10/31/88
Sodium (Na)	530	10	273.1	KG	10/31/88
Specific Conduct. (field)	5750	NA	120.1	MA	10/20/88
Specific Conduct. (lab A)	8570	NA	120.1	RAH	10/20/88
Specific Conduct. (lab B)	8100	NA	120.1	RAH	10/20/88
Specific Conduct. (lab C)	8050	NA	120.1	RAH	10/20/88
Specific Conduct. (lab D)	8570	NA	120.1	RAH	10/20/88
Sulfate (SO_4)	ND	10	375.4	TG	11/09/88
Temperature, Degrees C	18.8	NA	170.1	MA	10/20/88
Total Dissolved Solids	6040	2	160.1	SW	10/28/88
Total Organic Carbon (A)	410	50	415.1	TS	11/09/88
Total Organic Carbon (B)	380	50	415.1	TS	11/09/88
Total Organic Carbon (C)	400	50	415.1	TS	11/09/88
Total Organic Carbon (D)	410	50	415.1	TS	11/09/88
Total Organic Halogen (A)	8.3	0.5	9020	GD	12/30/88
Total Organic Halogen (B)	8.6	0.5	9020	GD	12/30/88
Total Organic Halogen (C)	9.0	0.5	9020	GD	12/30/88
Total Organic Halogen (D)	10	0.5	9020	GD	12/30/88
Toxaphene	ND	0.02	608	GD	11/08/88
2,4-D	ND	0.01	8150	GD	11/07/88
2,4,5-TP (Silvex)	ND	0.001	8150	GD	11/07/88

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) SC-Sub-contracted analysis.
(5) Analysis performed on filtered (0.45 micron) sample where appropriate.

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

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(Red)

FMC - Baltimore, MD
Fourth Quarter, 1988 Report
CHS Facility Permit A-023

As required in Part III G. of the subject permit, listed below are descriptions of deviations from permit conditions from October 1 to December 31, 1988.

1) 10/6: While burning MAC heels, the scrubber pH rose above the permit limit. The operator couldn't hear the alarm because he was in a noisy area. Acid was added manually to correct.
Start: 11:49
Duration: 12m 52s
Max pH: 9.7

2) 10/7: The secondary air flow rose above the permit limit, reason unknown. Remedied by manually reducing the air flow rate.
Start: 08:05
Duration: 2m 21s
Max air flow rate: 5200 acfm

3) 10/10: While switching from MAC heels to 7-OH tar feed, lost flow due to a plugged 7-OH line, causing combustion temperature to drop below the permit limit. Corrected by feeding fuel oil.
Start: 14:20
Duration: 9m 09s
Min. temperature: 480°C

4) 10/14: While switching feeds, the primary air flow rate rose above the permit limit. Remedied by manually reducing the air flow.
Start: 00:33
Duration: 2m 36s
Max. air flow: 5150 acfm

5) 10/19: The scrubber pH rose above permit limits due to mechanical problems with its controller. Feed was shut down and an instrument mechanic repaired the controller.
Start: 14:56
Duration: 13m 46s
Max pH: 10.9

6) 10/20: After completing a burn of herbicide bottoms, the pH controller overshot the addition of caustic causing a pH rise above the permit limit. Remedied by readjusting the pH controller setpoint.
Start: 10:16
Duration: 11m 0s
Max. pH 11.5

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7) 10/23: While switching feeds, the secondary air flow rose for unknown reasons. The problem was corrected automatically.
Start 03:16
Duration: 1m 06s
Max air flow: 5000 acfm

8) 10/25: The primary air flow increased for unknown reasons. The operator was working in the process and could not respond immediately. The air flow rate was decreased manually.
Start: 10:44
Duration: 2m 52s
Max air flow rate: 5400 acfm

9) 11/1: When switching feeds, the WESP voltage dropped below the permit limit. Waste methanol feed was successfully interlocked. Waste methanol feed was resumed without problems.
Start: 04:06
Duration: 4m 08s
Min voltage: 10.9 KV

10) 11/2: Due to a leaking valve on the Waste Methanol storage tank, about 4,000 pounds of waste methanol were unknowingly incinerated with MAC heels. The storage tank contents were transferred to a trailer and the valve was repaired.

11) 11/3: While burning Waste Methanol and Super Tar, and while the operator was out of the area on other duties, the Super Tar flow kicked out, causing the temperature to drop. The Waste Methanol flow was successfully interlocked, but xylene emissions continued to be fed.
Start: 00:43
Duration: 19m 31s
Min. temp. 260°C

12) 11/25: The secondary air flow rose for unknown reasons. Remedied by manually reducing the flow rate.
Start: 00:16
Duration: 4m 49s
Max air flow rate: 5500 acfm

13) 12/4: The WESP voltage dropped below the permit limit for unknown reasons. It returned to normal before any manual action was taken.
Start: 05:54
Duration: 1m 54s
Min. voltage: 18.5 KV

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14) 12/5: The WESP voltage dropped below the permit limit four times. The cause was believed to be an internal ground. Arrangements with the vendor were made to repair on 12/7.
Start: 07:33
Duration: 4m 01s
Min. voltage: 19 KV

15) 12/6 The WESP voltage dropped below the permit limit twice. See the description on 12/5. The voltage returned to normal without any manual action taken.
Start: 01:14
Duration: 1m 34s
Min. voltage: 18.6V

16) 12/12 The automatic valve in the Waste Methanol feed line failed internally in the open position, exceeding the permit limits on Waste Methanol feed rate, on the total BTU rate, and burning Waste Methanol without the auto shutoff system in operation. The flow was stopped by closing a manual valve. The automatic valve was replaced the same day.
Start: 06:15
Duration: about 1 hr. 30 min
Max. Waste Methanol feed rate: 7870 lbs/hr
Max. BTU rate 7.5×10^7 BTU/hr

17) 12/26 While burning MAC heels and herbicide bottoms, the scrubber pH dropped below the permit limit due to herbicide bottom flowrate fluctuations. Remedied by increasing the caustic flowrate to the scrubber.
Start: 22:33
Duration: 10m 32s
Min. pH: 3.6

18) 12/31 While burning Waste Methanol, the flowrate spiked above the permit limit. The flowrate was reduced manually to correct.
Start: 08:24
Duration: 1m 05s
Max flowrate: 2160 lbs/hr

FMC Corporation

Agricultural Chemical Group
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FMC

April 14, 1989

Mr. Brian English
Maryland Department of the Environment
Waste Management Administration
2500 Broening Highway
Baltimore, Maryland 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. English:

As per the requirement of Section I, Special Condition A of the Baltimore Plant's CHS Permit No. A-023 (EPA I.D. No. MDD003071875), attached is the first quarter, 1989 report listing the quantities of materials stored and incinerated on site.

Also, per the General Conditions of the CHS Permit and our Consent Order of January 13, 1986, attached are the sampling and analytical results of the groundwater monitoring program for the first quarter.

Also, pursuant to Part III G of the Permit, attached are descriptions of deviations from the incinerator operating conditions specified in Part III C of the Permit for the first quarter.

If you have any questions about the report, please do not hesitate to contact me.

Sincerely yours,

A. P. Dean

A. P. Dean
Environmental Manager

APD:ct

cc: Michael Freiheiter - Federal Environmental Protection Agency
C. James Leizear - Maryland Department of the Environment
James F. Xavier - Maryland Department of the Environment

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FMC - BALTIMORE, MD
FIRST QUARTER, 1989 REPORT
CHS FACILITY PERMIT A-023

As required by Part IIIG. of the subject permit, listed below are descriptions of deviations from permit conditions from January 1 to March 31, 1989.

1) 1/1: While burning waste methanol and super tar, the super tar flow was interrupted, causing the combustion chamber temperature to drop. This tripped the low temperature interlock, which shut off the methanol flow and caused the temperature to decrease more rapidly. The temperature dropped below the operating limit while xylene emissions were still being fed to the incinerator. Fuel oil was introduced to raise the temperature back to normal.

   Start: 00:24
   Duration: 5m 19s
   Min. temp: 660°C

2) 1/3 While burning waste methanol and super tar, the flowrate of methanol spiked above the operating limit for unknown reasons.

   Start: 08:33
   Duration: 3m 5s
   Max. flowrate: 3725 lbs/hr

3) 1/9 While burning 7-OH Tar and supertar, the secondary air flow rose above the operating limit. The flow was reduced manually to correct.

   Start: 20:19
   Duration: 1m 29s
   Max. flowrate: 5050 acfm

4) 1/11 While burning MAC heels, its feed pump failed, causing the scrubber pH to rise above the operating limit. The spare feed pump was switched in to remedy the problem.

   Start: 15:19
   Duration: 10m 28s
   Max. pH: 10:6

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5) 1/21 While switching feeds to waste methanol, the flowrate initially overshot the setpoint and upper operating limit. The flow was manually reduced to remedy the problem.

Start: 03:13
Duration: 1m 7s
Max. flowrate: 2260 lb/hr

6) 1/21 While burning 7-OH tar, a water pump failed, causing the WESP make-up water flowrate and the venturi quench column make-up water flowrate to drop below operating limits. The spare water pump was switched in to remedy the problem.

Start: 14:33
Duration: 6m 0s
Min. WESP flow: 17 gpm
Min. quench flow: 208 gpm

7) 1/23 While switching feeds to waste methanol, its flowrate initially overshot the setpoint and upper operating limit. Flow was reduced manually to remedy.

Start: 03:21
Duration: 1m 5s
Max. flowrate 4900 lb/hr

8) 2/8 While burning waste methanol, the scrubber pH dropped below the operating limit. The operator believed the alarm was due to an instrument mechanic who was checking that system at the time and therefore did not initially react to it. The caustic flowrate was raised to remedy the problem.

9) 3/5 While switching feeds to waste methanol, its flowrate initially overshot the setpoint and upper operating limit. Waste methanol feed was halted and herbicide bottoms feed was substituted.

Start: 20:48
Duration: 1m 1s
Max. flowrate: 3000 lb/hr

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FMC CORPORATION - BALTIMORE, MD
FIRST QUARTER, 1989 REPORT

Permit No. A-023

EPA I.D. No. MDD003071875

Special Condition A

Materials Incinerated On-Site	Quantity (Tons)
7-Hydroxy Tar (Plant 3)	85
Claisen Tar	18
Plant 4 Waste	1126
Methallyl Chloride Waste	548
DV Ester Methanol and Chloroacetylenics	705
Basin Oil	52

Materials Stored On Side	
Glassware	3.3
P_2S_5	0.175
Hazardous Waste lbs.	224

Gascoyne Laboratories, Inc.

Baltimore, MD 21224-6697

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REPORT OF ANALYSIS

Report No. 89-01-438 Report Date: February 18, 1989

Report To: FMC Corporation Page: 1 of 26

Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #16

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	1200	25	325.3	SW	02/06/89
Chromium (Cr)	0.05	0.05	218.1	KG	02/01/89
Endrin	ND	0.01	608	GD/TM	02/08/89
Ground Water Elevation	1.78	NA	NA	MA	01/27/89
Iron (Fe)	2.93	0.01	236.1	KG	02/02/89
Lindane	ND	0.01	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.03	608	GD/TM	02/08/89
pH (field)	7.0	NA	150.1	MA	01/27/89
pH (lab A)	7.2	NA	150.1	MM	01/27/89
pH (lab B)	7.0	NA	150.1	MM	01/27/89
pH (lab C)	7.0	NA	150.1	MM	01/27/89
pH (lab D)	7.1	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.403	0.005	420.1	ED/MM	02/06/89
Potassium (K)	226	1	258.1	KG	02/02/89
Specific Conductance (field)	7380	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	3270	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	11600	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	11700	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	10300	NA	120.1	MM	01/27/89
Sulfate (SO_4)	28	20	375.4	SW	02/07/89
Temperature, °C	15.1	NA	170.1	MA	01/27/89

Notes: (1) ND-Not Detected.

(2) NA-Not Applicable.

(3) Results expressed as mg/liter (ppm).

(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 89-01-438 Report Date: February 16, 1989

Report To: FMC Corporation Page: 3 of 26

Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #17

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride	590	5	325.3	SW	02/06/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	1.92	NA	NA	MA	01/27/89
Iron (Fe)	215	1	236.1	KG	02/02/89
Lindane	ND	0.002	608	GD/TM	02/08/89
Mecury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxchlor	ND	0.01	608	GD/TM	02/08/89
pH (field)	4.3	NA	150.1	MA	01/27/89
pH (lab A)	4.5	NA	150.1	MM	01/27/89
pH (lab B)	4.6	NA	150.1	MM	01/27/89
pH (lab C)	4.5	NA	150.1	MM	01/27/89
pH (lab D)	4.5	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.361	0.005	420.1	ED/MM	02/06/89
Potassium (K)	11.1	0.1	258.1	KG	02/02/89
Specific Conductance (field)	2910	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	3210	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	3220	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	3370	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	3250	NA	120.1	MM	01/27/89
Sulfate (SO_4)	510	10	375.4	SW	02/07/89
Temperature, °C	13.6	NA	170.1	MA	01/27/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-01-438 Report Date: February 18, 1989

Report To: FMC Corporation Page: 5 of 26

Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	2700	25	325.3	SW	02/06/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	1.40	NA	NA	MA	01/27/89
Iron (Fe)	790	1	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
pH (field)	5.3	NA	150.1	MA	01/27/89
pH (lab A)	5.4	NA	150.1	MM	01/27/89
pH (lab B)	5.5	NA	150.1	MM	01/27/89
pH (lab C)	5.4	NA	150.1	MM	01/27/89
pH (lab D)	5.5	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.220	0.005	420.1	ED/MM	02/06/89
Potassium (K)	185	1	258.1	KG	02/02/89
Specific Conductance (field)	7390	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	8760	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	8780	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	8040	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	8600	NA	120.1	MM	01/27/89
Sulfate (SO_4)	35	10	375.4	SW	02/07/89
Temperature, °C	15.5	NA	150.1	MA	01/27/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

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REPORT OF ANALYSIS

Report No. 89-01-438 Report Date: February 18, 1989

Report To: FMC Corporation Page: 7 of 26

Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.2	FK	02/02/89
Chloride (Cl)	540	10	325.3	SW	02/06/89
Chromium (Cr),Hexavalent	ND	0.01	SM 312B	MM	01/27/89
Chromium (Cr), Total	ND	0.01	218.1	KG	02/01/89
Copper (Cu)	0.02	0.01	220.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	7.36	NA	NA	MA	01/27/89
Iron (Fe)	6.20	0.01	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
Nickel (Ni)	0.18	0.02	249.1	KG	02/02/89
pH (field)	5.7	NA	150.1	MA	01/27/89
pH (lab A)	5.9	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.081	0.005	420.1	ED/MM	02/06/89
Potassium (K)	15.3	0.01	258.1	KG	02/02/89
Specific Conductance (field)	1887	NA	120.1	MA	01/27/89
Specific Conductance	2510	NA	120.1	MM	01/27/89
Sulfate (SO_4)	250	10	375.4	SW	02/07/89
Temperature, °C	14.3	NA	170.1	MA	01/27/89
Total Dissolved Solids	1600	1	160.1	ED	02/10/89

Notes: (1) ND-Not Detected.

(2) NA-Not Applicable.

(3) Results expressed as mg/liter (ppm).

(4) Digestion Method 3010 used for sample preparation (EPASW-846).

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

ORIGINAL
(Red)

Groundwater 1st Quarter 1989

Compound	Well 12	Well 12A	Well 13	Well 13A	Well 14	Well 15
Aniline	ND	ND	6725	ND	ND	ND
Ethyl Carbanate	ND	ND	ND	ND	ND	ND
Methyl carbanate	ND	ND	ND	ND	ND	ND
DAP	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND
Ethion	ND	ND	ND	ND	ND	ND
Lindane	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND
ONP	ND	ND	ND	ND	ND	ND
Pyrethrum	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND
Xylenes	32	44	440	26	61	127
Toluidine	ND	ND	5419	ND	ND	ND

All results are in ug/ml

Gascoyne Laboratories, Inc.

ORIGINAL (Red)

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REPORT OF ANALYSIS

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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #12A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.2	FK	02/02/89
Chloride (Cl)	300	2	325.3	SW	02/06/89
Chromium (Cr),Hexavalent	ND	0.1	SM 312B	MM	01/27/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Copper (Cu)	0.03	0.01	220.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground water Elevation	3.66	NA	NA	MA	01/27/89
Iron (Fe)	200	1	236.1	KG	02/02/89
Lindane	ND	0.002	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
Nickel (Ni)	ND	0.02	249.1	KG	02/02/89
pH (field)	6.0	NA	150.1	MA	01/27/89
pH (lab A)	6.1	NA	150.1	MM	01/27/89
Phenols (4-AAP)	1.342	0.005	420.1	ED/MM	02/06/89
Potassium (K)	65.9	0.1	258.1	KG	02/02/89
Specific Conductance (field)	1580	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	1730	NA	120.1	MM	01/27/89
Sulfate (SO_4)	250	10	375.4	SW	02/07/89
Temperature, °C	15.4	NA	170.1	MA	01/27/89
Total Dissolved Solids	1200	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #13

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	2600	25	325.3	SW	02/06/89
Chromium (Cr),Hexavalent	ND	1	SM 312B	MM	01/27/89
Chromium (Cr), Total	0.14	0.05	218.1	KG	02/01/89
Copper (Cu)	0.04	0.01	220.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	5.15	NA	NA	MA	01/27/89
Iron (Fe)	200	1	236.1	KG	w02/02/89
Lindane	ND	0.006	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
Nickel (Ni)	0.15	0.02	249.1	KG	02/02/89
pH (field)	6.6	NA	150.1	MA	01/27/89
pH (lab A)	6.7	NA	150.1	MM	01/27/89
Phenols(4-AAP)	0.503	0.005	420.1	ED/MM	02/06/89
Potassium (K)	1200	10	258.1	KG	02/02/89
Specific Conductance (field)	10300	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	11400	NA	120.1	MM	01/27/89
Sulfate (SO_4)	ND	20	375.4	SW	02/07/89
Temperature, °C	15.4	NA	170.1	MA	01/27/89
Total Dissolved Solids	8400	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #13A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	1800	25	325.3	SW	02/06/89
Chromium (Cr),Hexavalent	ND	0.1	SM 312B	MM	01/27/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Copper (Cu)	0.03	0.01	220.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	3.30	NA	NA	MA	01/27/89
Iron (Fe)	1200	10	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.04	608	GD/TM	02/08/89
Nickel (Ni)	0.24	0.02	249.1	KG	02/02/89
pH (field)	5.6	NA	150.1	MA	01/27/89
pH (lab A)	5.8	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.081	0.005	420.1	ED/MM	02/06/89
Potassium (K)	57.3	0.1	258.1	KG	02/02/89
Specific Conductance (field)	5360	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	6200	NA	120.1	MM	01/27/89
Sulfate (SO_4)	450	100	375.4	SW	02/07/89
Temperature, °C	14.2	NA	170.1	MA	01/27/89
Total Dissolved Solids	5500	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA- Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #14

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	450	2	325.3	SW	02/06/89
Chromium (Cr),Hexavalent	ND	0.1	SM 312B	MM	01/27/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Copper (Cu)	0.02	0.01	220.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	1.43	NA	NA	MA	01/27/89
Iron (Fe)	76.3	0.1	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
Nickel (Ni)	ND	0.02	249.1	KG	02/02/89
pH (field)	6.6	NA	150.1	MA	01/27/89
pH (lab A)	6.5	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.053	0.005	420.1	ED/MM	02/06/89
Potassium (K)	59.9	0.1	258.1	KG	02/02/89
Specific Conductance (field)	2400	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	2360	NA	120.1	MM	01/27/89
Sulfate (SO_4)	84	20	375.4	SW	02/07/89
Temperature, °C	15.9	NA	170.1	MA	01/27/89
Total Dissolved Solids	1400	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #15

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	5400	50	325.3	SW	02/06/89
Chromium (Cr) Hexavalent	ND	1	SM 312B	MM	01/27/89
Chromium (Cr), Total	0.05	0.05	218.1	KG	02/01/89
Copper (Cu)	0.02	0.01	220.1	KG	02/01/89
Endrin	ND	0.003	608	GD/TM	02/08/89
Ground Water Elevation	9.23	NA	NA	MA	01/27/89
Iron (Fe)	0.31	0.01	236.1	KG	02/02/89
Lindane	ND	0.002	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.04	608	GD/TM	02/08/89
Nickel (Ni)	0.06	0.02	249.1	KG	02/02/89
pH (field)	6.6	NA	150.1	MA	01/27/89
pH (lab A)	6.7	NA	150.1	MM	01/27/89
Phenols(4-AAP)	23	0.5	420.1	ED/MM	02/06/89
Potassium (K)	1800	10	258.1	KG	02/02/89
Specific Conductance (field)	21900	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	22900	NA	120.1	MM	01/27/89
Sulfate (SO_4)	64	20	375.4	SW	02/07/89
Temperature, °C	11.6	NA	170.1	MA	01/27/89
Total Dissolved Solids	2100	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #22

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd)	ND	0.01	213.1	KG	02/01/89
Chloride	250	2	325.3	SW	02/06/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	14.36	NA	NA	MA	01/27/89
Iron (Fe)	25.3	0.1	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
pH (field)	5.6	NA	150.1	MA	01/27/89
pH (lab A)	5.9	NA	150.1	MM	01/27/89
pH (lab B)	5.9	NA	150.1	MM	01/27/89
pH (lab C)	5.9	NA	150.1	MM	01/27/89
pH (lab D)	5.9	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.114	0.005	420.1	ED/MM	02/06/89
Potassium (K)	2.2	0.1	258.1	KG	02/02/89
Specific Conductance (field)	1120	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	1190	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	1130	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	1200	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	1200	NA	120.1	MM	01/27/89
Sulfate (SO_4)	17	10	375.4	SW	02/07/89
Temperature, °C	12.4	NA	170.1	MA	01/27/89
Total Dissolved Solids	700	1	160.1	ED	02/10/89

Notes: (1) ND-Not Detected.

(2) NA- Not Applicable.

(3) Results expressed as mg/liter (ppm).

(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis

Laboratory Director
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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Chromium (Cr)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	160	5	325.3	SW	02/06/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Endrin	ND	0.003	608	GD/TM	02/08/89
Ground Water Elevation	14.21	NA	NA	MA	01/27/89
Iron (Fe)	52.9	0.1	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.02	608	GD/TM	02/08/89
pH (field)	5.9	NA	150.1	MA	01/27/89
pH (lab A)	6.1	NA	150.1	MM	01/27/89
pH (lab B)	6.1	NA	150.1	MM	01/27/89
pH (lab C)	6.0	NA	150.1	MM	01/27/89
pH (lab D)	6.0	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.373	0.005	420.1	ED/MM	02/06/89
Potassium (K)	1.3	0.1	258.1	KG	02/02/89
Specific Conductance (field)	875	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	811	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	807	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	825	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	815	NA	120.1	MM	01/27/89
Sulfate (SO_4)	2.7	10	375.4	SW	02/07/89
Temperature, °C	15.9	NA	170.1	MA	01/27/89
Total Dissolved Solids	340	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
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REPORT OF ANALYSIS

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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #24

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cr)	ND	0.01	213.1	KG	02/01/89
Chloride (Cl)	98	2	325.3	SW	02/06/89
Chromium (Cr), Total	ND	0.05	218.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	13.88	NA	NA	MA	01/27/89
Iron (Fe)	51.4	0.1	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.01	608	GD/TM	02/08/89
pH (field)	5.9	NA	150.1	MA	01/27/89
pH (lab A)	6.2	NA	150.1	MM	01/27/89
pH (lab B)	6.2	NA	150.1	MM	01/27/89
pH (lab C)	6.1	NA	150.1	MM	01/27/89
pH (lab D)	6.1	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.040	0.005	420.1	ED/MM	02/06/89
Potassium (K)	1.0	0.1	258.1	KG	02/02/89
Specific Conductance (field)	517	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	498	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	495	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	509	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	494	NA	120.1	MM	01/27/89
Sulfate (SO_4)	ND	10	375.4	SW	02/07/89
Temperature, °C	15.7	NA	170.1	MA	01/27/89
Total Dissolved Solids	200	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
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Sample I.D. Monitoring well, samples taken by Gascoyne Laboratories, Inc., on 1/26/89 and 1/27/89 at the Patapsco Avenue Location: Well #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Chromium (Cr)	ND	0.01	213.2	FK	02/02/89
Chloride (Cl)	1300	10	325.3	SW	02/06/89
Chromium (Cr), Total	0.05	0.05	218.1	KG	02/01/89
Endrin	ND	0.001	608	GD/TM	02/08/89
Ground Water Elevation	26.86	NA	NA	MA	01/27/89
Iron (Fe)	3.77	0.01	236.1	KG	02/02/89
Lindane	ND	0.001	608	GD/TM	02/08/89
Mercury (Hg)	ND	0.005	245.1	FK	02/07/89
Methoxychlor	ND	0.02	608	GD/TM	02/08/89
pH (field)	6.6	NA	150.1	MA	01/27/89
pH (lab A)	6.9	NA	150.1	MM	01/27/89
pH (lab B)	6.9	NA	150.1	MM	01/27/89
pH (lab C)	7.2	NA	150.1	MM	01/27/89
pH (lab D)	6.8	NA	150.1	MM	01/27/89
Phenols (4-AAP)	0.465	0.005	420.1	ED/MM	02/06/89
Potassium (K)	20.4	0.1	258.1	KG	02/02/89
Specific Conductance (field)	4320	NA	120.1	MA	01/27/89
Specific Conductance (lab A)	4700	NA	120.1	MM	01/27/89
Specific Conductance (lab B)	4720	NA	120.1	MM	01/27/89
Specific Conductance (lab C)	4480	NA	120.1	MM	01/27/89
Specific Conductance (lab D)	4730	NA	120.1	MM	01/27/89
Sulfate (SO_4)	59	10	375.4	SW	02/07/89
Temperature, °C	14.9	NA	170.1	MA	01/27/89
Total Dissolved Solids	2700	1	160.1	ED	02/10/89

Notes:
(1) ND-Not Detected.
(2) NA-Not Applicable.
(3) Results expressed as mg/liter (ppm).
(4) Digestion Method 3010 used for sample preparation (EPA SW-846).

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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FMC

October 13, 1989

Mr. Brian English
Maryland Department of the Environment
Waste Management Administration
2500 Broening Highway
Baltimore, Maryland 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. English:

Pursuant to FMC's CHS Permit No. A-023, Section I, Special Condition A, attached is the third quarter 1989 listing of quantities of materials stored and incinerated on-site.

Also, pursuant to the general conditions of the subject permit and our Consent Order of January 13, 1986, attached are the sampling and analytical results of the groundwater monitoring program for the third quarter.

Also, pursuant to Part III G of the subject permit, attached are descriptions of deviations from the incinerator operating conditions in Part C for the third quarter.

Sincerely yours,

John G. Giblin

John G. Giblin
Environmental Engineer

cc: Michael Freiheiter - U.S. Environmental Protection Agency
C. James Leizear - Maryland Department of the Environment
James F. Xavier - Maryland Department of the Environment

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FMC CORPORATION - BALTIMORE, MARYLAND
THIRD QUARTER - 1989 REPORT

Permit No. A023
EPA I.D. No. MDD003071875
Special Condition A

MATERIALS INCINERATED ON-SITE	QUANTITY (TONS)
Plant 4 Waste	969
Basin Oils	44
Methallyl Chloride (MAC) Waste	523
DV Ester Waste Methanol	631
Herbicide Bottoms	69
Waste Oil	0

MATERIALS STORED ON-SITE	QUANTITY (TONS)
Glassware	2.1
Phosphorous Pentasulfide	0.4
Hazardous Waste	242

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FMC CORPORATION - BALTIMORE, MARYLAND
THIRD QUARTER, 1989 REPORT

Permit No. A-023

Pursuant to Part III. G. of the subject permit, listed below are descriptions of deviations from permit conditions which occurred from July 1 to September 30, 1989.

1) 7/4 While burning a mixture of Basin Oils and MAC waste the feed rate spiked above the operating limit. The erratic flow was caused by inconsistent feed quality. The flowrate was reduced, then shutdown to remedy the problem.
Start Time: 12:43
Max. flowrate: 3980 lbs/hr
Duration: 1m 19s

2) 8/9 While burning MAC waste the combustion chamber pressure was above the operating limit for unknown reasons. The pressure returned within limits before corrective action could be taken.
Start time: 11:54
Max. pressure: 0.2" WG
Duration: 1m 28s

3) 8/14 When switching feeds from 7-OH tar to MAC waste, the MAC heels flowrate overshot the setpoint and spiked above the operating limit. The flow was reduced to remedy the problem.
Start time: 11:40
Max. flowrate: 3160 lb/hr
Duration: 1:03

4) 9/12 While burning waste methanol the quench water flowrate dropped below the operating limit for unknown reasons. The operator was attending to other activities at the time, but the flowrate had returned to normal when he returned several minutes later.
Start time: 02:33
Min. Flowrate: 236 gpm
Duration: 4m 22s

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5) 9/16 While burning waste methanol the quench water flowrate dropped below the operating limit for unknown reasons. The valve was stroked to attempt to remedy the problem, but apparently without success. However, the flowrate soon returned to normal on its own. The effect on supply pressure of other large take-offs in the water supply system is being investigated.
Start time: 10:29
Min. Flowrate: 236 gpm
Duration: 1m 7s

6) 9/25 After switching from 7-OH tar to MAC waste the scrubber pH rose above the operating limit due to underdamped response of the controller. The operator was busy outside in a high noise area so did not hear the alarm. When he returned to the control room, he switched the feed to fuel oil then shut down the incinerator.
Start time: 07:17
Max. pH: 10.7
Duration: 12m 39s

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 1 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #10

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	8900	50	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	0.05	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	6.8	NA	NA	TS/SC	08/09/89
Iron (Fe) *	202	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.007	EPA 8080	GD/RJ	08/22/89
pH (field)	6.4	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	6.5	NA	EPA 150.1	CM	08/09/89
pH (lab B)	6.5	NA	EPA 150.1	CM	08/09/89
pH (lab C)	6.5	NA	EPA 150.1	CM	08/09/89
pH (lab D)	6.5	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	1.4	0.5	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	1600	10	EPA 258.1	KG	08/21/89
Specific Conductance (field)	20900	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	25500	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	24500	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	25900	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	24700	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	4200	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	20.4	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	18000	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

Irving M. Kipnis

Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 2 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #10

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	820	10	EPA 415.1	MM	08/11/89
Total Organic Carbon (B) *	800	10	EPA 415.1	MM	08/11/89
Total Organic Carbon (C) *	820	10	EPA 415.1	MM	08/11/89
Total Organic Carbon (D) *	800	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	64	5	EPA 9020	CL/CM	08/22/89
Total Organic Halogen (B)	78	5	EPA 9020	CL/CM	08/22/89
Total Organic Halogen (C)	75	5	EPA 9020	CL/CM	08/22/89
Total Organic Halogen (D)	71	5	EPA 9020	CL/CM	08/22/89
Toxaphene	ND	0.04	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.02	EPA 8150	GD	08/17/89
2,4,5-TP (Silvex)	ND	0.01	EPA 8150	GD	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
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Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 3 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	560	10	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/21/89
Ground Water Elevation (field)	8.6	NA	NA	MA/SC	08/08/89
Iron (Fe) *	26.0	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/21/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.003	EPA 8080	GD/RJ	08/22/89
Nickel (Ni)	0.15	0.02	EPA 249.1	KG	08/21/89
pH (field)	5.6	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	5.8	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.07	0.005	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	5.7	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	2070	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	2260	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	490	100	EPA 375.4	SW	08/25/89
Temperature, °C (field)	16.5	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	1490	1	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 4 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	50	1	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	2.8	0.1	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/21/89
Zinc (Zn)	0.12	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.005	EPA 8150	GD/JS	08/21/89
2,4,5-TP (Silvex)	ND	0.002	EPA 8150	GD/JS	08/21/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
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Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	310	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	4.8	NA	NA	MA/SC	08/08/89
Iron (Fe) *	209	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.002	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.01	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	ND	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.1	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.2	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	1.8	0.05	EPA 420.1	TS/MM	08/18/89
Potassium (K) *	60.1	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	1680	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	1670	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	960	200	EPA 375.4	SW	08/25/89
Temperature, °C (field)	15.5	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	1330	1	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 9-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 6 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #12A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	53	1	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	3.4	0.2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.07	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.04	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.005	EPA 8150	GD/RJ	08/18/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/18/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

Report No. -08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 7 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	1500	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	0.05	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.01	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.003	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	7.2	NA	NA	MA/SC	08/08/89
Iron (Fe) *	45.9	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.003	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.02	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	0.03	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.6	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.7	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	2.1	0.05	EPA 420.1	TS/MM	08/18/89
Potassium (K) *	680	1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	7140	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	9250	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	3900	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	16.5	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	7500	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 8 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	1200	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	65	10	EPA 9020	CM	08/19/89
Toxaphene	ND	0.06	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.06	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.03	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/16/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 9 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	1900	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	3.6	NA	NA	MA/SC	08/08/89
Iron (Fe) *	1400	10	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.003	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	0.20	0.02	EPA 249.1	KG	08/21/89
pH (field)	5.8	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	5.7	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.08	0.005	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	45.8	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	4930	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	6830	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	3200	500	EPA 375.4	SW	08/25/89
Temperature, °C (field)	15.8	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	5100	2	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

Report To: FMC Corporation Page: 10 of 28

Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #13A

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	250	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	3.8	0.2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.09	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0005	EPA 8150	GD/RJ	08/16/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
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Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #14

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	420	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	2.1	NA	NA	MA/SC	08/08/89
Iron (Fe) *	78.0	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.008	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	ND	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.5	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.5	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.05	0.005	EPA 420.1	MM/TS	08/18/89
Potassium (K) *	63.3	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	2330	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	1920	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	1300	200	EPA 375.4	SW	08/25/89
Temperature, °C (field)	17.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	1500	2	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #14

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	100	1	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	4.4	0.2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.05	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/16/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #15

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	6300	50	EPA 325.3	RAH	08/10/89
Chromium (Cr), Hexavalent *	ND	0.1	SM 312B	TS	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Copper (Cu)	0.02	0.01	EPA 220.1	KG	08/21/89
Endrin	ND	0.02	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	10.9	NA	NA	MA/SC	08/08/89
Iron (Fe) *	0.18	0.01	EPA 236.1	KG	08/21/89
Lindane	ND	0.002	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.01	EPA 8080	GD/RJ	08/18/89
Nickel (Ni)	0.04	0.02	EPA 249.1	KG	08/21/89
pH (field)	6.4	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.5	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	21	0.3	EPA 420.1	TS	08/18/89
Potassium (K) *	2300	10	EPA 258.1	KG	08/21/89
Specific Conductance (field)	12020	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	17890	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	4500	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	17.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	11000	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #15

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	1200	10	EPA 415.1	MM	08/11/89
Total Organic Halogen (A)	26	2	EPA 9020	CM	08/19/89
Toxaphene	ND	0.07	EPA 8080	GD/RJ	08/18/89
Zinc (Zn)	0.02	0.01	EPA 289.1	KG	08/21/89
2,4-D	ND	0.03	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.005	EPA 8150	GD/RJ	08/16/89

Notes: (1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) *-Analyses performed on filtered (0.45 micron) sample.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #16

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	4200	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	0.67	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	3.6	NA	NA	TS/SC	08/09/89
Iron (Fe) *	0.72	0.01	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.005	EPA 8080	GD/RJ	08/22/89
pH (field)	7.0	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	7.1	NA	EPA 150.1	CM	08/09/89
pH (lab B)	7.5	NA	EPA 150.1	CM	08/09/89
pH (lab C)	7.0	NA	EPA 150.1	CM	08/09/89
pH (lab D)	7.0	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	0.42	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	2700	10	EPA 258.1	KG	08/21/89
Specific Conductance (field)	18400	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	20200	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	20400	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	20500	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	20500	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	4300	1000	EPA 375.4	SW	08/25/89
Temperature, °C (field)	22.1	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	16000	4	EPA 160.1	CL/CM	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #16

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	2300	100	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	2300	100	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	2300	100	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	2400	100	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	179	20	EPA 9020	CM	08/22/89
Total Organic Halogen (B)	190	20	EPA 9020	CM	08/22/89
Total Organic Halogen (C)	183	20	EPA 9020	CM	08/22/89
Total Organic Halogen (D)	176	20	EPA 9020	CM	08/22/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.02	EPA 8150	GD/RJ	08/17/89
2,4,5-TP (Silvex)	ND	0.01	EPA 8150	GD/RJ	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #17

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	710	5	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	2.6	NA	NA	TS/SC	08/09/89
Iron (Fe) *	209	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.007	EPA 8080	GD/RJ	08/22/89
pH (field)	4.6	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	4.3	NA	EPA 150.1	CM	08/09/89
pH (lab B)	4.5	NA	EPA 150.1	CM	08/09/89
pH (lab C)	4.3	NA	EPA 150.1	CM	08/09/89
pH (lab D)	4.3	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	0.37	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	12.9	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	2480	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	3040	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	2930	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	3030	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	3020	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	400	10	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.2	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	2400	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #17

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	64	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	60	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	76	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	87	1	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	35	5	EPA 9020	CM	08/22/89
Total Organic Halogen (B)	42	3	EPA 9020	CM	08/22/89
Total Organic Halogen (C)	41	3	EPA 9020	CM	08/22/89
Total Organic Halogen (D)	40	5	EPA 9020	CM	08/22/89
Toxaphene	ND	0.04	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.001	EPA 8150	GD/RJ	08/17/89
2,4,5-TP (Silvex)	ND	0.001	EPA 8150	GD/RJ	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #22

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	260	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD	08/21/89
Ground Water Elevation (field)	15.6	NA	NA	MA/SC	08/08/89
Iron (Fe) *	19.3	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.003	EPA 8080	GD	08/21/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.03	EPA 8080	GD	08/18/89
pH (field)	5.7	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	5.8	NA	EPA 150.1	MM	08/08/89
pH (lab B)	5.9	NA	EPA 150.1	MM	08/08/89
pH (lab C)	5.8	NA	EPA 150.1	MM	08/08/89
pH (lab D)	5.8	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.18	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	0.8	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	800	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	885	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	866	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	871	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	947	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	650	100	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.6	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	589	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #22

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	49	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	54	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	48	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	49	1	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	36	5	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	35	5	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	42	5	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	38	5	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0006	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	230	5	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.003	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	15.5	NA	NA	MA/SC	08/08/89
Iron (Fe) *	61.5	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.003	EPA 8080	GD	08/21/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.03	EPA 8080	GD/RJ	08/18/89
pH (field)	5.9	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.0	NA	EPA 150.1	MM	08/08/89
pH (lab B)	6.0	NA	EPA 150.1	MM	08/08/89
pH (lab C)	6.0	NA	EPA 150.1	MM	08/08/89
pH (lab D)	6.0	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.17	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	0.8	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	638	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	743	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	738	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	738	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	745	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	1500	200	EPA 375.4	SW	08/25/89
Temperature, °C (field)	19.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	487	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #23

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	32	1	EPA 415.1	RAH	08/16/89
Total Organic Carbon (B) *	31	1	EPA 415.1	RAH	08/16/89
Total Organic Carbon (C) *	29	1	EPA 415.1	RAH	08/16/89
Total Organic Carbon (D) *	30	1	EPA 415.1	RAH	08/16/89
Total Organic Halogen (A)	73	2	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	57	10	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	73	5	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	66	5	EPA 9020	CM	08/19/89
Toxaphene	ND	0.1	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0005	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

Irving M. Kipnis
Laboratory Director
Irving M. Kipnis, Ph.D.

Please see reverse side for explanations and other information.

Gascoyne Laboratories, Inc.

ORIGINAL (Red)

Baltimore, MD 21224-6697

BALTIMORE, M.D.
(301) 285-8510

FAX #
(301) 285-0815

REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #24

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	120	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	15.4	NA	NA	MA/SC	08/08/89
Iron (Fe) *	52.9	0.1	EPA 236.1	KG	08/21/89
Lindane	ND	0.002	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.02	EPA 8080	GD/RJ	08/18/89
pH (field)	6.0	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	6.1	NA	EPA 150.1	MM	08/08/89
pH (lab B)	6.2	NA	EPA 150.1	MM	08/08/89
pH (lab C)	6.1	NA	EPA 150.1	MM	08/08/89
pH (lab D)	6.2	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.02	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	0.6	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	479	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	474	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	481	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	482	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	477	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	800	100	EPA 375.4	SW	08/25/89
Temperature, °C (field)	17.3	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	347	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #24

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (B) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (C) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Carbon (D) *	15	1	EPA 415.1	TS	08/14/89
Total Organic Halogen (A)	0.46	0.02	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	0.18	0.04	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	0.24	0.02	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	0.17	0.02	EPA 9020	CM	08/19/89
Toxaphene	ND	0.06	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.003	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.0005	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	120	2	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.001	EPA 8080	GD/RJ	08/18/89
Ground Water Elevation (field)	26.9	NA	NA	MA/SC	08/08/89
Iron (Fe) *	0.39	0.01	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/18/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.01	EPA 8080	GD/RJ	08/18/89
pH (field)	6.7	NA	EPA 150.1	MA/SC	08/08/89
pH (lab A)	7.9	NA	EPA 150.1	MM	08/08/89
pH (lab B)	6.8	NA	EPA 150.1	MM	08/08/89
pH (lab C)	7.2	NA	EPA 150.1	MM	08/08/89
pH (lab D)	7.1	NA	EPA 150.1	MM	08/08/89
Phenols (4-AAP)	0.20	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	19.4	0.1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	684	NA	EPA 120.1	MA/SC	08/08/89
Specific Conductance (lab A)	821	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab B)	810	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab C)	808	NA	EPA 120.1	MM	08/08/89
Specific Conductance (lab D)	806	NA	EPA 120.1	MM	08/08/89
Sulfate (SO_4) *	360	50	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.4	NA	EPA 170.1	MA/SC	08/08/89
Total Dissolved Solids *	761	1	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #25

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	65	1	EPA 415.1	MM	08/15/89
Total Organic Carbon (B) *	61	1	EPA 415.1	MM	08/15/89
Total Organic Carbon (C) *	60	1	EPA 415.1	MM	08/15/89
Total Organic Carbon (D) *	62	1	EPA 415.1	MM	08/15/89
Total Organic Halogen (A)	160	2.0	EPA 9020	CM	08/19/89
Total Organic Halogen (B)	1.08	20	EPA 9020	CM	08/19/89
Total Organic Halogen (C)	134	10	EPA 9020	CM	08/19/89
Total Organic Halogen (D)	129	10	EPA 9020	CM	08/19/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/18/89
2,4-D	ND	0.007	EPA 8150	GD/RJ	08/16/89
2,4,5-TP (Silvex)	ND	0.004	EPA 8150	GD/RJ	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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Irving M. Kipnis, Ph.D.

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REPORT OF ANALYSIS

Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Cadmium (Cd) *	ND	0.01	EPA 213.1	KG	08/21/89
Chloride (Cl) *	1900	25	EPA 325.3	RAH	08/10/89
Chromium (Cr), Total *	ND	0.05	EPA 218.1	KG	08/21/89
Endrin	ND	0.002	EPA 8080	GD/RJ	08/22/89
Ground Water Elevation (field)	2.4	NA	NA	TS/SC	08/09/89
Iron (Fe) *	916	1	EPA 236.1	KG	08/21/89
Lindane	ND	0.001	EPA 8080	GD/RJ	08/22/89
Mercury (Hg) *	ND	0.005	EPA 245.1	FK	08/15/89
Methoxychlor	ND	0.005	EPA 8080	GD/RJ	08/22/89
pH (field)	5.3	NA	EPA 150.1	TS/SC	08/09/89
pH (lab A)	5.4	NA	EPA 150.1	CM	08/09/89
pH (lab B)	5.4	NA	EPA 150.1	CM	08/09/89
pH (lab C)	5.3	NA	EPA 150.1	CM	08/09/89
pH (lab D)	5.3	NA	EPA 150.1	CM	08/09/89
Phenols (4-AAP)	0.04	0.005	EPA 420.1	TS	08/25/89
Potassium (K) *	190	1	EPA 258.1	KG	08/21/89
Specific Conductance (field)	8200	NA	EPA 120.1	TS/SC	08/09/89
Specific Conductance (lab A)	8490	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab B)	8530	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab C)	8490	NA	EPA 120.1	MM	08/09/89
Specific Conductance (lab D)	8450	NA	EPA 120.1	MM	08/09/89
Sulfate (SO_4) *	4000	500	EPA 375.4	SW	08/25/89
Temperature, °C (field)	18.8	NA	EPA 170.1	TS/SC	08/09/89
Total Dissolved Solids *	6900	2	EPA 160.1	CL	08/16/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.
(5) *-Specific Conductance expressed as micromhos/cm.

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Report No. 89-08-198 Report Date: September 12, 1989

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Sample I.D. Monitoring Well samples taken by Gascoyne Laboratories, Inc., on 8/8/89 and 8/9/89 at the Patapsco Avenue location.

Well Number: #27

	Results	Detection Limits	Method	Analyst	Date Test Completed
Total Organic Carbon (A) *	430	10	EPA 415.1	MM	08/16/89
Total Organic Carbon (B) *	430	10	EPA 415.1	MM	08/16/89
Total Organic Carbon (C) *	420	10	EPA 415.1	MM	08/16/89
Total Organic Carbon (D) *	420	10	EPA 415.1	MM	08/16/89
Total Organic Halogen (A)	6.7	1	EPA 9020	CM	08/22/89
Total Organic Halogen (B)	7.2	1	EPA 9020	CM	08/22/89
Total Organic Halogen (C)	6.7	1	EPA 9020	CM	08/22/89
Total Organic Halogen (D)	7.8	1	EPA 9020	CM	08/22/89
Toxaphene	ND	0.03	EPA 8080	GD/RJ	08/22/89
2,4-D	ND	0.001	EPA 8150	GD/RJ	08/17/89
2,4,5-TP (Silvex)	ND	0.001	EPA 8150	GD/RJ	08/17/89

Notes:
(1) Results are expressed in mg/liter.
(2) ND-Not Detected.
(3) NA-Not Applicable.
(4) *-Analyses performed on filtered (0.45 micron) sample.

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Please see reverse side for explanations and other information.

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APPENDIX K

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many former manufacturing operations, the practice of on-site disposal of both process and non-process residuals, and inherent uncertainties regarding timing, volumes, locations and substances, make it difficult to assess property-specific characteristics. Consequently, the study approach considers the FMC property by geographic study areas.

The following areas represent a reasonable spatial subdivision of the FMC property as a means of evaluating site characteristics and possibly identifying specific areas of concern:

A. Former Surge Pond Area

B. Former Coal Pile Area

C. Former R & D Area

D. Former Fermentation Area

E. Former Sluiceway Area

F. Inactive Disposal Area

G. Southwest Plant Complex

H. Stormwater Retention Basin Area

I. Firewater Pond Area

These areas are identified on Figure 3. Note that many of the areas are the result of former practices. The remainder of this Report will address the overall FMC property by considering each property-specific study area.

2.03.3.1 Former Surge Pond Area:

The former surge pond area is the most hydraulically upgradient location on the FMC property. This area is contiguous to the existing Pounce® manufacturing facilities. Chemical manufacturing has occurred in the former surge pond area since

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before 1957. The surge pond itself was formerly used to collect stormwater runoff in the area. Water collected in the pond was pumped to treatment prior to permitted discharge to Stonehouse Cove. The surge pond was closed in 1983 and has since been removed.

2.03.3.2 Former Coal Pile Area:

The former coal pile area was reportedly used for coal storage for many years. Coal usage was discontinued in the early 1950's.

2.03.3.3 Former R & D Area:

The former R & D (research & development) area was previously used for various R & D applications. The buildings were demolished in 1972. Waste solvents were generated by the R & D facilities. A nearby subsurface steel tank was used to store spent solvents and reportedly was pumped out for disposal. The tank was subsequently excavated and removed.

2.03.3.4 Former Fermentation Area:

The former fermentation area previously contained buildings involved in the fermentation of molasses to various intermediate and end products. All of these buildings have been demolished. The basement of one of these buildings was reportedly used for open burning of trash and waste materials from offices and manufacturing. This building's foundation has since been filled with debris and rubble.

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2.03.3.5 Former Sluiceway Area:

A concrete sluiceway was previously used to convey wastewater to the southern part of the plant site with ultimate discharge to Curtis Bay. The sluiceway was abandoned and backfilled in 1972.

2.03.3.6 Inactive Disposal Area:

The inactive disposal area had been used for many years for disposal of manufacturing wastes and construction debris. On-site disposal in this area ceased during 1975. Both its boundaries and contents are poorly defined. Available information indicates that a variety of bulk and containerized residues from chemical production were disposed in this area. Materials believed present include acetoacetarylides, carbamates, pyrethrum flower residues, 7-OH tar, 7-Nitro centrifuge bottoms, Ethion® wastes, and Butacide® tars.

2.03.3.7 Southwest Plant Complex:

The southwest plant complex, along the eastern shore of Stonehouse Cove, was the site of lagoons, water intakes and outfalls, and old process facilities. Between 1970 and 1980 the lagoons were filled, the outfalls decommissioned, and the shoreline recontoured. In addition, this area includes many gravity sewers, sumps and storage tanks associated with past and present manufacturing operations. The gravity sewers and sumps in this area are being inspected as part of a plant-wide program. Those facilities of questionable integrity have been and are being rehabilitated or removed. For example, a sump located near Well 8 was

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inspected and was determined to have a sizable opening. The sump contained activated carbon and wastewater associated with the Calgon treatment system. The sump was cleaned and taken out of service until properly repaired.

2.03.3.8 Stormwater Retention Basin Area:

An impoundment was constructed around 1960 in the vicinity of the present Stormwater Retention Basin (SRB). This impoundment reportedly contained spent acid from the manufacture of Tedion®, an agricultural chemical. This acid impoundment was removed from service in the early 1970s. It reportedly was excavated and residues were disposed off-site during expansion of the 7-OH Plant 3 facility.

The Stormwater Retention Basin was constructed in 1976 to collect stormwater runoff from the 7-OH plant area. It is presently a single clay liner surface impoundment, but is proposed to be removed and replaced with a dual cell, subsurface, rectangular concrete tank. Regulatory review, allocation of funds, engineering design, contractor selection, and equipment delivery will dictate the replacement schedule.

2.03.3.9 Firewater Pond Area:

The Firewater Pond was constructed in 1976, in conjunction with the Stormwater Retention Basin. The Firewater Pond contains brackish water pumped from Curtis Bay. It is used as a source of water to be used in the event of a fire.

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APPENDIX L

1987

ORIGINAL (Red)

State of Maryland

DEPARTMENT OF THE ENVIRONMENT

201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201
AREA CODE 301 • 225-5647

William Donald Schaefer
Governor

Martin W. Walsh, Jr.
Secretary

CONTROLLED HAZARDOUS SUBSTANCES FACILITY PERMIT

Permit Number: A-023

Effective Date: October 5, 1987

Expiration Date: October 4, 1990

Pursuant to the Provisions of Health-Environmental Article, Section 7-232, Annotated Code of Maryland and regulations promulgated thereunder, the Office of Environmental Programs, Waste Management Administration, hereinafter referred to as "WMA" hereby authorizes

FMC Corporation
Agricultural Chemical Group

to operate a controlled hazardous substances Incinerator facility located at 1701 East Patapsco Avenue, Baltimore, Maryland in accordance with the following special and general conditions including the attached map made a part hereof, and the provisions of COMAR 10.51. Applicable regulations are those which are in effect on the date of issuance of this permit.

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated August, 1981 as modified by subsequent amendments dated January 13, 1984; August 10, 1984; February 28, 1985; April 10, 1985; September 4, 1985; October 31, 1985; September 4, 1986; September 30, 1986; December 4, 1986; December 31, 1986; April 1, 1987; April 2, 1987; April 24, 1987; May 5, 1987; June 16, 1987; June 23, 1987; July 14, 1987; and July 29, 1987 (hereafter referred to as the application) is accurate and that the facility will be constructed and/or operated as specified in the application. Any inaccuracies found in this information may be grounds for the termination or modification of this permit (see COMAR 10.51.07.02 J) and potential enforcement action. The Permittee must inform the WMA of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

PART III - INCINERATION

A. WASTE IDENTIFICATION

1. The Permittee may not incinerate any off-site generated waste.

2. The Permittee shall incinerate only the following on-site generated wastes:

NON-CHS WASTES

Liquid Waste Streams

a. Super Tar
b. Claisen Tar
c. 7-OH Tars (Plants I, III, IV)
d. DV Ester Step 1 Waste
e. DV Ester Step 3 Waste
f. Plant 4 CD-101 Flush Oil
g. Plant 4 Tars (U-11 and U-12 tars)
h. Waste No. 2 Fuel Oil
i. Waste Oil
j. Command Herbicide Organic Waste Stream
k. Diallyl Phthalates

Gaseous Waste Streams

l. Xylene Waste Gas Stream
m. 7-OH Plant III Step I Gas Steam

CHS WASTES

n. Second Basin Oil
o. Third Basin Oil
p. Waste Methanol
q. TMOA Waste (trimethyl-orthoacetate)
r. MAC Waste (Methallyl chloride)
s. Allyl Alcohol/Ether

t. Pounce Organics

u. DV Ester Step 3 Head Cut C/A

v. DV Ester Step 3 Bottoms

w. Heptane

x. Hexane

y. Xylene from 7-OH

z. Plant 4 Organics

B. WASTE FEED LIMITATIONS

1. The Permittee shall incinerate wastes listed in (A) above within the specifications listed below, except as provided in B.2 below:

   a. Total BTU loading from all wastes fed to the incinerator: less than or equal to 4.5×10^7 BTU/hour.

   b. Total chlorine loading from all wastes fed to the incinerator: less than or equal to [redacted]r.

   c. Total ash loading: less than or equal to [redacted] lbs/hour.

   d. Viscosity of waste streams fed through the organics nozzle: less than or equal to 50 centipoise at 100°F.

   e. Gaseous xylene waste feed rate: less than or equal to [redacted]ubic feet per minute (ACFM).

2. The Permittee, when incinerating CHS wastes listed in (A) above which contain Appendix V constituents shall comply with the specifications listed below:

   a. Waste methanol feed rate: less than or equal to [redacted]/hr. avg on 1 Hr. 5%

   b. Combined feed rate of all 7-OH Tars: less than or [redacted]bs/hr.

   c. Waste Super Tar/Claisen Tar feed rate: less than [redacted]bs/hr.

   d. Total ash loading: less than or equal to [redacted]hour.

regulation flow rate violation on fan rec or row but rate for Hole Hour is in limit

C. OPERATING CONDITIONS

1. The Permittee shall incinerate wastes listed in (A) only when the incinerator is operating within the specifications listed below:

   a. Stack gas carbon monoxide (CO) concentration; less than or equal to:

      i. 500 ppm average corrected to 7% oxygen for any ten minute period

      ii. 100 ppm average corrected to 7% oxygen for any 60 minute period

   b. In determining compliance with (a) above assume a constant 15% oxygen level in the stack gas.

   c. Combustion chamber temperature as measured by the [redacted]s in the combustion chamber: [redacted] when burning [redacted] containing [redacted]ents; [redacted]F when burning any waste which does not contain Appendix V constituents. Any excursions below these limits shall be for less than [redacted] consecutive s[redacted].

   d. Primary combustion chamber air flow, including the xylene waste gas stream: less than or equal to [redacted]. Any excursions above this limit shall be for less than [redacted]cutive [redacted].

   e. Secondary combustion chamber air flow: less than or equal to [redacted]. Any excursions above this limit shall be for less than sixty [redacted] consecutive seconds.

   f. Venturi quench column process water flow rate: greater than or equal to [redacted]. Any excursions below this limit shall be for less than sixty [redacted] consecutive seconds.

   g. Venturi quench column make-up water flow rate: greater than or equal to [redacted] Any excursions below this limit shall be for less than six[redacted] consecutive seconds.

   h. Packed tower scrubber liquid flow rate: greater than or equal to [redacted]. Any excursions below this limit shall be for less than [redacted] (60) consecutive seconds.

i. Scrubber liquid pH: greater than 5.5 and less than 9.5. Any excursions outside of this pH range shall be for less than ten ([redacted]ive minutes.

j. Wet electrostatic precipitator (WESP) recirculating pump flow rate: greater than or equal to 160 gpm. Any excursions below this limit shall be for less than six[redacted]onsecutive [redacted]s.

k. WESP make-up water flow rate: greater than or equal to 18 gpm. Any excursions below this limit shall be for less than sixty (60) [redacted]tive [redacted]s.

l. WESP DC voltage: greater than or equal to [redacted]V. Any excursions below this limit shall be for less than sixty[redacted]ecutive seconds.

m. Combustion chamber pressure: less than atmospheric. Any excursions above atmospheric pressure shall be for less than [redacted]0) co[redacted]ive seconds.

2. The Permittee may not introduce wastes into the incinerator unless the incinerator and associated equipment are operating within the conditions specified above.

3. Within 120 days of permit issuance, the Permittee shall install, operate, maintain, and calibrate a system to [redacted] off waste feed to the incinerator. This system shall be operated whenever CHS wastes containing Appendix V constituents are fed to the incinerator and shall be operated to shut off any CHS waste stream containing Appendix V constituents when the conditions listed below are violated.

IV 2|1

a. Exhaust gas carbon monoxide concentration is greater than:

i. An average of 500 ppm for any ten-minute period corrected to 7% oxygen.

ii. An average of 100 ppm for any sixty-minute period corrected to 7% oxygen.

b. In determining compliance with a. above assume a constant 15% oxygen level in the stack gas.

c. The incinerator combustion chamber temperature, as measured by the thermocouples in the combustion chamber, falls below [redacted] for sixty (60) [redacted] seconds.

d. Primary combustion air flow including the gaseous xylene waste stream: [redacted] ACFM for [redacted] consecutive seconds.

e. The secondary combustion air flow: greater than [redacted] for sixty (60) [redacted] seconds.

f. Scrubber liquid flow rate: less [redacted] gallons per minute for sixty [redacted] consecutive seconds.

g. WESP DC voltage: less than 20 [redacted] for sixty (60) consecutive seconds.

4. If there is an incinerator shut-down or any of the automatic waste feed cut-off systems activate, the Permittee may not re-introduce waste to the incinerator until the cause of the incinerator shut down has been determined and the problem rectified.

5. The Permittee may not feed CHS wastes containing Appendix V constituents into the incinerator if any portion of the automatic waste feed cut-off system is inoperative, unless alternative monitoring approved by the Department is performed and monitored for manual shut down.

6. The Permittee may not operate the alternative monitoring required in (5) above for a period greater than [redacted] it is approved by the Secretary.

7. The Permittee shall stop all waste feed when changes in the waste feed or operating conditions are not in accordance with this permit.

D. PERFORMANCE STANDARDS

The Permittee shall operate and maintain the incinerator, in accordance with conditions III B and III C above, to meet the following performance standards:

1. A destruction and removal efficiency (DRE) greater than or equal to 99.99% for all Appendix V constituents.

ORIGINAL
(Red)

2. When burning CHS wastes containing Appendix V constituents: a hydrogen chloride (HCl) emissions rate less than or equal to 4.0 lbs/hr or 1% of the HCl in the stack gas prior to entering any pollution control equipment.

3. A particulate matter emissions less than or equal to 0.030 grains per dry standard cubic foot corrected to 12% carbon dioxide

4. No stack gas emissions which are visible to human observers other than water in an uncombined form.

E. MONITORING AND INSPECTIONS

1. The Permittee shall maintain, operate, and calibrate monitoring equipment which continuously monitors and records the following:

	Parameter	Frequency of Calibration
a.	carbon monoxide concentration of incinerator exhaust gas corrected to 7% oxygen with assumed 15% oxygen level in the stack gas	daily
b.	combustion zone temperature	quarterly
c.	primary combustion air flow	monthly
d.	secondary combustion air flow	monthly
e.	scrubber liquid flow rate	monthly
f.	WESP DC voltage	monthly

2. The Permittee shall monitor and record the following operating parameters at least every two (2) hours during incineration of wastes: process and make-up water flows to the venturi quench column, WESP recirculating pumps flow rate, WESP make-up water flow rate, and scrubber water pH.

3. The Permittee shall thoroughly visually inspect the incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) at least daily for leaks, spills, fugitive emissions, and signs of tampering.

 ORIGINAL (Red)

4. The Permittee shall test the incinerator emergency waste feed cut-off system and associated alarms at least monthly to verify operability.

F. **RECORDKEEPING**

The Permittee must maintain a written operating log at the facility. For each calendar day on which hazardous waste is burned, the log must contain the information specified below:

1. Total quantity of each waste burned.

2. Description of all maintenance performed.

3. Results of all monitoring, testing, and inspections as required in Section E.

G. **REPORTING**

1. The Permittee shall report to the Secretary all occurances in which the parameters listed in Section C violate the limits and time periods specified. The report shall describe the parameter, date, start time, duration and (where appropriate) magnitude of the exceedance. It shall also describe the cause of the exceedance, corrective measures taken to prevent reoccurrence and whether automatic shut down occurred. If there are no exceedances during a given period, the Permittee shall submit a report to that effect.

2. The Permittee shall submit the above compliance reports on a quarterly basis no later than fifteen (15) days after the end of each calendar quarter.

3. The Permittee shall immediately verbally report to the Secretary any period in which a portion of the automatic cut-off system is inoperative and it is being monitored by an alternative method for manual shutdown. A written report shall be submitted with the above quarterly report.

H. **WASTE ANALYSIS**

Throughout operation of the incinerator, the permittee shall conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical limits specified in this permit, as specified in Attachment 1, waste analysis and at a minimum each time there is a change in the composition of the waste due to a process change.

I. COMPLIANCE SCHEDULE

1. Within 120 days of issuance of this permit, the Permittee shall install a waste feed shut off system to comply with conditions C.3a above. DONE FEB. 5, 88

J. TEST SCHEDULE

Within 90 days of issuance of this permit, the Permittee shall allow the Department to conduct a test to determine the HCl removal efficiency of the air pollution control devices associated with the incinerator. DONE 3 JAN 88

K. CLOSURE

At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues (including but not limited to ash, scrubber waters, and scrubber sludges) from the incinerator site, in accordance with Attachment 6.

LIST OF ATTACHMENTS

Attachment No.		Applicability
1.	Waste Analysis Plan	Y
2.	Inspection Schedule	Y
3.	Training Outline	Y
4.	Contingency Plan	Y
5.	Incinerator and Control System Description	Y
6.	Closure Plan	Y
7.	Financial Assurance	Y

Ronald Nelson, Director
Waste Management Administration

October, 5, 1987
Date Signed

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(Red)

APPENDIX M

11/30/89 ORIGINAL (Red)

IN THE MATTER OF:	*	DEPARTMENT OF THE ENVIRONMENT
FMC Corporation	*	
	*	
SERVE ON:		Hazardous and Solid Waste
	*	Management Administration
A. Parker Dean		2500 Broening Highway
FCM Corporation	*	Baltimore, Maryland 21224
1701 E. Patapsco Avenue		
Baltimore, Maryland 21226	*	C-O-89-057

* * * * * * * * * * * * * * * * *

COMPLAINT

(1) **WHEREAS**, the State of Maryland, Department of the Environment, Hazardous and Solid Waste Management Administration pursuant to the powers, duties and responsibilities vested in the Secretary of the Environment by Environment Article, (formerly the Health-Environmental Article), Sections 1-301, 7-201 through 7-268, inclusive, Annotated Code of Maryland, and delegated to the Director, Hazardous and Solid Waste Management Administration, has reasonable grounds to believe that FMC Corporation has violated Maryland law, regulations and Controlled Hazardous Substance Facility Permit A023, issued on November 16, 1981, under Health-Environmental Article, Section 7-207, regarding storage of Controlled Hazardous Substances (CHS).

(2) **WHEREAS**, on September 9, 1988 and September 28, 1988 an inspection by representatives of the Hazardous and Solid Waste Management Administration revealed that containers of CHS were leaking and in poor condition while in storage on the 7-OH

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container storage pad. Said condition constitutes a violation of COMAR 10.51.05.03B, 10.51.05.09B and CHS Facility Permit A023 General Condition A.

(3) **WHEREAS**, on September 9, 1988 and September 28, 1988 an inspection by a representative of the Hazardous and Solid Waste Management Administration revealed that containers of CHS, namely Toluene were in storage in an unpermitted CHS container storage area. Said condition constitutes a violation of COMAR 10.51.05.03B and CHS Facility Permit A023 General Conditon A.

(4) **WHEREAS**, on September 28, 1988 a review of the inspection log for the 7-0H container storage pad revealed that no notations were made on leaking and poor condition containers noted between September 9 and September 28, 1988. Said condition constitutes a violation of COMAR 10.51.05.02E4, 10.51.05.09E and CHS Facility Permit A023 General Condition A.

(5) **WHEREAS**, on September 28, 1988 an inspection by a representative of the Hazardous and Solid Waste Management Administration revealed that thirty-six (36) fifty-five gallon drums marked CHS were in storage outside the permitted CHS container storage area. Said condition constitutes a violation of COMAR 10.51.05.03B and CHS Facility Permit A023 General Condition A.

ORDER

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(Red)

THEREFORE, it is **ORDERED** by the Director of the Hazardous and Solid Waste Management Administration that FMC Corporation shall:

1. Inspect and maintain all Controlled Hazardous Substance containers as required by all applicable COMAR 10.51 regulations and FMC Controlled Hazardous Substance Facility Permit A023 General Condition A.

2. Maintain all inspection logs required for each Controlled Hazardous Substance unit as required by COMAR 10.51 and FMC Controlled Hazardous Substance Facility Permit A023 General Condition A.

CIVIL PENALTY

(A) The Hazardous and Solid Waste Management Administration is seeking a civil penalty in this case of $4,000.00.

(B) FMC Corporation has a right to a hearing pursuant to Environment Article, Sections 7-261 (9-337), Annotated Code of Maryland. The Office of Hearings will issue a notice of hearing date and location unless prepayment of the civil penalty is made. Prepayment would constitute a waiver of a hearing.

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(C) An appearance before the Hearing Examiner constitutes an administrative hearing and FMC Corporation has the rights of any party in a contested case provided by the Maryland Administrative Procedure Act, State Government Article, Section 10-201, et seq., Annotated Code of Maryland.

(D) Depending upon the evidence presented at the hearing, the Office of Hearings may assess any penalty up to $1,000.00 for each day a violation existed or a maximum of $50,000.00.

PROCEDURE FOR REQUESTING A HEARING ON THE COMPLAINT AND ORDER

(E) FMC Corporation may obtain a hearing to contest the Complaint portion of this document by filing a written request for a hearing within ten (10) calendar days of receipt of this document in accordance with the Maryland Administrative Procedure Act, State Government Article, Section 10-201, et seq., and in accordance with the Environment Article, Section 7-261, (9-337), Annotated Code of Maryland. Such a request should be sent to Chief Hearing Examiner, Office of Hearings, 3th Floor, 2500 Broening Highway, Building # 30, Baltimore, Maryland 21224, with a copy to the Attorney who signed this document, at the Office of the Attorney General, Department of the Environment, 2nd Floor, 2500 Broening Highway, Building # 30, Baltimore, Maryland 21224.

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(F) If FMC Corporation will be represented by an attorney in an administrative hearing, the attorney must be admitted to the Bar in the State of Maryland or must be specially admitted to the Maryland Bar pursuant to Maryland Rule 20 of the Maryland Rules governing admission to the Bar. Rule 20 governs special admission of out-of-state attorneys.

If you have any questions concerning this matter, please contact Mr. Joseph Stang, Inspector, Hazardous Waste Enforcement Division, Hazardous and Solid Waste Management Administration, at (301) 631-3400.

December 2, 1988
DATE

Ronald Nelson, Director
Hazardous and Solid Waste
Management Administration

Approved as to form and legal sufficiency this 30th day of November, 1988.

Patricia A. Smith
Assistant Attorney General

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APPENDIX N

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1676.029

CLOSURE CERTIFICATION

STORMWATER RETENTION BASIN

FMC CORPORATION
BALTIMORE, MARYLAND

DECEMBER 1988

O'BRIEN & GERE ENGINEERS, INC.
1304 BUCKLEY ROAD
SYRACUSE, NEW YORK 13221

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TABLE OF CONTENTS

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SECTION 1 - INTRODUCTION	
1.01 Background	1
1.02 Objectives	2
SECTION 2 - CLOSURE ACTIVITIES	
2.01 Inventory Management	3
2.02 Facility Decontamination	3
2.03 Cover Installation	5
2.04 Leachate Management	6
2.05 Closure Certification	7

FIGURES

1 Site Plan

2 Projected Closure Schedule

APPENDICES

A. Stabilized Residue/Fabrication Disposal Manifest Summary
B. Soil Sample Figure/Test Results
C. Decontamination Wipe Test Results
D. Clay Source Test Data
E. Compacted Soil Backfill Test Results
F. Compacted Clay Test Results
G. Cover Layer Test Results

EXHIBITS

A. Closure Plan Approval

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SECTION 1 - INTRODUCTION

1.01 Background

FMC Baltimore utilized a Stormwater Retention Basin to collect site runoff prior to on-site treatment and discharge to municipal sewer systems. Figure 1 is a site plan showing the location of the impoundment within the FMC property. The basin was constructed during 1976 and placed in operation in March 1977.

Analysis of basin influent and contents indicated that the impoundment occasionally contained liquids with a pH greater than 12.5 or less than 2.0. Therefore, the impoundment was classified as a hazardous waste storage facility and subject to the provisions of RCRA and COMAR 10.51. A RCRA Part B application was submitted to the State of Maryland in November 1985.

FMC decided to replace the impoundment with a tank system. Evaluation of several alternatives resulted in the selection of a below grade concrete tank with a primary and secondary HDPE liner. The selected location for the replacement facility was the same as the surface impoundment to take advantage of existing waste water and storm water transfer facilities.

A Closure Plan for the surface impoundment was submitted to the State of Maryland (State) and United States Environmental Protection Agency (EPA) in June 1987. A public hearing was held in September 17, 1987 to provide an opportunity for public comment on the Closure Plan. On October 6, 1987 the State approved the Closure Plan with the modifications presented in Exhibit A.

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The construction of the replacement tank system was integral to the closure of the surface impoundment. Consequently the closure schedule, presented as Figure 2, resulted in completion of closure when the new facility was operational. The facility completed start-up testing during 1988.

1.02 Objectives

The approved Closure Plan included the submission of Closure Certification by both an independent Professional Engineer and FMC that the impoundment had been closed in accordance with the approved Closure Plan. The purpose of this Closure Certification Report is to document testing conducted during closure activities and provide a certification by an independent engineer that closure was completed in accordance with the approved Closure Plan.

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SECTION 2 - CLOSURE ACTIVITIES

2.01 Inventory Management

When construction on the impoundment began it contained stormwater runoff and residual sludge. These substances were managed differently.

The storm water was pumped from the impoundment to the existing waste water treatment system for pre-treatment prior to discharge to the Patapsco waste water treatment facility. In addition, any water which entered the construction area during closure was managed in the same way.

The residual sludge was solidified using calcium oxide in roll off boxes. The solidified material was then transferred to transport vehicles for disposal at the permitted hazardous waste management facility operated by GSX Services (SCD070375985) located in Pinewood, South Carolina. Appendix A summarizes the information on shipments of solidified residue to the GSX disposal facility. The total mass of residue stabilized and disposed of off-site was approximately 1097 tons.

2.02 Facility Decontamination

Facility and equipment decontamination included several different operations. FabriForm erosion protection was removed and where contaminated disposed of in an off-site permitted facility. Equipment used during the operation of the impoundment was either stored and reused with the replacement tank, decontaminated, or disposed of off-site at a permitted facility.

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Construction equipment was decontaminated on site, in accordance with the Closure Plan, prior to leaving the work area.

The stained FabriForm and other concrete removed from the impoundment was transported to the GSX facility in Pinewood, South Carolina. Appendix A presents a summary of shipments based on the copies of manifests retained by FMC. The total mass of FabriForm and concrete sent to GSX was approximately 504 tons.

Upon completion of residue removal and FabriForm removal the impoundment retained a portion of its clay liner. A series of tests was conducted on the liner to determine residual concentration to be encapsulated beneath the replacement tank. Appendix B presents the sample locations and test results from this effort. The results demonstrate that the residue was effectively removed prior to initiation of tank construction. The concentration of five indicator compounds in the soil at final grades was in the part per million range, demonstrating over 99.9% reduction from pre-closure concentrations.

Equipment used during construction included earth moving equipment, pile drivers, trucks, and steel sheeting. This equipment was rinsed and then steam cleaned to remove construction area residues. Prior to leaving the site the equipment was wipe tested using procedures presented in Appendix C. The results of the testing, presented in Appendix C, demonstrated that the equipment was decontaminated in accordance with the approved Closure Plan prior to leaving the construction area.

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An asphalt pavement storage area was constructed as part of the closure program. The storage area was used to store soil from the impoundment area during the construction of the replacement tank. The stored soils were used to backfill against the concrete tank walls. When the asphalt area was empty it was washed down to remove residual soils. A wipe sample was collected and analyzed for selected parameters. The results of that sampling and analyses are presented in Appendix C. These results demonstrate that the closure was completed in accordance with the approved Closure Plan.

2.03 Cover Installation

A portion of the area occupied by the surface impoundment is now occupied by a smaller tank system. The remaining area was backfilled with soil from the excavation for the tank. The placed backfill was overlain by a clay cap system which was covered by asphalt.

The clay used to construct the clay cover was obtained from Campbell Sand and Gravel. Appendix D presents the results of testing conducted on the clay prior to selection for use. The results demonstrate that the clay met the specifications within the approved Closure Plan.

Prior to installation of the clay the soil backfill was compacted. Appendix E presents the results of testing done on the compacted soil. Subsequent to clay compaction samples were collected to demonstrate compliance with the approved Closure

ORIGINAL (Red)

Plan. The results presented in Appendix F demonstrate that the installed clay met the specifications contained in the approved Closure Plan.

Overlying the clay layer is a granular subbase for the asphalt cover. Appendix G presents quality control data on the granular base. The data demonstrate compliance with the approved Closure Plan.

Bound separately are as-built plans which document the construction of the replacement facility. Included within the as-built package are final grades and elevations for the concrete tank system and surrounding clay cap system. Visual inspection of the closed facility confirms that precipitation drains rapidly to the facilities sewer system in accordance with the approved Closure Plan.

2.04 Leachate Management

Rainfall and ground water infiltration to the construction area was pumped from the excavation to FMC's process waste water pretreatment facilities. The effluent was routed to the Patapsco waste water treatment facility for permitted discharge. This water management was in accordance with the approved Closure Plan.

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2.05 Closure Certification

Certification of Closure is required under 40 CFR 265 and COMAR 10.51.05.07F. I am familiar with the closure actions and the approved Closure Plan and certify that closure of the Stormwater Retention Basin has been completed in accordance with the approved Closure Plan.

Steve R. Garver, P.E.
Vice President
New York State License No. 052526

LICENSED PROFESSIONAL ENGINEER
STEVEN R. GARVER
No. 052526
STATE OF NEW YORK

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

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Appendices

O'BRIEN & GERE

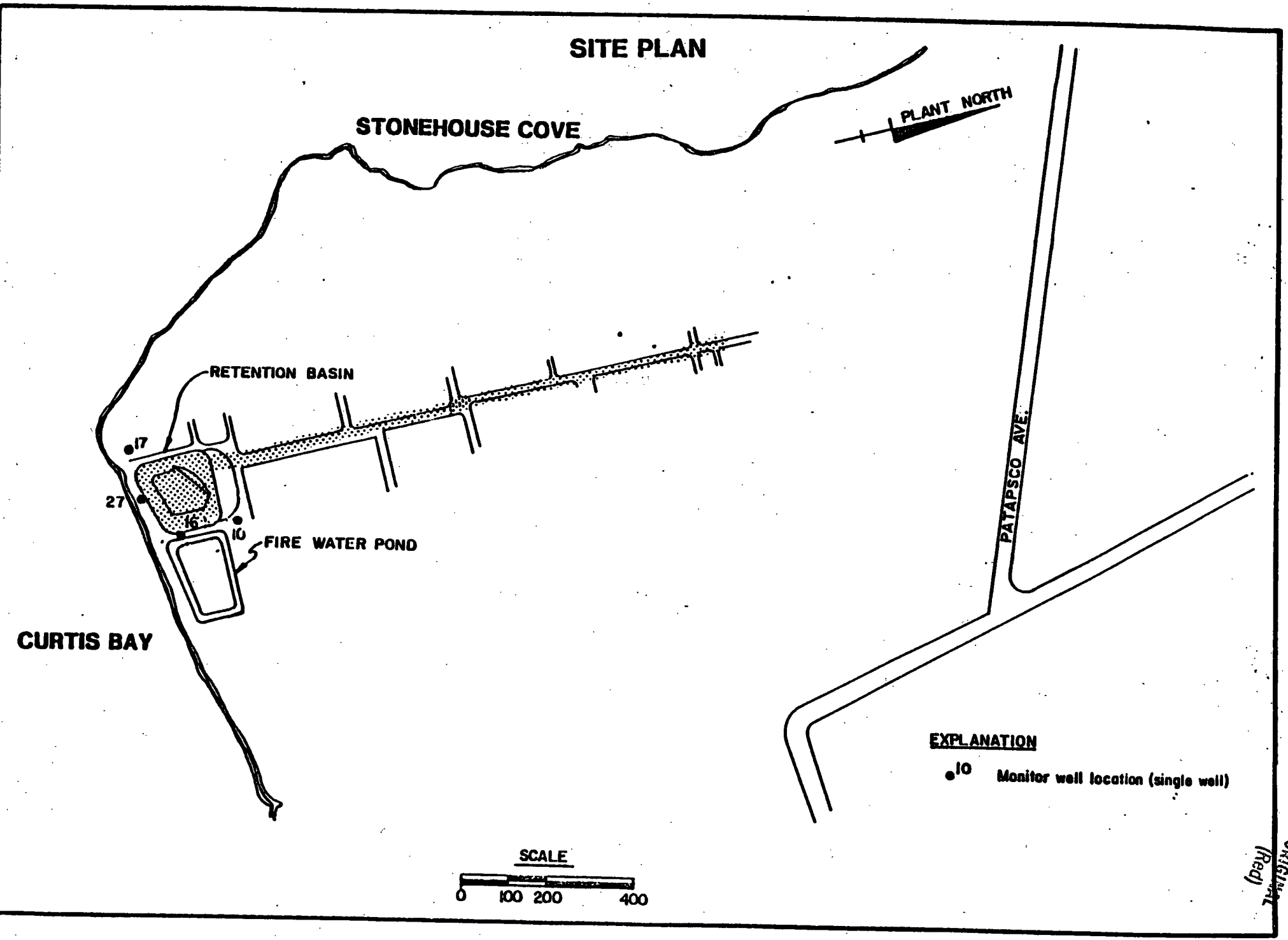
SITE PLAN
STONEHOUSE COVE
PLANT NORTH
RETENTION BASIN
17
27
16
10
FIRE WATER POND
CURTIS BAY
PATAPSCO AVE.
EXPLANATION
10 Monitor well location (single well)
SCALE
0 100 200 400

FIGURE 1

(Red)

FMC BALTIMORE
STORMWATER RETENTION BASIN
PROJECTED CLOSURE SCHEDULE

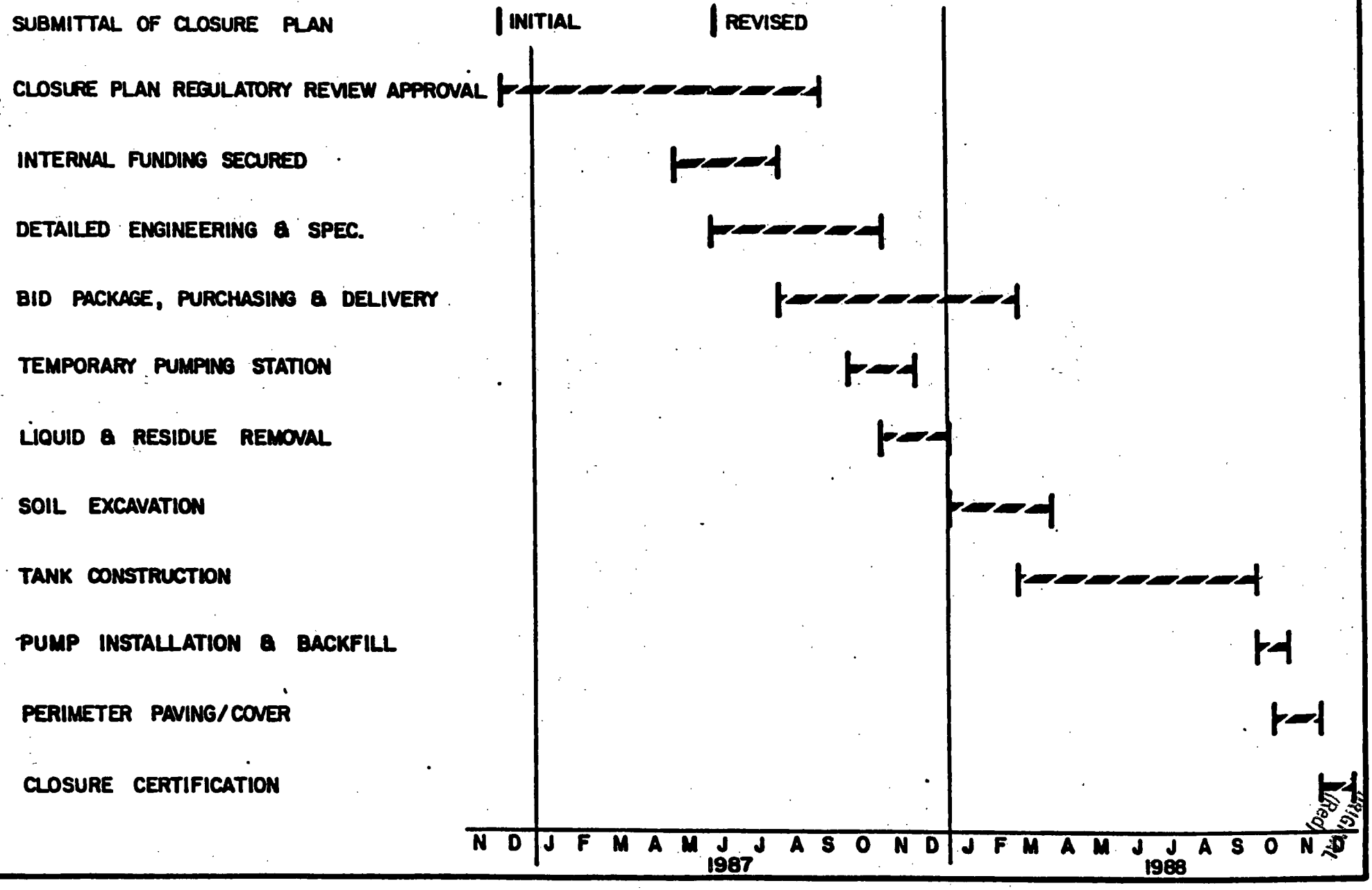

FIGURE 2

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CURRIEN & GERE

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Appendices

O'BRIEN & GERE

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APPENDIX A

STABILIZATION RESIDUE/FABRICATION DISPOSAL MANIFEST SUMMARY

ORIGINAL (Red)

APPENDIX A
STABILIZED RESIDUE DISPOSAL MANIFEST SUMMARY[1]

DATE	MANIFEST NO.	MASS (lbs)
11/22/87	90500	33380
	90501	32560
	90502	33980
	90503	32380
11/30/87	90504	25520
	90505	22840
	90506	22120
	90507	37140
	90508	31840
	90509	38960
	90510	32940
	90511	35440
	90512	30180
	90513	32040
12/2/87	90514	38160
	90515	41120
	90516	39440
	90517	33500
	90518	36540
	90519	41120
	90520	37280
	90521	35720
	90522	22960
	90523	37620
	90524	37560
11/4/87	90525	34080
	90526	35360
	90527	33220
	90528	37960
	90529	41940
	90530	40020
	90531	33800
	90532	36780
	90533	40560
	90534	42960
	90535	42960
	90536	42980
	90537	38580
	90538	41160
	90539	40820
	90540	42480
	90541	39780
	90542	41860
	90543	38980

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APPENDIX A
STABILIZED RESIDUE DISPOSAL MANIFEST SUMMARY[1]
(continued)

DATE	MANIFEST NO.	MASS (lbs)
12/8/87	90544	29200
	90545	34820
	90546	40100
	90547	40400
	90548	39220
	90549	35220
	90550	33580
	90551	36240
	90552	33360
	90553	34080
12/9/87	90554	33060
12/10/87	90555	37820
	90556	32920
	90557	34480
	90558	35460
	90559	37260
	90560	38400
	90561	35980
	90562	34300
	90563	35180
	90564	34160
	90565	35660
12/14/87	90566	41320
	90567	40720
	90568	41420
	90569	38140
	90570	40120
	90571	40100
	90572	39480
	90573	36100
	90574	41780
	90575	35700
12/16/87	90576	35480
	90577	37680
	90578	42620
	90579	41640
	90580	40700
	90581	46320
	90582	41000
	90583	42660
	90584	38700
	90585	377620
	90586	38640
	90587	38540
	90588	35460

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APPENDIX A
STABILIZED RESIDUE DISPOSAL MANIFEST SUMMARY[1]
(continued)

DATE	MANIFEST NO.	MASS (lbs)
12/16/87	90589	35860
	90590	44760
	90591	36020
	90596	34760
	90597	34940
	90598	36820
	90599	40280
7/7/88	90103	43180
	90104	44000
TOTAL		3,632,120 (1816 tons)[2]

(1) Stabilized residue and FabriForm hauled to GSX Services of South Carolina Inc.Route #1, Pinewood, SC 29125, (803) 452-5003. SCD070375985 was 1816 tons. Approximate mass of components was as follows: residue (1097 tons), lime (215 tons), FabriForm and other concrete debris (504 tons).

(2) Estimated components:
residue - 1097 tons
lime - 215 tons
FabriForm and other concrete debris - 504 tons

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APPENDIX B

SOIL SAMPLE FIGURE/TEST RESULTS

ORIGINAL
(Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date December 31, 1987

From A. P. Dean

cc DWHorgan
BLJohansen
CFKusiak
DWPalmer
AFShanta

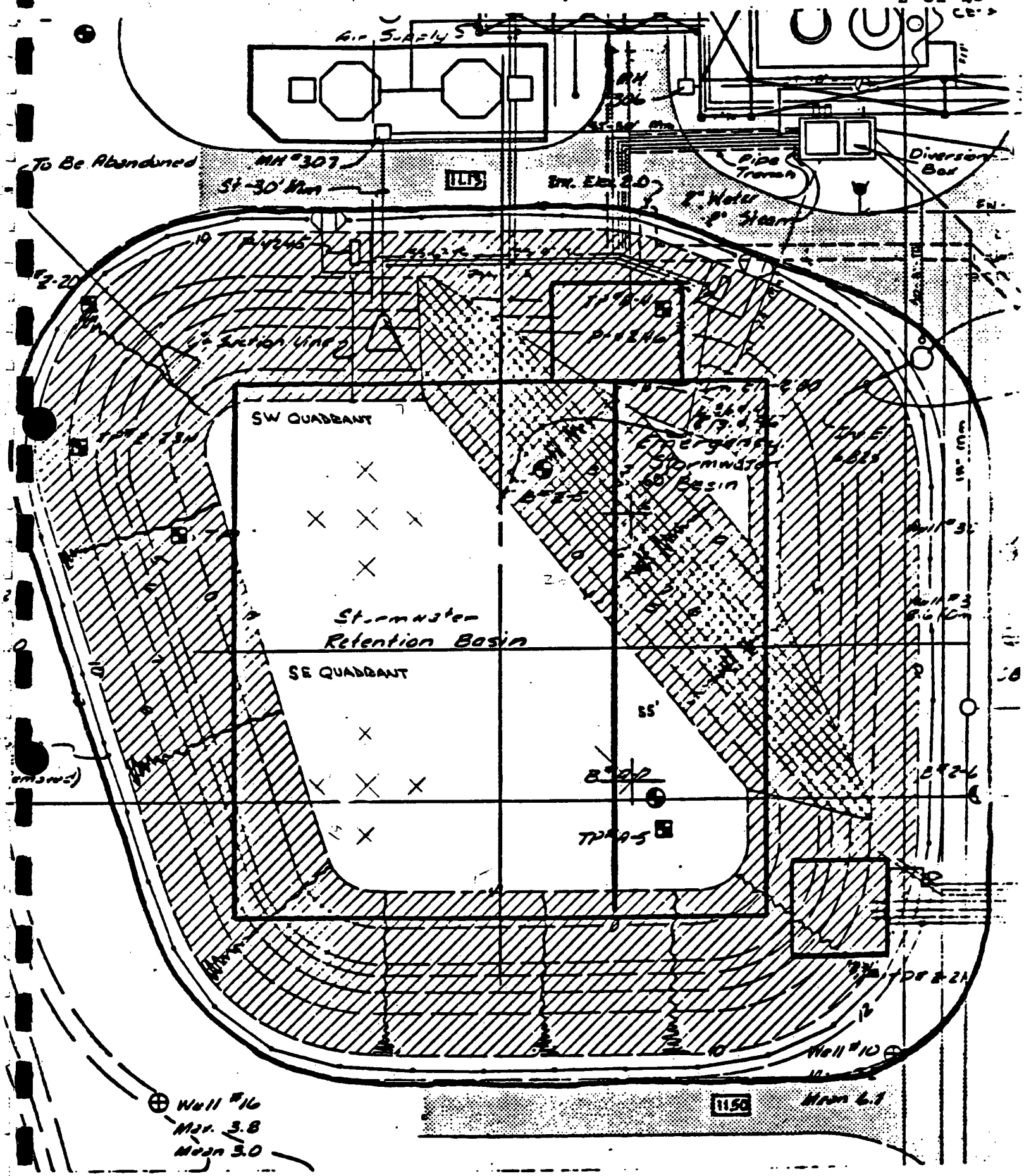
Subject RETENTION BASIN SOIL SAMPLES - SOUTH QUADRANTS

On this date, in accordance with the requirements of the Stormwater Retention Basin Closure Plan, soil samples were collected by this writer in the two (2) south quadrants of the Basin following the Soil Testing Protocol - Section 02001 of the plan.

The attached print identifies sampling points. Only south quadrant sampling was conducted this date to accomodate construction schedules and sampling logistics. Sampling of the two (2) north quadrants will be conducted at a later date when construction grades in that area are achieved.

Samples were stored in a glass quart container, duly labeled and forwarded to the plant laboratory for the analyses set forth in the Protocol.

ct



Retention Basin - Closure Plan - Soil Sampling
DECEMBER 31, 1987 10:15-11:00 AM
X = 3/4 x 3" Leyan Core Sample

1 mm = 1 Foot

APDEAN
12-31-87

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(Red)

PLANT FMC
Smpl. Date 12-31-87
Smpl. Time 10:30 AM
Req'd. By A.P. DEAN
Smpl. ID SE-Soil
Batch No. Retention Basin
Analyses Req'd. Closure Plan
Spec 02001
Arr. Time
Comp. Time
Shift
AU

PLANT FMC
Smpl. Date 12-31-87
Smpl. Time 10:45 AM
Req'd. By A.P. DEAN
Smpl. ID SW Soil
Batch No. Retention Basin
Analyses Req'd. Closure Plan
Spec 02001
Arr. Time
Comp. Time
Shift
AU

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date January 13, 1988

From A. P. Dean

cc DWHorgan
BLJohansen
CFKusiak
DWPalmer
AFShanta

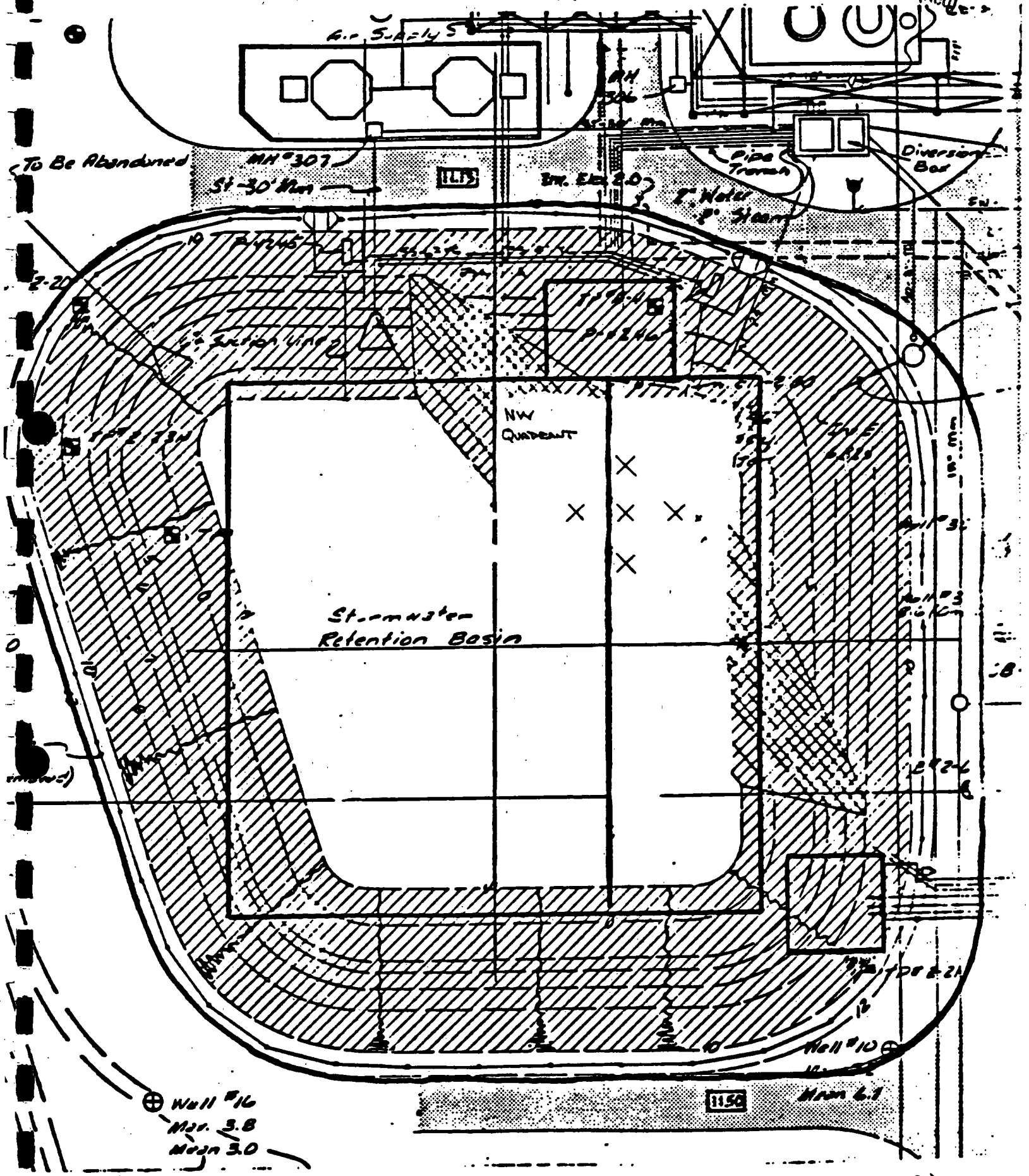
Subject RETENTION BASIN SOIL SAMPLE - NORTH WEST QUADRANT

On this date, in accordance with the requirements of the Stormwater Retention Basin Closure Plan, a soil sample was collected by this writer in the north west quadrant of the Basin following the Soil Testing Protocol - Section 02001 of the plan.

The attached print identifies sampling points. Only north west quadrant sampling was conducted this date to accomodate construction schedules and sampling logistics. Sampling of the north east quadrant will be conducted at a later date when construction grades in that area are achieved.

Samples were stored in a glass quart container, duly labeled and forwarded to the plant laboratory for the analyses set forth in the Protocol. Ms. Monica Miller of the Waste Management Administration, State Department of the Environment observed the sampling.

ct



Retention Basin - Closure Plan - Soil Sampling

January 13, 1988 1:30 - 2:00 PM

1 MM = 1 Foot

A. P. Dean
1-13-88

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To: B. L. Johansen, A. F. Shanta

Date: January 13, 1988

From: A. P. Dean

cc:

Subject: RETENTION BASIN SOIL SAMPLE - NORTHWEST QUADRANT

Accompanying this memorandum is a sample of the above referenced material which is submitted for analyses. As you know the Stormwater Retention Basin Closure Plan requires that soil samples be collected from four (4) quadrants of the former Basin when all wastes have been removed and construction grades for the new tank have been met.

At this time, only the northwest section of the construction area is ready; accordingly the sample is labeled NW (north west quadrant). The sample consists of five (5) core subsamples collected from the quadrant. One (1) composite sample is to be prepared from the five (5) subsamples.

The resultant composite is to be analyzed for the following materials which have been or could have been discharged to the Basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

For your records, I have attached a copy of the specific Soil Testing Protocol - Section 02001 from the Closure Plan. Sampling of the remaining northeast quadrant will be done at a later date when construction grades in that area are achieved and pile installation is completed.

ct

FMC Agricultural Chemical Group
Baltimore

ORIGINAL
(Red)

Interoffice

To: File

Date: February 17, 1988

From: A. P. Dean

cc: DWHorgan
BLJohansen
CFKusiak
DWPalmer
AFShanta

Subject: RETENTION BASIN SOIL SAMPLE - NORTH EAST QUADRANT

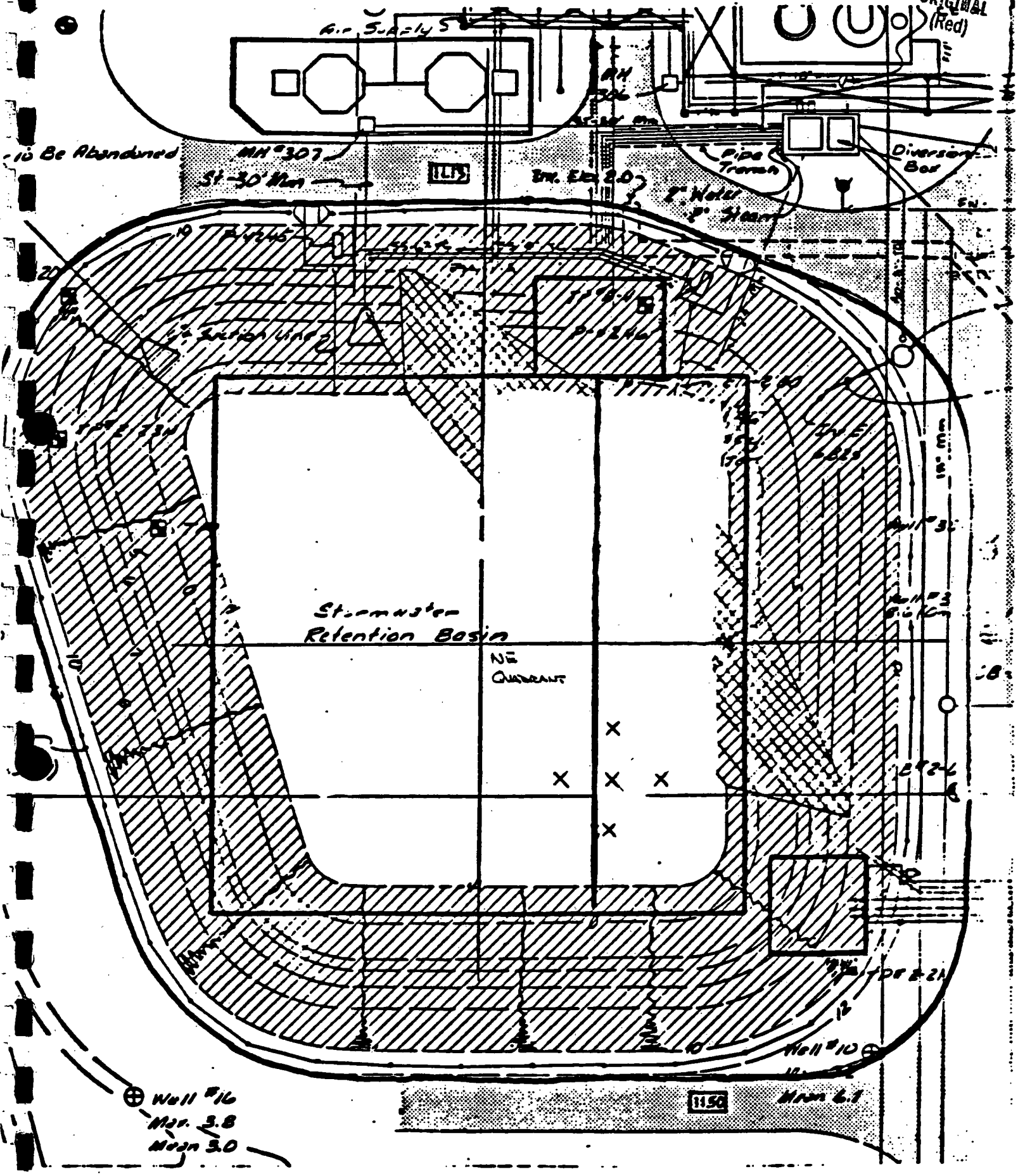
On this date, in accordance with the requirements of the Stormwater Retention Basin Closure Plan, a soil sample was collected by this writer in the north east quadrant of the Basin following the Soil Testing Protocol - Section 02001 of the plan.

The attached print identifies sampling points. Only north east quadrant sampling was conducted which concludes the State required soil sampling aspects ofthe project.

Samples were stored in a glass quart container, duly labeled and forwarded to the plant laboratory for the analyses set forth in the protocol.

ct

ORIGINAL (Red)



Retention Basin - Closure Plan - Soil Sampling

February 17, 1988 9:00-9:30 Am

x : 3/4 x 3" Lekan Core Sample

1 mm = 1 Foot

APDEAN
2-17-88

ORIGINAL
(Red)

PLANT FMC	Arr. Time
Smpl. Date 1-13-88	Comp. Time
Smpl. Time 1:50 PM	Shift
Req'd. By A.P. DEAN	AU
Smpl. ID NW-Soil	Batch No. RETENTION BASIN
Analyses Req'd. Closure Plan	
SPEC 02001	

FMC Agricultural Chemical Group
Baltimore

ORIGINAL
(Red)

Interoffice

To B. L. Johansen/A. F. Shanta

Date February 17, 1988

From A. P. Dean A.P. Dean

cc

Subject RETENTION BASIN SOIL SAMPLE - NORTHEAST QUADRANT

Accompanying this memorandum is a sample of the above referenced material which is submitted for analyses. As you know the Stormwater Retention Basin Closure Plan requires that soil samples be collected from four (4) quadrants of the former Basin when all wastes have been removed and construction grades for the new tank have been met.

With the collection of the northeast sample the required soil testing of the Retention Basin is concluded. The sample consists of (5) core subsamples collected from the quadrant. One (1) composite sample is to be prepared from the five (5) subsamples.

The resultant composite is to be analyzed for the following materials which have been or could have been discharged to the Basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

For your records, I have attached a copy of the specific Soil Testing Protocol - Section 02001 from the Closure Plan.

ct

ORIGINAL (Red)

SOIL TESTING PROTOCOL - SECTION 02001

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Testing of remaining soils for contamination from Stormwater Retention Basin contents.

B. Related Work Specified Elsewhere

1. Earthwork: Section 02000
2. Selected Fill: Section 02002
3. Solidification and Removal of Accumulated Sludge: Section 02003
4. Cover Materials and Installation: Section 02004
5. Bituminous Concrete Pavements: Section 02005

PART 2 - EXECUTION

2.01 SAMPLING

A. Sample Collection

1. The area located under the proposed 110 x 110 foot tank will be divided into four quadrants subsequent to excavation to construction required elevations.
2. Five (5) samples shall be collected from each quadrant: one from the center of each quadrant, and four at a distance of 10 feet from the center in each of four compass direction using 3/4 inch diameter Lexan^R tubing.
3. The samples shall be collected by driving the Lexan^R tube to a depth of 3 inches ±0.5 inches and withdrawing the tubing.
4. One (1) composite sample will be prepared for each quadrant from the five (5) subsamples. The composite samples will be stored in a glass container which will be labeled as to sample location, date and sampler.

02001-2
1676.027

ORIGINAL
(Red)

SOIL TESTING PROTOCOL - SECTION 02001

B. Sample Testing

1. The four composite samples will be submitted to a laboratory for analyses. The analytical program will include the following substances which have been or could have been discharged to the retention basin:

   Orthonitrophenol
   Orthonitrophenol methyl ether (Ether)
   7-Hydrogen
   7-Nitro
   Carbon tetrachloride
   Benzene
   Monochlorobenzene
   Chloroform
   Toluene
   Claisen
   Isobutenyl

- END OF SECTION -

discussed w/ Al Shanta 10/8/87

FMC Agricultural Chemical Group
Baltimore

Interoffice

To B. L. Johansen, A. F. Shanta

Date December 31, 1987

cc

From A. P. Dean A.P. Dean

Subject RETENTION BASIN SOIL SAMPLES - SOUTH QUADRANTS

Accompanying this memorandum are two (2) samples of the above referenced material which are submitted for analyses. As you know the Stormwater Retention Basin Closure Plan requires that soil samples be collected from four (4) quadrants of the former Basin when all wastes have been removed and construction grades for the new tank have been met.

At this time, only the south section of the construction area is ready; accordingly the two (2) samples are labeled SW (south west quadrant) and SE (south east quadrant). Each of the two (2) samples consists of five (5) core subsamples collected from the respective quadrant. One (1) composite sample is to be prepared for each quadrant from the five (5) subsamples.

The two (2) resultant composites are to be analyzed for the following materials which have been or could have been discharged to the Basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

For your records, I have attached a copy of the specific Soil Testing Protocol - Section 02001 from the Closure Plan. Sampling of the two (2) north quadrants will be done in early January 1988 when construction grades in that area are achieved.

ct

ORIGINAL
(Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To A. P. Dean

Date January 29, 1988

From A. F. Shanta AS

cc JAPalmer
DWPalmer
DWHorgan

Subject RETENTION POND CLOSING ANALYSES

The samples of soil that you took for the retention pond closing have been analyzed. Three samples were received labeled as follows:

SW soil 12/31/87 at 1045
SE soil 12/31/87 at 1030
NW soil 1/13/88 at 1350

Upon receipt the samples were refrigerated at 4°C. Before analysis, the soil in the five Lucite tubes comprising each sample were blended together. Portions of the blend were used for the analyses. The specified volatile components were determined by GC/MS using a purge and trap technique and the semi-volatile materials, after extraction, using GC ESTD (ref. FMC Methods GW-1, GW-7 and P-100). Detection limits were approximately 0.1 ppm and 10 ppm respectively for the volatiles and semi-volatiles. Results for the various parameters are given below:

	Amount in ppm		
Component	SW	SE	NW
Benzene	ND	ND	ND
Toluene	ND	ND	ND
Chloroform	ND	ND	ND
Chlorobenzene	0.2	2.1	0.1
Carbontetrachloride	ND	ND	ND
7-hydrogen	19	20	12
ONP	ND	ND	ND
Claisen	ND	14	22
Isobutenyl	ND	ND	ND
ONPME	162	253	175
7-nitro	44	49	36

elr

ORIGINAL
(Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To A. P. Dean

Date February 23, 1988

From M. L. Schrock

cc JAPalmer
DWPalmer
DWHorgan
AFShanta

Subject RETENTION POND CLOSING ANALYSIS

The final soil sample for the retention pond closure plan was taken and labelled NE Soil February 17, 1988 @ 0930. Please refer to your memo from A. F. Shanta dated January 29, 1988 and titled the same as this one for the methods of analysis used. The detection limits were approximately the same as before; 0.1ppm and 10ppm respectively for the volatiles and semi-volatiles with the results given below.

Component	Amount in ppm
Benzene	ND
Toluene	ND
Chloroform	ND
Chlorobenzene	ND
Carbon tetrachloride	ND
7-hydrogen	25
ONP	ND
Claisen	20
Isobutenyl	10
ONPME	301
7-nitro	62

elr

ORIGINAL
(Red)

APPENDIX C

DECONTAMINATION WIPE TEST RESULTS

ORIGINAL
(Red)

FMC CORPORATION
Agricultural Chemical Group
Baltimore, Maryland

Wipe Sampling Procedure

Discussion

Wipe testing is an indirect measure of the hazards encountered from skin contact with chemicals. If enough sites are chosen for wiping, the body of data accumulated indicates the general level of contamination. The amount of chemicals found during wipe sampling is dependent upon the nature of the surface, the desorbing liquid, the size of the area wiped, the original chemical deposition, and many other factors. This method provides for consistency in sampling, thereby reducing the number of variables present in this type of analysis. This method is consistent with the ACG method prepared by T. J. Clark.

Analytes - Any chemical that comes in contact with work surfaces, and leaves a non-volatile residue. This includes, but is not limited to, Ethion® and Pounce®.

Matrix - Any work surface where chemical residues exist. Typical areas may be valve handles, desk tops, hand rails, eating areas, door handles, and hands.

Procedure - Wiping Surface with a Kim-Wipe® moistened with isopropyl alcohol, desorbing with solvent, and gas chromatographic (GC) analysis.

Limit of Detectability

Variable, depending on the gas chromatograph and the detector. However, usually all components have a limit of detectability between 0.1 ug and 2.0 ug.

Apparatus

1. Box of Kim-Wipe® Disposable Wipes" - 5 x 8 - 1/2 inches.

2. Box of disposable plastic or neoprene gloves.

3. Bottle of rubbing alcohol (containing 70% isopropyl alcohol by volume in water).

4. Box of screw-cap glass vials with teflon cap liner for holding "wipe" samples for analysis in the laboratory.

5. Labels and tape.

Reagents

1. All chemicals must be A.C.S. reagent grade quality or better.

2. Isopropyl alcohol, A.C.S. reagent grade; V.W.R. catalogue #JT-9080-3.

Procedure

1. Dilute reagent grade isopropyl alcohol to 70% with distilled water. Mix well.

2. Mark off an area of 100 square centimeters with tape. This is the usual size of an area that is wiped. For areas that are not flat, such as door handles, the entire area is wiped.

3. Wear clean disposable gloves whenever taking "wipe" samples. This practice avoids contamination of the "Kim-Wipe®" by the hand and prevents skin contact with any toxic substances.

4. Remove a "Kim-Wipe®" tissue and fold the completely open tissue in half three times.

5. For WET "wipe" samples, add approximately 20 drops of the 70% isopropyl alcohol solution to the folded "Kim-Wipe®".

6. Go to the sample location and wipe the entire area with the "Kim-Wipe®". Wipe the surface firmly and completely, but not with sufficient hand pressure to damage the "Kim-Wipe®".

7. Fold the dirty side of the "Kim-Wipe®" tissue inward and wipe the same surface again.

8. Fold the dirty side inward and wipe the same surface a third time.

9. Fold the dirty side inward once again and insert it into the mouth of the glass vial. Place the cap on the vial, and mark the number or identity of the sample on the outside.

10. Wipe gloves clean after taking each sample with a clean paper towel moistened with water or isopropyl alcohol. It is suggested that gloves be changed or discarded after taking "wipe" samples in heavily contaminated areas where deposits are easily removed, or after every 10 "wipe" samples have been taken.

ORIGINAL
(Red)

APPENDIX F

COMPACTED CLAY TEST RESULTS

File 10.6.0

ORIGINAL (Red)

Professional Service Industries, Inc.
PTL Division

REPORT OF INSPECTION SERVICES

ESTED FOR: FMC
Agricultural Chemical Group
1701 E. Patapsco Avenue
Box 1616
Baltimore, Maryland 21203

Attn: Mr. Clem Kusiak

PROJECT: FMC
Retention Pond
Baltimore, Maryland
P. O. No. 058940

DATE: July 15, 1988

OUR REPORT NO.: 427-80004-095

ARKS:

SUMMARY OF INSPECTION

As requested, a PSI representative was on site between 10:15 am and 11:15 am to monitor and test fill placements in area around the west, north, and east side 10' off the pond.

These services were performed on a full-time basis.

CONDITIONS REQUIRING CORRECTION - CORRECTIVE ACTION TAKEN

Attachments: Field Density Tests Report
Sketch

Respectfully submitted,
Professional Service Industries, Inc.

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FMC RETENTION POND
Client's Name: FMC
General Contractor: BON GIOVANNI
Excavator: BONGIOVANNI

PSI Job No.: 427- 80004
Client Job No.:
Date: 7-15-88
Weather: SUNNY Temp. (°F): 95

2/3

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION RETENTION POND
1	16.5	94.7	1	90	90.0	✓			0	10'W ALONG WEST SIDE
2	14.2	95.4			90.7	✓			0	10'W 20'N FROM NE CORNER
3	17.8	96.8			91.6	✓			0	10'E 10'N FROM SE CORNER

Compaction Equipment Used: Vibratory ☐ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☐ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☐ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☐ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
	105.3	16%	☐	☐
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks:

Technician: Date: 7-15-88 Approved: Field Copy Given To Client Yes ☐ No ☐

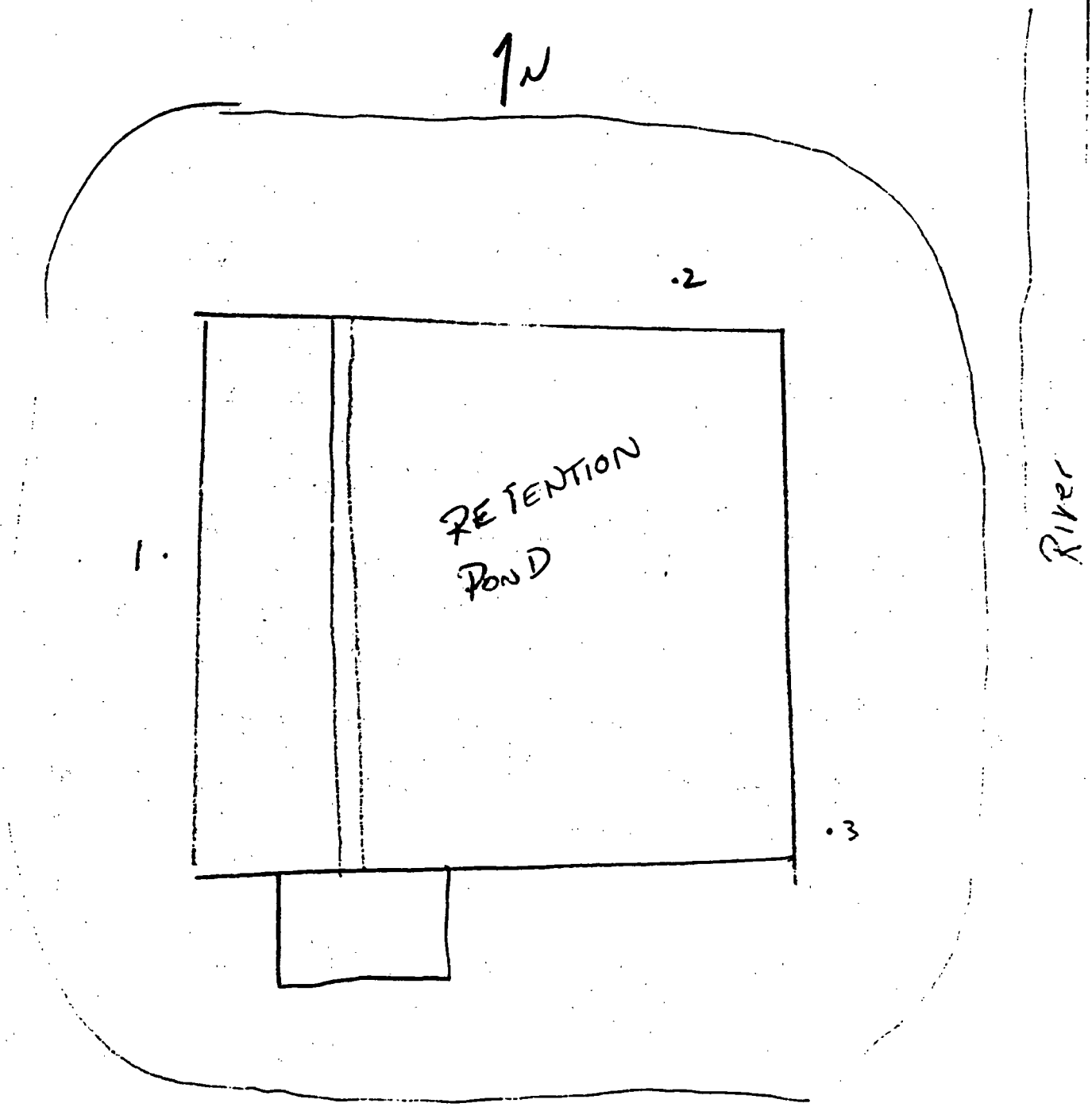
ORIGINAL (Red)

APPENDIX F
2 of 7

Professional Service Industries, Inc.
PTL Division
606 BARKWOOD COURT
LINTHICUM, MARYLAND 21090
TEL: 301-789-3224
FAX: 301-789-3233
WASHINGTON AREA: 261-2825

ORIGINAL (Red)

SKETCH



Sketch No.	PTL-II Order No.	Lab No.	Page 3 of 3

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ORIGINAL
(Red)

Professional Service Industries, Inc.
PTL Division

REPORT OF INSPECTION SERVICES

TESTED FOR: FMC
Agricultural Chemical Group
1701 E. Patapsco Avenue
Box 1616
Baltimore, Maryland 21203

Attn: Mr. Clem Kusiak

PROJECT: FMC
Retention Pond
Baltimore, Maryland
P. O. No.: 058940

DATE: June 28, 1988

OUR REPORT NO.: 427-80004-091

REMARKS:

SUMMARY OF INSPECTION

As requested, a PSI representative was on site between 11:30 am and 3:30 pm to monitor and test fill placements in area around retention pond 50' surrounding.

These services were performed on a full-time basis.

CONDITIONS REQUIRING CORRECTION - CORRECTIVE ACTION TAKEN

During our visit non-compliances were encountered regarding fill placements.

These non-compliances along with corrective measures are listed in the attached test reports.

Attachments: Field Density Tests Report
Sketch

Distribution: Client (1)

Respectfully submitted,
Professional Service Industries, Inc.

806 Barkwood Court, Suite K • Linthicum, MD 21090 • Phone: 301/789-3224

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FAIR [illegible] ROAD
Client's Name: [illegible]
General Contractor: [illegible]
Excavator: [illegible]

PSI Job No.: 427- 8[illegible]04
Client Job No.:
Date: 6/28/88
Weather: [illegible] Temp. (°F): 80°

2/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
1	20.4	7[illegible]	1	90	91.4	✓			-14"	80' SW FROM NORTH CORNER
	17.0	9[illegible]			91.1		✓	ART		30' W 40' S " " "
3	17.6	[illegible]			88.3		✓	ART		10' W " " "
4	17.0	9[illegible]			93.1	✓				100' S " " "
[illegible]	[illegible]	[illegible]			92.3	✓				70' S 30' E " " "
6	14.5	10[illegible]			95.6	✓				40' S 50' E " " "
7	16.[illegible]	95[illegible]			90.8	✓		R-2		30' W 40' S " "
8	15.4	9[illegible]			91.3	✓		R-3		10' W " " "
9	17.4	88.6					✓	ART		10' E 5' S " " "
10	18.7	93.8				✓				20' S 30' E

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☑ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
1	105.3	16.	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks: ~~[illegible]~~ #2,3 RE ROLLED AND PASSED

Technician: Bruce Cain Date: 6/28/88 Approved: Field Copy Given To Client Yes ☐ No

ORIGINAL (Red)

APPENDIX F
5 of 7

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FMC RETENTION POND
Client's Name: FMC
General Contractor: BONGIOVANNI
Excavator: BONGIOVANNI

PSI Job No.: 427- 80004
Client Job No.:
Date: 6/28/88
Weather: SUNNY Temp. (°F): 80°

3/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
1	16.6	96.8	1	90	93.8	✓		R-9	-1'	10'E 5'N FROM THE NORTH CORNER
2										
3										
4										
5										
6										
7										
8										
9										
10										

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☑ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
	102.5	16	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks:

Technician: [signature] Date: Approved: Field Copy Given To Client Yes ☐ No ☐

ORIGINAL (Red)

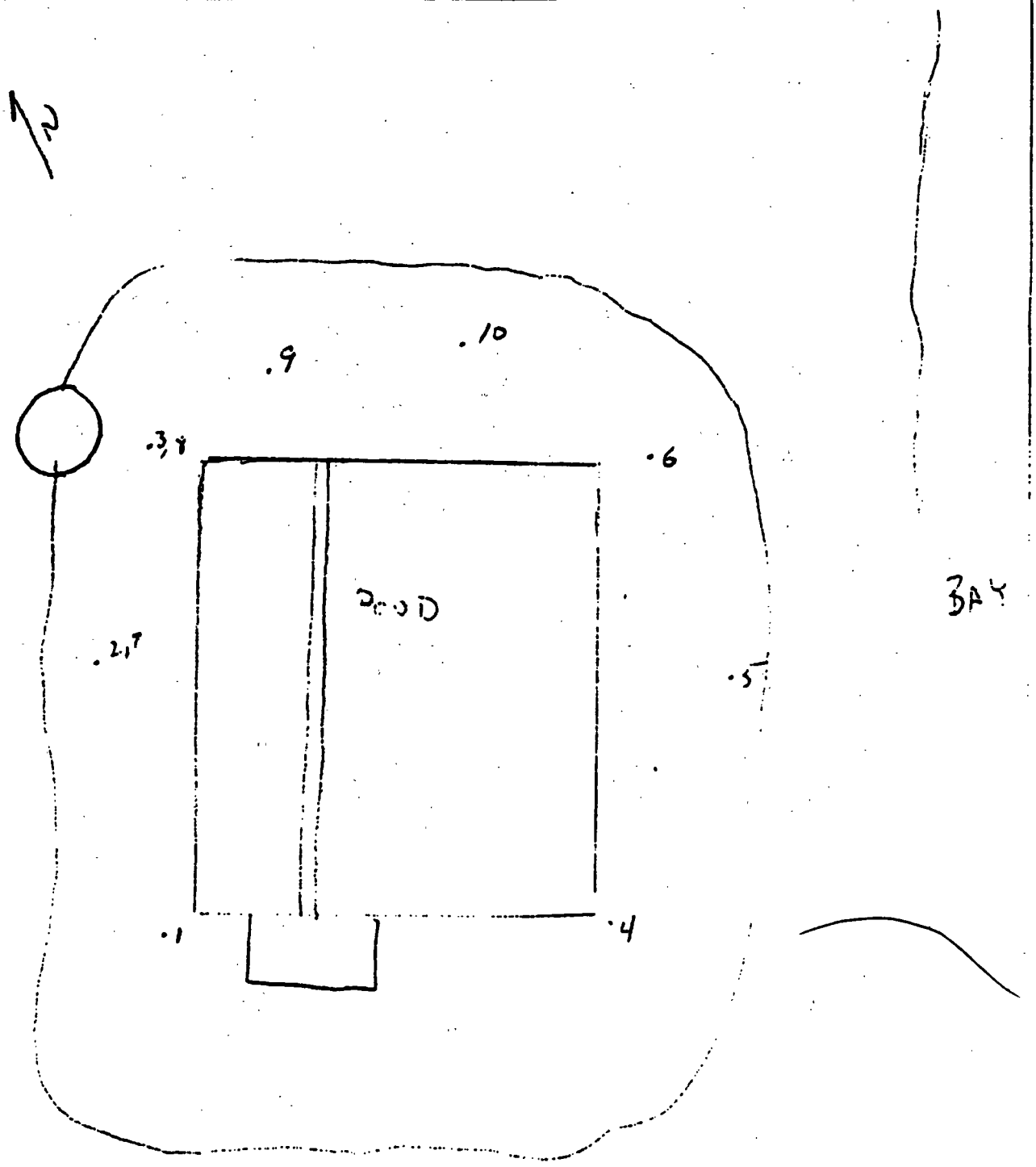
APPENDIX F
6 of 7

Professional Service Industries, Inc.
PTL Division
808 BARKWOOD COURT
LINTHICUM, MARYLAND 21090
TEL: 301-789-3224
FAX: 301-789-3233
WASHINGTON AREA: 261-2625

ORIGINAL (Red)

FMC

SKETCH



Sketch No 1 | PTL-II Order No | Lab No. | Page 1 of 1

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APPENDIX G

COVER LAYER TEST RESULTS

ORIGINAL
(Red)

GENSTAR

Genstar Stone Products Company
Executive Plaza IV
Hunt Valley, Maryland 21031
Telephone (301) 628-4000

June 1, 1988

Baltimore Asphalt Paving Co.
1320 N. Monroe Street
Baltimore, Maryland 21217
ATTN: John Elliott

RE: FMC - Retention Basin

Gentlemen:

This is to certify that the MD SHA-CR-6/GASB Crusher Run limestone as produced at our Texas, Maryland Quarry meets the requirements of the 1982 Maryland State Highway Administration specifications under Section 903 and City of Baltimore specifications under Article 20.02.

The following gradation analysis is based on the average of 48 individual tests.

SIEVE SIZE	2"	1 1/2"	#4	#10	#200
Texas CR-6/GASB % Passing	100	99.5	36.2	25.8	5.9
SHA Tolerance Range	100	90-100	29-49	--	2-12
Balto. City Spec.		100	25-55	15-45	0-12

This material complies with other specifications as set forth in the Maryland State Highway Administration and City of Baltimore requirements regarding deleterious substances, abrasion and soundness.

Respectfully submitted,

GENSTAR STONE PRODUCTS COMPANY

Ronald L. Heckel

RONALD L. HECKEL
Manager, Quality Control
Aggregates

RLH:kr

cc: J. Schwoerer

Exhibits

ORIGINAL
(Red)

O'BRIEN & GERE

received 10/?

State of Maryland

DEPARTMENT OF THE ENVIRONMENT
201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201
AREA CODE 301 • 225-5647

William Donald Schaefer
Governor

Martin W. Walsh, Jr.
Secretary

October 6, 1987

CERTIFIED MAIL
Return Receipt Requested

Mr. Darryl Palmer
Environmental Manager
FMC Corporation
Agricultural Chemicals Group
1701 East Patapsco Avenue - Box 1616
Baltimore, Maryland 21203

Dear Mr. Palmer:

The Waste Management Administration (WMA) has received no further comment concerning the closure of the storm water Rentention Basin, since the hearing held on September 17, 1986. The WMA approves the closure plan as modified by a letter from FMC dated July 30, 1987 and a letter from WMA dated August 4, 1987. In accordance with the approved closure plan the post-closure permit application shall be submitted within 15 days and closure operations shall begin within 90 days upon your receipt of this letter.

As the public notice of the hearing for the closure was provided at the same time as the public notice for the incinerator permit, there will be one invoice for both notices. You should receive the invoice shortly, as it will be included with the incinerator permit.

If you have any questions concerning this matter, please contact Ms. Monica Miller of my staff at (301) 225-5701.

Sincerely,

Ronald Nelson, Director
Waste Management Administration

RN/lak

cc: Mr. William E. Chicca
Mr. Alvin Bowles
Mr. Charles Lewis
Mr. Reid Rosnick
Ms. Monica Miller
Mr. John Humphries

ORIGINAL (Red)

11. Important Note: DRY "wipe" samples are to be taken in the same way as described above, with the omission of Step 5.

12. The vials are to be returned to the laboratory for subsequent analysis.

13. A fresh piece of "Kim-Wipe®" that has not been used should be submitted to the lab in a separate vial, for use as a blank.

Prepared by: Connie L. Johnson

Approved by: Mary H. Bean

Date: February 13, 1987

ORIGINAL
(Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date July 20, 1987

cc FD Hale-O'Brien & Gere

From A. P. Dean

Subject RETENTION BASIN CLOSURE PLAN - Wipe Test

Present closure plans call for the decontamination of equipment used in closure via water wash and steam cleaning. The State is suggesting that while acceptable, the decontamination requires verification by analytical, laboratory results.

For purposes of experimentation, wipe tests were conducted on hand rails at the Retention Basin to simulate "analytical work" following decontamination if the State insists on same.

Procedure/Methodology/Standards:

*Basis For Assessment
(1) Evaluate Potential Exposure to humans
(2) Max. allowable concentration based on:
(a) For materials intended for re-use - use mammalian LD50
(b) Area of surface to which human could be exposed - use "standard size" of 100 ft^2 (surface area of 4-55 gal drums; customarily 4 drums/pallet)
(c) Avg. human body wgt. - 170# (77 kg)
(d) Safety factor = 1/10 of LD_{50}
(e) Contaminents to be evaluated individually

W = allowable wgt. of contaminant per $100cm^2$

$w = 100cm^2 \times 77\ Kg \times LD_{50} \times 1 \div 100ft^2 \times 929\ cm^2/ft2 \times 1($
$= 0.0083 \times LD_{50}$

*Potential Materials For Analysis

	LD_{50}	X	.0083 X 1000 (mg→µg)	=	Standard =µg/$100cm^2$
ONP	3100				25730
Ether	872				7237
7-H	2745				22783
$7-NO_2$	806				6690

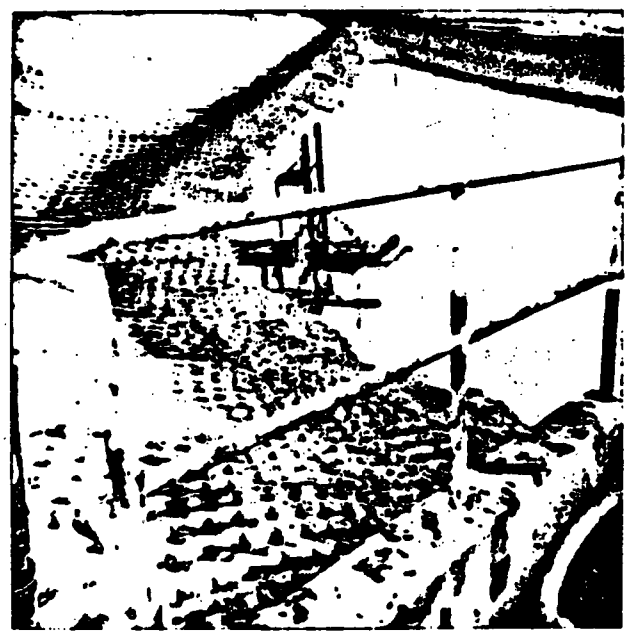
	LD_{50} X	.0083 X 1000 (mg/µg) =	Standard =µg/100cm^2
CCl_4	1770		14691
Benzene	3800		31540
MC Benzene	1540		12782
Chloroform	800		6640
Toluene	5000		41500
Claisen	2000/4000		16600/33200
Isobutenyl	1300/4436		10790/36819

*Sampling and Analysis

On July 14, 1987 at approximately 2:00PM this writer and K. H. Beach of the process lab conducted two wipe tests of the hand railing surrounding the north retention basin pump station (see photo); prior to sampling the railings were washed with warm water only and dried.

The top and bottom rail were both wiped with 70% isopropyl alcohol, diluted with 5 ml. methylene chloride and analized by gas chromatography for ten (10) hydroxy cmpds (including those hydroxy compounds noted above). With a detection limit of approximately 25µg/100cm$_2$ no hydroxy materials were found.

ct



WIPE TEST: 7/14/87 @ 2:00 PM
Top & Bottom Rail of 7-OH North Ret. Basin Pump Station; WASHED w/ WARM H2O PRIOR TO WIPE TEST

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)		ANALIZED BY	DECON.(Y or N)
	12-7-87 8:30AM	Liebherr 921 Excavator "bucket"	M.H. Beam A.P. Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-8-87	Yes
	12-7-87 8:30AM	Liebherr 921 Excavator Left Track	M.H. Beam A.P. Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-8-87	Yes
	12-9-87 2:50PM 12-10-87 11:05AM	J.E. McCausland, Inc "Whole of a Pump" #4446 Pump Head (M5-13)	A.P. Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen	Yes
	12-9-87 2:50PM	J.E. McCausland, Inc "Whole of a Pump" #4450 Pump Head	A.P. Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen	Yes
	12-22-87 8:55AM	Mixing Dumpster (lime) #1285162	A.P. Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-22-87	Yes

* Industrial Hygiene Manual
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ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

AMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)		ANALIZED BY	DECON.(Y or N)
	12-22-87 8:55AM	Mixing Dumpster (Sludge) #1285163	A.P Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B Johansen 12-22-87	YES
	12-30-87 11:45AM	Mixing Dumpster (Sludge) # 1285166	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-31-87	YES
	12-30-87 11:50AM	Mixing Dumpster (Sludge) # 1285160	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-31-87	Yes
	1-7-88 8:20AM	Komatsu Excavator PC 200 LC "Bucket"	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 1-11-88	YES
	1-7-88 8:30AM	Komatsu Loader WA-200 "Bucket"	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B Johansen 1-11-88	YES

* Industrial Hygiene Manual Method # 14-A

ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

SAMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (μG/100CM²)		ANALIZED BY	DECON.(Y or N)
	1-7-88 8:35AM	Decon. Trailer Clean Side Locker Handle & Front #3	ADBEW	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in space	B. Johanson 1/11/88	NA - maintained in non-contaminated condition
	1-7-88 8:40am	Decon Trailer Clean Side Door Knob & Light Switch	ADBEW	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in space	B. Johanson 1/11/88	"
	1-7-88 8:45AM	Decon Trailer Clean Side Floor Area in Front of Lockers	ADBEW	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in space	B. Johanson 1/11/88	"
	1-29-88 8:15AM	C.J. Langenfelder Euclid #ER 99 interior bed of dump	ADBEAU	7-H. ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in space	B. Johanson 1-29-88	Yes
	2-9-88 2:50PM	C.J. Langenfelder Caterpillar D-5 # A-297 Left track	ADBEAU	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in space	B. Johanson 2-9-88	Yes

* Industrial Hygiene Manual
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Original (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

AMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (µG/100CM²)		ANALIZED BY	DECON.(Y or N)
	2-8-88 2:20pm	C.J. Langenfelder Caterpillar D-5 # A-277 Front Blade	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson 2-9-88	Yes
	2-9-88 3:15PM	C.J. Langenfelder Caterpillar D3B #A371 Left track	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson 2-10-88	Yes
	2-9-88 3:15AM	C.J. Langenfelder Caterpillar D3B #A371 Front Blade	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson 2-10-88	Yes
	2-17-88 9:00AM	C.J. Langenfelder 3B3 Crane - Track tread	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson 2-18-88	Yes
	2-17-88 1:00 pm	Dirt from stump pan of Caterpillar D-5	APDEAN sample received from C.J. Langenfelder to R. Moulin	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	No peaks for Hydroxy compds; general petrol. products	M. Schrock 2-17-88	Yes

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ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

SAMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)		ANALIZED BY	DECON.(Y or N)
	2-22-88 3:00Pm	C.J. Langenfelder SH-282 Gradall Bucket	ADDean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in specs	B. Johanson 2-22-88	Yes
	2-25-88 1:53Pm	C.J. Langenfelder Bantam C-266 Bucket (Koehring SH246)	CBrahan	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in specs	B. Johanson 2-26-88	Yes
	2-29-88 1:50PM	DRAG beam used in BASIN clean-out	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in specs	B. Johanson 3-1-88	Yes
	3-2-88 4:00 Pm	Multiple sections of wooden support mats 2 Samples	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in specs	B. Johanson 3-3-88	Yes
	3-3-88 3:10 Pm	Euclid Dump Truck R-103	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in specs	B. Johanson 3-7-88	Yes

* INDUSTRIAL Hygiene MANUAL
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ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

AMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (μG/100CM^2)	ANALIZED BY	DECON.(Y or N)
	3-3-88 3:15PM	Clam Bucket # 34940	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in space	B. Johansen 3-7-88	
	3-3-88 3:20PM	Cement Bucket # 08-68 R 2390.01	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in space	B. Johansen 3-7-88	
	3-3-88 3:25PM	Bucyrus-Erie 350 Excavator TRACK.	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in space	B. Johansen 3-7-88	
	3-3-88 3:30PM	Bucyrus-Erie 350 Excavator Bucket	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in space	B. Johansen 3-7-88	
	3-7-88 1:45PM	Decon trailer dirty side - door knob light switch (inside)	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in space	B. Johansen 3-9-88	

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ORIGINAL
(Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (µG/100CM^2)	ANALIZED BY	DECON.(Y or N)
	3-7-88 1:50PM	Decon trailer floor of laboratory	ADBEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-9-88	
	3-7-88 2:00PM	Decon trailer clean side - door knob light switch (inside)	ADBEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-9-88	
	3-8-88 10:00AM	CAT Excavator - 950 H-116 Blade	ADBEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-9-88	
	3-8-88 10:00AM	Cherry Picker 3H-256 Hook & Pulley	ADBEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-9-88	
	3-8-88 10:00	I-Beams 20% sampled; all decoved 4 Samples	ADBEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec all 4 samples	B. Johansen 3-9-88	

* INDUSTRIAL Hygiene MANUAL
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ORIGINAL
(Red)

ORIGINAL
(Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

AMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)	ANALIZED BY	DECON.(Y or N)
	3-10-88 1:10PM	C.J.L. office trailer Floor area	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B Johansen 3-11-88	yes
	3-10-88 1:15PM	C.J.L. office trailer Door knob & light switch	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-11-88	yes
	8-30-88 9.00AM	Spoil Area Asphalt Pad SW-corner	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 9-7-88	yes
	8-30-88 9.00AM	Spoil Area Asphalt Pad SE-corner	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen	yes
	8-30-88 9.00AM	Spoil Area Asphalt Pad NE-corner	APDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B Johansen	yes

* INDUSTRIAL Hygiene MANUAL
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7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (µG/100CM^2)	ANALIZED BY	DECON.(Y or N)
	8-30-83 9:00AM	Spoil Area Asphalt Pad NW-corner	[illegible]	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in [illegible]	B. Johnson	yes
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		

* Industrial Hygiene Manual
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APPENDIX C
ORIGINAL 17
(Red)

APDean

7-OH RETENTION BASIN
SHEET PILES
Decontamination and Wipe Testing*

Sheet No.	Sample Date/Time	Sampled By	Results (ug/100 cm^2)	Analized By	Decon. Yes/No
#15	6-3-88 2:45PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in space	B. Johnson	Yes
#16	6-3-88 2:50PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in space	B. Johnson	Yes
#17	6-3-88 2:55AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in space	B. Johnson	Yes
#18	6-3-88 3:00PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in space	B. Johnson	Yes
			7-H - ONPME - Claisen - Isobutenyl 7-Nitro		

*Industrial Hygiene Manual
Method #14-A
10/10/86

ORIGINAL (Red)

APDean

7-OH RETENTION BASIN
SHEET PILES
Decontamination and Wipe Testing*

Sheet No.	Sample Date/Time	Sampled By	Results (ug/100 cm^2)		Analized By	Decon. Yes/No
#61	5-26-88 3:20PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro	w/in specs	B Johansen	Yes
#81	6-1-88 9:00AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro	w/in specs	B. Johansen	Yes
#85	6-1-88 9:05AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro	w/in specs	B Johansen	Yes
#86	6-1-88 9:10AM	A.P.Dean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro	w/in specs	B. Johansen	Yes
#89	6-1-88 9:15AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro	w/in specs	B. Johansen	Yes

*Industrial Hygiene Manual
Method #14-A
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APDean

7-OH RETENTION BASIN
SHEET PILES
Decontamination and Wipe Testing*

Sheet No.	Sample Date/Time	Sampled By	Results (ug/100 cm^2)	Analized By	Decon. Yes/No
#44	5-26-88 7:10AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johnson	Yes
#40	5-26-88 7:15AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johnson	Yes
#49	5-26-88 7:20AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johnson	Yes
#45	5-26-88 7:25AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johnson	Yes
#57	5-26-88 3:15PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johnson	Yes

*Industrial Hygiene Manual
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ORIGINAL
(Red)

ORIGINAL
(Red)

APPENDIX D

CLAY SOURCE TEST DATA

File 10.6.0

CPR

Your copy for Fmc
I have copy!

ORIGINAL (Red)

DWH

Professional Service Industries, Inc.
PTL Division

June 23, 1988

FMC
Agricultural Chemical Group
1701 East Patapsco Avenue
Baltimore, Maryland 21226

Attention: Mr. Clem Kusiak

RE: Laboratory Test Results
Sample: Campbell Sand & Gravel
FMC Retention Pond
Baltimore, Maryland
PSI No.: 427-80004-090

Gentlemen:

As requested, Professional Service Industries, Inc. performed laboratory tests on the above referenced materials. Test results are as follows:

Maximum Dry Density and Optimum Moisture

The maximum dry density and optimum moisture of the soil was determined per ASTM D-1557 Method A, test method for Moisture-Density Relations of Soils. The maximum dry density was determined to be 105.3 pounds per cubic foot. The optimum moisture was determined to be 16.0%.

Additional information of this test is enclosed.

Liquid Limit, Plastic Limit, and Plasticity Index

The liquid limit, plastic limit, and plasticity index of the soil was determined per ASTM D-4318-84. The soil was determined to have a liquid limit of 48, a plastic limit of 26, and a plasticity index of 22.

Per the unified Soil Classification System the material is considered to be a type of ML-CL material. A copy of the Unified Classification chart is enclosed for your information.

806 Barkwood Court, Suite K • Linthicum, MD 21090 • Phone: 301/789-3224

(Red)

FMC
June 23, 1988
Page 2 of 2

Permeability Test

The coefficient of permeability for this material at 95.3% compaction is 3.003×10^{-8} cm/sec. Material will need to be processed to break up material.

If you have any questions, feel free to contact me at your convenience.

Respectfully submitted,
PTL Division

Jeffrey A. Grueter
Division Manager

JAG:sml

Enclosures

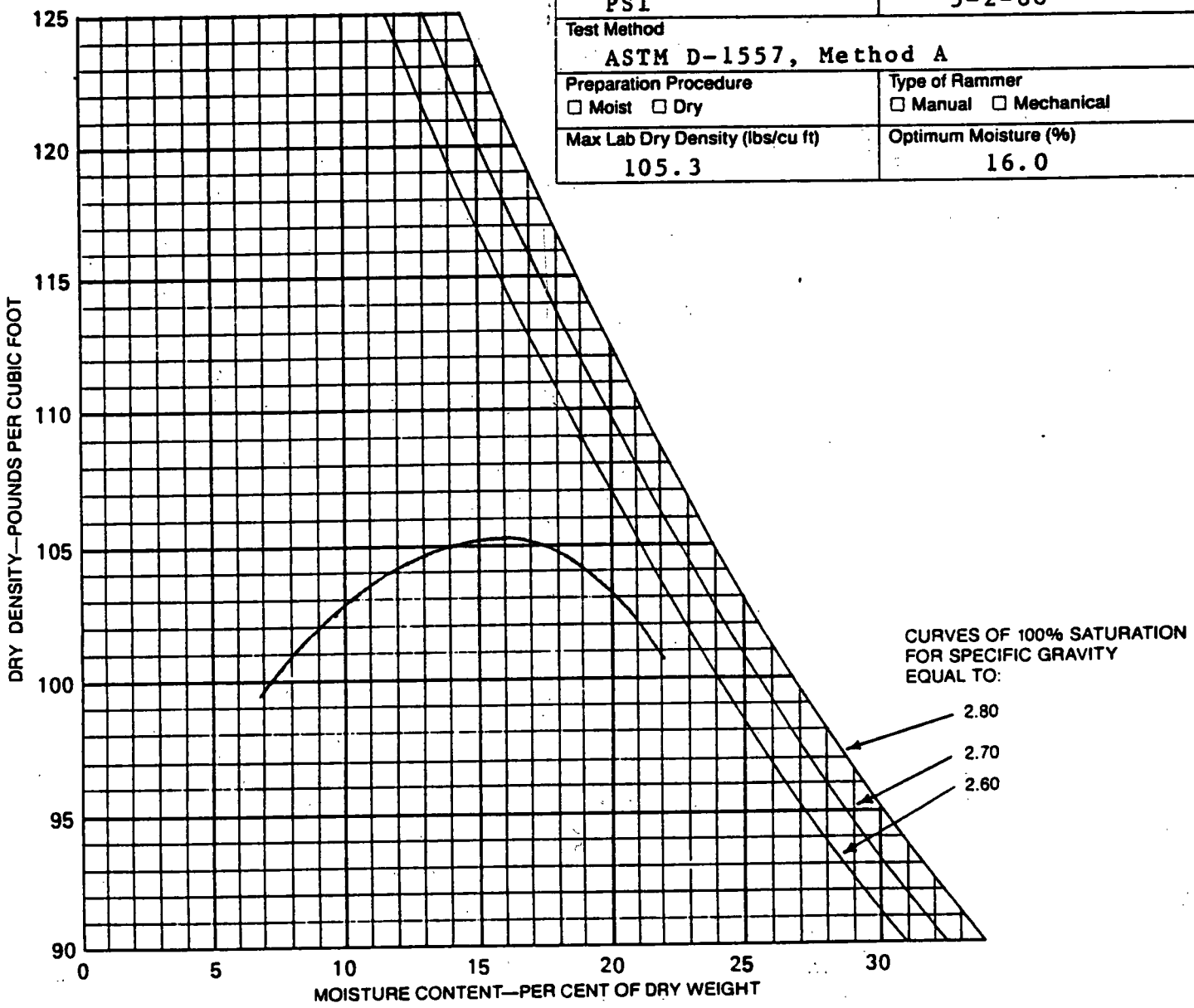
Professional Service Industries, Inc.
PTL Division

806 Barkwood Court, Suite K
Linthicum, Maryland 21090
301/789-3224

ORIGINAL
(Red)

MOISTURE DENSITY RELATIONSHIP TEST REPORT

Project FMC Retention Pond Baltimore, Maryland	Report Date 6-23-88	Report No. 090	PTL Order No. 427-80004
	Client Order No. 058940	Page 1 of 1	Lab No. 88096
Client FMC Agricultural Chemical Group 1701 E. Patapsco Avenue Box 1616 Baltimore, Maryland 21203	Source of Sample Campbell sand & gravel		
	Soil Description Grey CLAY with trace fine sand		
	Sample Submitted By PSI	Date Sample Received 5-2-88	
	Test Method ASTM D-1557, Method A		
	Preparation Procedure ☐ Moist ☐ Dry	Type of Rammer ☐ Manual ☐ Mechanical	
	Max Lab Dry Density (lbs/cu ft) 105.3	Optimum Moisture (%) 16.0	



Distribution/Remarks Client (1)	Submitted By: Manager

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS.

APPENDIX D
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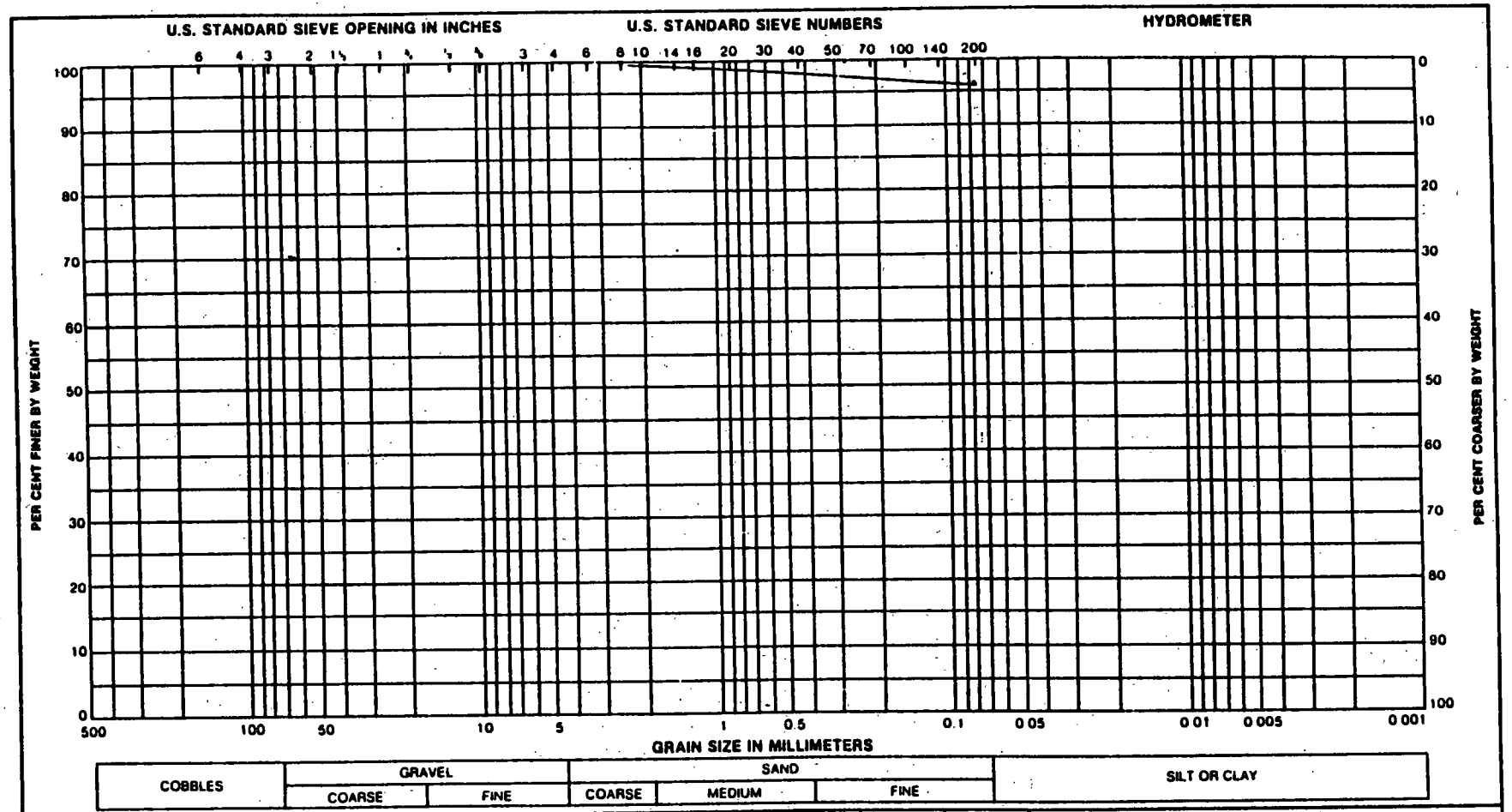
ORIGINAL
(Red)



Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI	Project
			Dark grey CLAY		48.0	25.8	22.2	FMC Retention Pond

REPORT OF SOIL ANALYSIS

File No. 427-80004-090

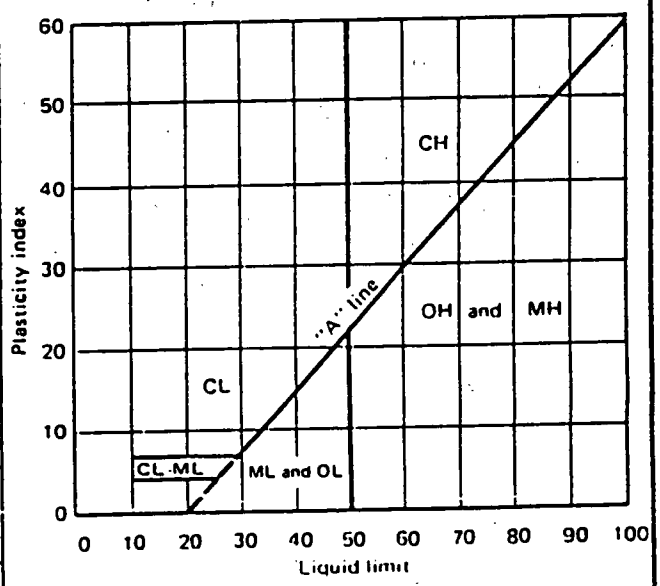
PSI A-100-7

UNIFIED SOIL CLASSIFICATION SYSTEM

U.S. ARMY CORPS OF ENGINEERS – U.S. WATER AND POWER RESOURCES AGENCY – ASTM D2487

ORIGINAL (Red)

Major divisions			Group symbols	Typical names	Laboratory classification criteria		
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 per cent . . . GW, GP, SW, SP; More than 12 per cent . . . GM, GC, SM, SC; 5 to 12 per cent . . . *Borderline* cases requiring dual symbols**	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW	
		Gravel with fines (Appreciable amount of fines)	GM* d	Silty gravels, gravel-sand-silt mixtures		Atterburg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 *borderline* cases requiring use of dual symbols
			GM* u			Atterburg limits above "A" line with P.I. greater than 7	
			GC	Clayey gravels, gravel-sand-clay mixtures			
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			SP	Poorly graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM* d	Silty sands, sand-silt mixtures		Atterburg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols.
			SM* u			Atterburg limits above "A" line with P.I. greater than 7	
			SC	Clayey sands, sand-clay mixtures			
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity			
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL	Organic silts and organic silty clays of low plasticity			
	Silts and Clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
			CH	Inorganic clays of high plasticity, fat clays			
			OH	Organic clays of medium to high plasticity, organic silts			
	Highly organic soils		Pt	Peat and other highly organic soils			



PLASTICITY CHART

*Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterburg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.
**Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

Fines (silt or clay)**	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Coarse Gravel	Cobbles
Sieve Sizes 270 200 140 60 40 20 10 4 ½ ¾ 3						

**The L.L. and P.I. of "Silt" plot below the "A" line on the plasticity chart, Table 4, and the L.L. and P.I. for "Clay" plot above the "A" line.

Professional Service Industries, Inc.
Pittsburgh Testing Laboratory Division

850 Poplar Street
Pittsburgh, Pennsylvania 15220
412/922-4000

REPORT

No. 1

ORDER NO. 427-80004
DATE June 2, 1988

Client:	FMC Corporation
Report of:	Results of Permeability Test
Report to:	PSI - Baltimore
Project:	N/A
Sample Identification:	No. 1
Sample Represents:	Shale
Samples Submitted by:	PSI - Baltimore

PERMEABILITY TEST RESULTS

Sample No.	Remolded Data: Dry Density (pcf)	Remolded Data: Moisture Content (%)	Compaction (%)	Coefficient of Permeability (cm/sec)
1	100.4	17.2	95.3	3.003×10^{-8}

Note: Test made on material crushed thru a No. 4 sieve and remolded to 95% of the maximum dry density furnished by PSI - Baltimore.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.
PITTSBURGH TESTING LABORATORY DIVISION
Geotechnical Services

ms

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ORIGINAL
(Red)

O'BRIEN & GERE

9.3.5

May 6, 1988

M.A. Bongiovanni, Inc.
1400 Jamesville Ave.
P.O. Boy 147 - Colvin Station
Syracuse, N.Y. 13205

Dear Mike:

Your letter dated May 3 submitted test results for cover material to be used around the Stormwater Retention Tank. The submission was in accordance with Contract C Section 2004 Part 2 2.01. The attached test report was reviewed relative to the specifications and the reported permeability was 8.395×10^{-8} cm/sec, slightly above the specification of 1×10^{-8} cm/sec. The clay tested will meet the objective of the cover system. Consequently, the tested clay for the clay cover specified in the Contract Documents is approved.

If you have any questions, please contact me at (315) 451-4700.

Very truly yours,

O'BRIEN AND GERE ENGINEERS, INC.

Frank O. Hale

Frank Hale
Research Manager

cc: S.W. Anagnost
C.F. Kusiak
D.M. Gresko
[redacted]
S. Wescott

Professional Service Industries, Inc.

TEST BORING OR TEST PIT NUMBER	SAMPLE NUMBER	DEPTH OF SAMPLE TIP	ELEV. OF SAMPLE TIP	UNCONFINED COMPRESSIVE STRENGTH (TSF)	PENETROMETER (TSF)	NATURAL WATER CONTENT (Percent of Dry Weight)	DRY DENSITY (Pounds Per Cubic Foot)	VOLUMETRIC ANALYSIS			PARTICLE SIZE DISTRIBUTION							ATTERBERG LIMITS			APPARENT SPECIFIC GRAVITY
								SOLIDS (Percent)	Optimum Moisture	AIR (Percent)	COLLOIDS (Percent)	Percent Retained #200	SILT (Percent)	FINE SAND (Percent)	MEDIUM SAND (Percent)	COARSE SAND (Percent)	GRAVEL (Percent)	LIQUID LIMIT (Percent)	PLASTIC LIMIT (Percent)	PLASTICITY INDEX (Percent)	
*	88061						114.5	@	15%			10.0						54	31	23	

Permeability: 8.395×10^{-8} cm/sec

Percent Passing #200: 90.0%

*Sample ~~From~~ For Retention Pond, orangish red CLAY - From Jos. J. Hock Inc.

PROJECT NAME		PROJECT NO.
FMC Retention Pond	TABULATION OF TEST DATA	427-80004 Lab.No. 88061
		DATE 5-2-88 (completed 3-31-88)

ORIGINAL (Red)

APPENDIX 1
8 of 9

PSI A-100-17

APPENDIX D
9 of 9
ORIGINAL
(Red)

M. A. BONGIOVANNI, Inc.

GENERAL CONTRACTOR

1400 JAMESVILLE AVE.
P.O. BOX 147 - COLVIN STA.
SYRACUSE, N.Y. 13205
315-475-9937

FAX 315-475-3620

RECEIVED
MAY 3 - 1988
O'BRIEN & GERE
SYRACUSE, N.Y.

May 3, 1988

O'Brien & Gere Engineers
Attn: Don Gresko
1304 Buckley Road
Syracuse, NY 13221

Dear Don:

Attached find two (2) copies of test results on our proposed clay cover material. The tests indicate compliance with specification on all items with the exception of the permeability factor.

Specs call for a maximum of 1 x 10^{-8} CM/SEC while our material is extremely close at 8.395 x 10^{-8} CM/SEC. We would think that this material still falls within the "clay" classification.

Anticipating a potential problem, we are arranging for tests to be run on a sample from another source (Campbells Sand & Gravel). However, these tests take approximately 3 - 4 weeks for results.

In light of this, we ask that the material from Jos. J. Hock's pit be accepted so that we can be assured of a source as the work is scheduled to begin June 9th, 1988.

If Campbells product has better factors, we will use that material if you desire. We just don't want to be caught short.

We would appreciate your consideration on this matter. Please let us know as soon as possible so we can plan accordingly.

Very truly yours,

M. A. BONGIOVANNI, INC.

Michael Bongiovanni

MB:dbl
Enclosures

ORIGINAL
(Red)

APPENDIX E

COMPACTED SOIL BACKFILL TEST RESULTS

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FMC
Client's Name: BON GIOVANNI
General Contractor: BON GIOVANNI
Excavator: BON GIOVANNI

PSI Job No.: 427- 90004
Client Job No.:
Date: 6-22-88
Weather: SUNNY
Temp. (°F): 100°

2/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
1	14.7	10[illegible].6	1	90	95.3	✓			0	20'W 5'N FROM THE NORTH CORNER
2	13.6	110.1			95.7	✓				20'N 5'W " " "
3	20.[illegible]	103.6			90.1	✓				30'N 50'W " " "
4	14.3	112.2			[illegible]	✓				80'W 10'N " " "
5	13.5	108.3			94.1	✓				10'S 95'W " " "
6	15.0	103.9			90.3	✓				40'S 80'W " " "
7	12.6	105.[illegible]			91.3	✓				60'S 110'W " " "
8	15.6	108.1			94.0	✓				85'S 90'W " "
9	15.6	108.3			94.1	✓				10'E
10	11.4	114.2			99.2	✓				30'S 40'E

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☑ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☑ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
1	115	14.5	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks: SPEC. GIVEN AS 90% BY CLIENT

Technician: Bruce Cain Date: 6-22-88 Approved: Field Copy Given To Client Yes ☐ No ☐

APPENDIX E
1 of 3
ORIGINAL (Red)

PSI PTL Division

FIELD DENSITY TESTS

Project Name: FMC
Client's Name: [illegible]
General Contractor: [illegible]
Excavator: [illegible] Const.

PSI Job No.: 427- 80004
Client Job No.:
Date: 6-22-88
Weather: SUNNY Temp. (°F): 100°

3/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
11	14.5	106.4	1.	90	[illegible]	✓			0	60's 10'E From the North corner of the tank
12	12.6	113.7		[illegible]	98.7	✓			0	80's 35'E " " "

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☑ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
	113	14.5	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks:

Technician: Bruce Cain Date: 6-22-88 Approved: Field Copy Given To Client Yes ☐ No ☐

ORIGINAL (Red)

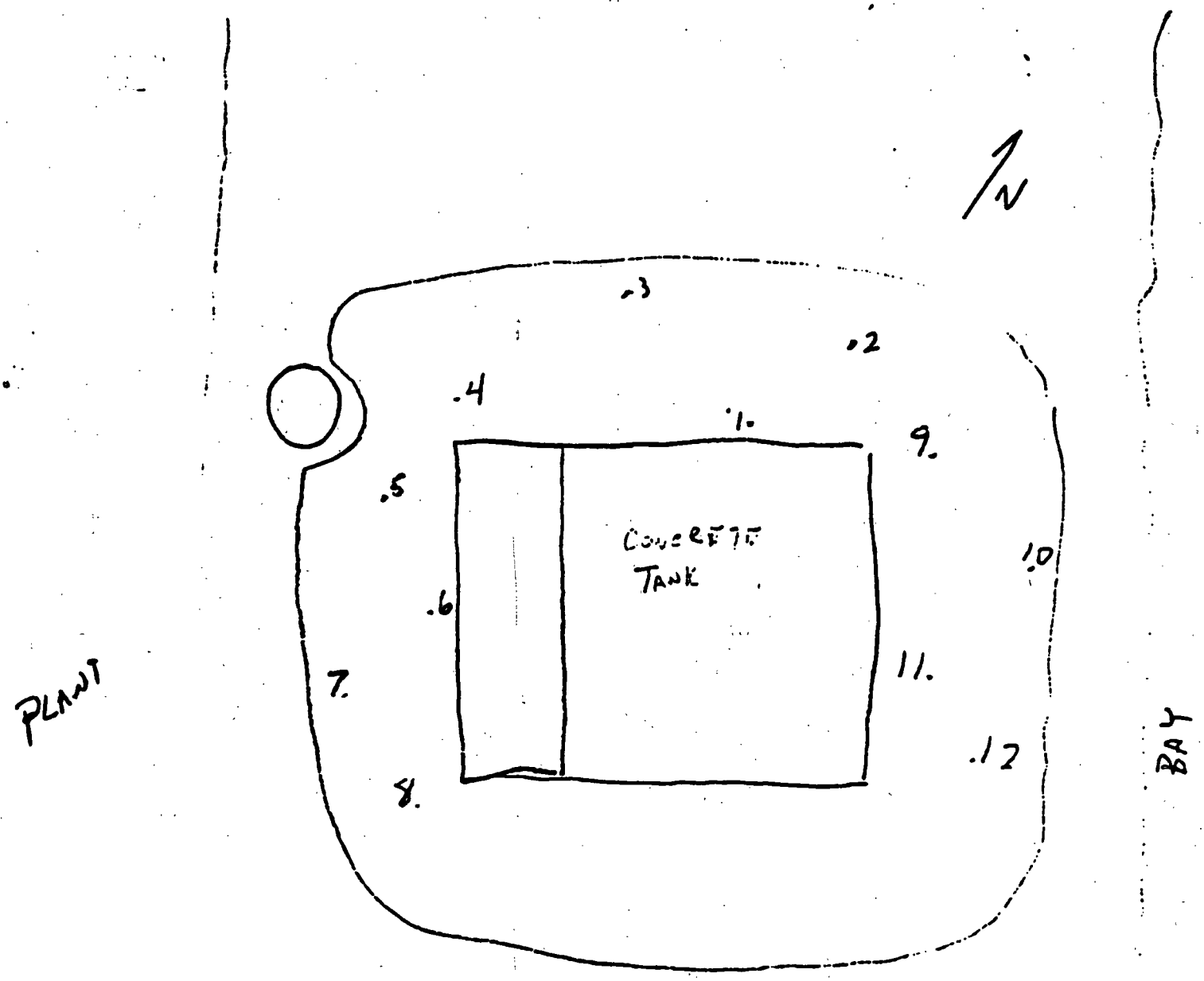
APPENDIX B 2 of 3

Professional Service Industries, Inc.
PTL Division
806 Barkwood Court, Suite
Linthicum, Maryland 21090
301/789-3224

ORIGINAL (Red)

FMC

SKETCH



Sketch No.	PTL Order No.	Lab No.	Page 4 of 4

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(Red)

APPENDIX O

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

JAN 4

FMC

~~January 3, 1985~~

Mr. Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

As discussed with you on December 24, 1984, the following information outlines the HCl spill incident that occurred at our plant December 22nd.

On 12/22/84 at 0300 hours the drain valves on a new HCl on-spec line that was rerouted two weeks ago were found to be open. At this time the line was in use for six hours and about 490 gallons of HCl spilled on the roadway and into the construction site northeast of Building 90. Investigation showed that HCl was started at 2100 hours on 12/21/84. Upon discovery, the spill area was thoroughly flushed with water with 50 percent of the flushing going directly to our sewer system to our wastewater treatment system. The remainder of the flush was contained in a plywood form in the construction site, and soda ash was spread over the area of the spill. After this, the area was pumped to our wastewater treatment system. This procedure was repeated several times until the water in the area had a pH level above 5.0.

Several actions have been implemented to prevent a recurrence of such an incident. Effective immediately, the line will be checked twice per shift when in use and reinforcement of SOP was made to operators to conduct outside checks of their entire work area within one hour of shift change. In addition, the HCl storage tank level indicators will be checked for calibration and a flow indicator with read out in the MAC plant control room will be installed in the HCl line at the storage tank area just before the line tee's off to tanks.

In addition to these corrective measures, our environmental department has reinforced to appropriate personnel/supervisors the need to call in a release of any controlled hazardous substance within one hour to the OEP enforcement division.

Should you have any questions or comments concerning this incident, please do not hesitate to call me.

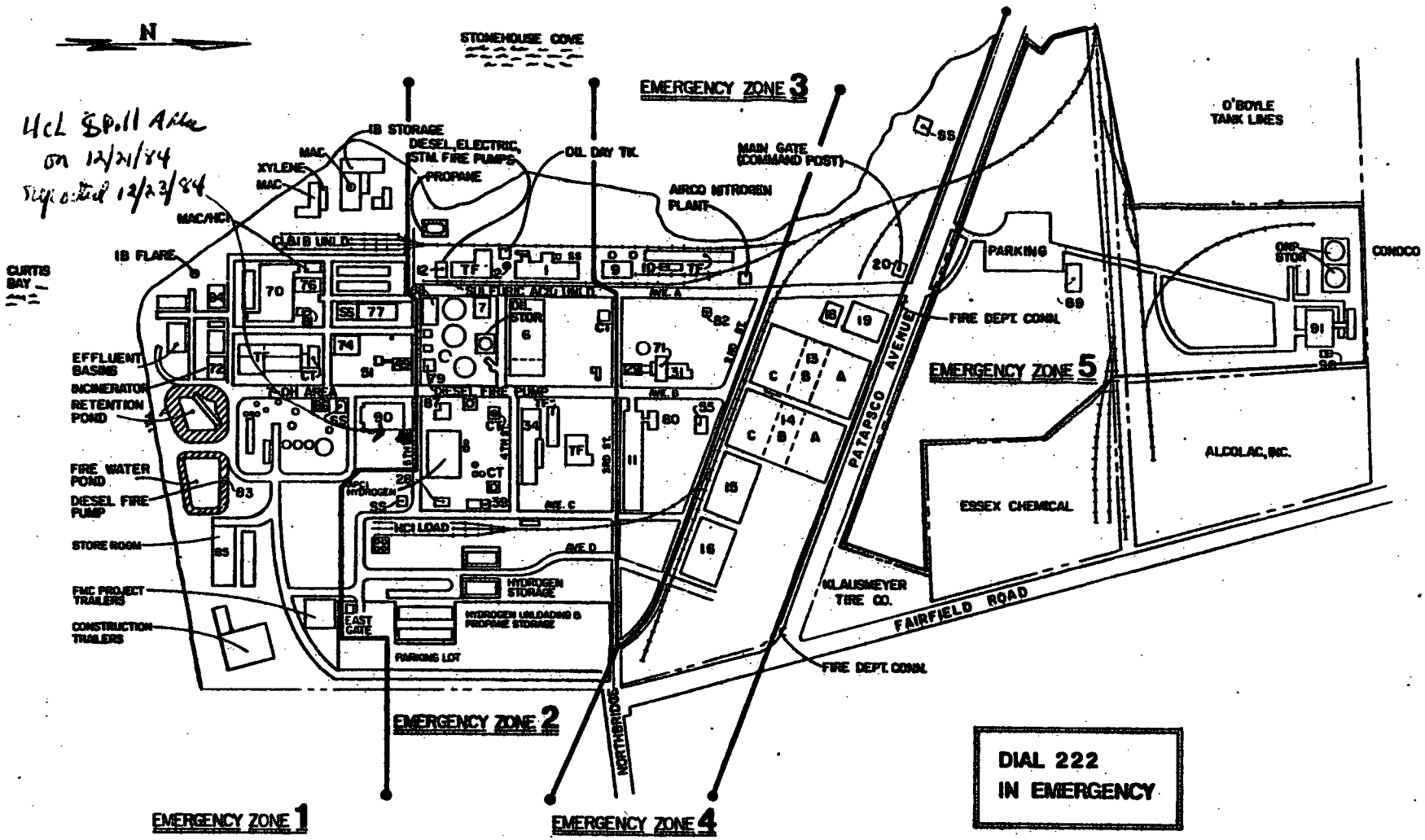
Sincerely,

D. W. Palmer

D. W. Palmer
Environmental Manager

DWP:ct

HCL Spill Area
on 12/21/84
Reported 12/23/84



NPG. LP.-TT. UNLOADING ROUTE

REV				
2	ADD LP TO ZONE 2	GAB	drawn by: R.W. BROWN	REVISIONS
			approved by: [signature]	4564-b
			JULY 30, 1982	rev. no 2

ORIGINAL (Red)

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

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24

ENFORCEMENT DIVISION

FMC

~~June 20, 1985~~

Mr. Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

As discussed with you on both June 19 and 20, 1985, the following information outlines the breakage of the HCl scrubber sewer line.

On June 19, 1985 at approximately 4:00 PM, it was noted that during the course of construction in the Plant 4 area, an underground terra-cotta pipe was accidentally broken. This pipe contains HCl contaminated water from the HCl scrubber bleed line. Since the pH is approximately 1.5, at a flow rate of approximately 2 GPM, the liquid is piped directly to the plant sewer system for treatment prior to discharge to the city sewer system.

Within a short time after notification was received, the area was flushed with fresh water for approximately 12 hours at a rate of 8 GPM. Due to this corrective action, the resulting pH was ~5. All free liquid was pumped to a plant sewer for further treatment.

Temporarily, a chemical hose will be routed to a plant sewer until permanent repairs are completed.

If you have any questions concerning this incident, please do not hesitate to call.

Sincerely yours,

C.A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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FMC

July 12, 1985

Mr. Paul Thompson
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Permit No. 80-DP-0499C

Dear Mr. Thompson:

As discussed in our phone conversation at 6:25 PM on July 10, 1985, the report on the 7/10 caustic spill incident is herein submitted. On July 10, 1985 at 6:00 PM while charging caustic to the DV acid chloride (FMC 30063) scrubber jet, a leak developed and resulted in a spill of approximately 25 gallons of caustic outside the process containment area. The wetted area was covered with sta-dri and subsequently shoveled into containers for later disposal. A sample of the outfall 002 effluent stream during the cleanup activity analyzed at a pH of 7.6. A grab sample at 9:00 AM on 7/11/85 yielded a 7.3 pH.

An investigation of the scrubber jet showed that a crack in the Haveg jet housing was the source of the leak. The scrubber jet system will not be used until a replacement or repaired jet is available and installed. Should you have any questions or comments concerning this incident, please do not hesitate to call me.

Sincerely,

D. W. Palmer

D. W. Palmer
Environmental Manager

DWP:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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FMC

~~August 13,~~ 1985

Mr. Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

As you requested, I am submitting the plan for reconstructing the Building 12 sump.

To date, this sump has been emptied and a 2 ft. depth of #6 stone was placed on the bottom. The walls have been water blasted and are to be sandblasted in preparation for an epoxy concrete lining. Prior to lining, the opening in the west wall will be plugged and sealed with concrete and then an additional 4 ft. depth of stone and a 1 ft. concrete pad will be installed to decrease the sump volume and improve maintainability. An east-west weir wall will be installed in this sump to allow one compartment to serve as a carbon-grit trap for the backflush water from our carbon system. Two self priming pumps operated via a low-high automatic level control system will be installed in the north section of the sump. The surface drain west of the railroad tracks will be renovated and remain connected to this sump. The area around this surface drain and the sump will be graded to allow runoff into the sump with no accumulation of rain water. The sump water will be pumped into the sewer system that goes to our settling basins and carbon treatment system. It is estimated that the sump repair itself will be completed by 11/1/85 and the pumps and transfer piping installation completed by 2/1/86. In the interim, the Building 12 sump will be kept emptied via a portable pump and/or steam syphon. I trust that this plan meets your approval and will keep you informed of any major changes or developments.

Also, no seepage into Stonehouse Cove from west of Building 12 has been observed since a former abandoned drain pipe in the vicinity of the surface drain was removed. A sample of the discolored gravel in this area was analyzed and determined to be 2-4 dinitro-6-sec-butylphenol. This material was removed, drummed and prepared for shipment to a secure chemical landfill.

Please call me if any comments or questions arise.

Sincerely,

R. T. Sebrosky
Environmental Engineer

RTS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

December 26, 1985

FMC

Joseph Stang
State of Maryland
Department of Health and Mental Hygiene
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

In accordance with the Baltimore facility's CHS Permit, I am following up my 11:30 A.M. telephone call to William Schmidt and Reid Rosnick (O.E.P. representatives) with this memo officially notifying your office of a release that occurred at this plant on December 23, 1985. At approximately 11:15 A.M., I was informed that on the north side of Patapsco Avenue (Pounce® facility), some DV Ester (product) splashed onto the ground. After thoroughly investigating this incident, I determined the cause and volume of material involved.

A tank truck located in a concreted and diked containment area was being filled with product (DV Ester) - normal operating procedures were being observed. After filling was completed, the loading pump was shut off. Shortly there after, liquid began to leak from a teflon seal, located in the loading line. The liquid (DV Ester) drained onto the previously loaded tank truck - causing the material to splash and subsequently fall to the ground.

The total volume of material that was contained in the loading pipe was ~seven gallons (7). I estimate, that ~1-2 gallon of DV Ester splashed onto the ground, while all remaining material was contained in a diked area. Absorbent was immediately placed on all free liquid, and shoveled into drums. All drummed material will be sent to a secure chemical landfill for disposal.

The loading line was then checked out to determine the cause of the teflon gasket failure. It was noted that apparently during mechanical assembly of this system, a metal backing plate (required to provide

ORIGINAL
(Red)

rigidity to teflon gaskets) was omitted - thus responsible for the gasket failure. This system will be repaired and checked before use is permitted.

If you have any additional questions, please contact me.

Sincerely,

C.A. Shaheen
C. A. Shaheen
Environmental Engineer

CAS:ct

cc: DWPalmer
RNMesiah - Phila.
FSiwajek
DCLewis

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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JAN 16 1986
ENFORCEMENT DIVISION

~~January 15, 1986~~

FMC

Joseph Stang
State of Maryland
Department of Health and Mental Hygiene
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On January 14, 1986, at approximately 12:45 PM, a small quantity of DV Ester (Product) was released outside of a containment area.

While attempting to straighten a pallet of 55 gallon steel drums containing DV Ester (Product), a forklift driver accidentally punctured one of the drums with one of the forks. Most of the liquid drained onto the macadam, and ~1-3 gallons drained onto a graveled area. The spill was responded to immediately. Oil-dry was immediately placed on all liquid, shoveled up and placed into drums. These drums of material were placed on a designated CHS storage area in preparation for shipment to a secure chemical landfill.

I telephoned the above information to Mr. Reid Rosnick, O.E.P., at approximately 1:00 PM in order to comply with the time constraint imposed by our CHS permit.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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JAN 21 1986
ENFORCEMENT DIVISION

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FMC

~~January 15, 1986~~

Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: FMC Corporation
NPDES Permit No. 80-DP-0499C (MD0000299C)

Dear Mr. Stang:

As discussed with you via telephone on January 8th, I am submitting a summary of the events concerning the high DV acid (FMC No. 30062) value obtained for our outfall 002 stream on January 3rd.

The composite outfall 002 sample for 1/3 analyzed 1.69 PPM DV acid. A grab resample taken 1/7 gave 1.04 PPM DV acid. Since some subsequent upstream samples (Bldg. 91 SE & Bldg. 91 SW corners) gave > 0.83 PPM DV acid we decided to hydroclean the B-91 sewer system including the piping to the outfall 002 sample station. All cleaning water from this operation was vacuumed into a tank truck for retreatment in the resin system. After the hydrocleaning operation, an outfall 002 grab and several upstream samples were taken and analyzed < 0.08 PPM DV acid. A composite outfall 002 sample taken 1/10 gave 0.080 PPM DV acid. Considering that no DV acid had been produced since mid-August and that the Bldg. 91 sewer system extending to the outfall 002 sample station was hydrocleaned in November, the source of the DV acid is puzzling. A possible explanation could be a pocket of contaminated dirt in the building trench system that was missed in the first hydrocleaning operation. To minimize chances of future outfall 002 DV acid excursions, we will implement a sampling program of an upstream source(s). Please contact me if there are any questions or comments concerning the above matter.

Sincerely,

R. T. Sebrosky
Environmental Engineer

RTS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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FEB 20 1986

ENFORCEMENT DIVISION

ORIGINAL (Red)

FMC

~~February 18, 1986~~

Joseph Stang
State of Maryland
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On February 13, 1986, you were informed by both Mr. Charles Lewis (O.E.P. 12:50 P.M.) and later by R. Sebrosky (FMC-2:08 P.M.), about two related releases that occurred at the FMC Baltimore plant on February 13, 1986.

At approximately 12:30 P.M. a tank of product (Sodium Sulfide) was overfilled due to an apparent failure of the tank's level indicator. At the time of overflow, the device indicated a level of 55%. Material flowed into a dike area and splashed onto a graveled area. I estimate that ~30 gallons of material was not contained. Oil-dry was immediately thrown on all free liquid.

At ~12:45 P.M., the tank's fill line was steamed to remove all product, however, a gasket failure occurred at a flanged section of piping, resulting in a release of ~20 gallons of product. All product fell to a graveled surface.

The line was immediately isolated in order to begin clean up procedures. Oil-dry was placed on all free liquid to contain the material. The contaminated gravel from both of the above incidents was removed and will be disposed at a secure chemical landfill.

A follow-up investigation noted that the liquid in the upper half of the product tank was frozen (tank is not heated or insulated) causing the level indicator to malfunction. A modification to this level indicator system will be devised to insure this mishap does not reoccur.

If you have any questions, please contact me.

Sincerely,

C.A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

STANG

ORIGINAL
(Red)

RECEIVED FMC
MAY 27 1986
ENFORCEMENT DIVISION

May 22, 1986

Joseph Stang
State of Maryland
Office of Environmental Programs
Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On May 22, 1986 at ~11:30 A.M. Chemical Waste Management, Inc. (C.W.M.) personnel were loading copper sludge (a non-RCRA waste) from a waste tank. During this period, a gasket in C.W.M.'s trailer dome failed, resulting in a release of approximately 20 gallons of waste material. The material was released to a graveled area outside a concreted containment area.

Clean up and containment of the material began immediately. All contaminated dirt and gravel were removed and scheduled for shipment to a secure landfill.

The above information was telephoned to Ms. Debbie Ford, O.E.P. at ~12:30 P.M.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

RECEIVED
JUN 4 1986
ENFORCEMENT DIVISION

ORIGINAL (Red)

FMC

June 2, 1986

Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On Monday, June 2, 1986 at approximately 6:30 AM, a railcar of 93% sulfuric acid was being unloaded. During this transfer operation, a stainless steel flex hose began to leak - resulting in a release of approximately 30-40 gallons of acid to the graveled ground. The transfer operation was immediately ceased. Containment and neutralization of the spill was begun immediately. Soda Ash was placed on all liquid in order to neutralize the material, while water was used to clean off the rail car.

After I was informed about this release, I contacted your office at approximately 9:10 AM.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL
(Red)

FMC

~~November 25, 1986~~

RECEIVED
DEC 1 1986
ENFORCEMENT DIVI

Joseph S. Stang
Office of Environmental Programs
Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Stang:

This letter shall serve as a follow-up to my telephone call to the Department on November 23, 1986 at 0240 hrs., and our telephone conversation on November 24, 1986 at 0830 hrs.

In the early morning of the twenty-third we were removing heavy oils from our 2nd waste water treatment basin with a portable pump and chemical hoses to an incinerator feed tank for subsequent incineration. The overall purpose of the operation is to remove all material from the basin to permit inspection during our present outage and efforts in this regard had been underway for several days without difficulty. The operation was to continue during the night shift and upon starting the pump the operator proceeded to the control room (approximately 50' away). to check the incinerator feed tank level. In doing so the operator quickly noticed that the oils were being pumped to the concrete road, asphalt sidewalk and gravel area adjacent to the control room due to a separation in the hose connections. The operation was stopped immediately, absorbant applied and cleanup initiated.

A total of seven (7) drums of gravel-absorbant material were cleaned up and will be disposed at an approved facility. The estimated 100 gallons or less of heavy oils became very viscous in the cool night temperature and were confined to an approximate 12' by 15' gravel area bordered by roads, sidewalks and tank dike walls.

Should you have any questions or require any additional information, please do not hesitate to call me.

Sincerely yours,

A. P. Dean
Environmental Engineer

APD:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

RECEIVED ORIGINAL (Red)
MAR 12 1987
ENFORCEMENT DIVISION

FMC

~~March 9, 1987~~

Joseph Stang
State of Maryland
Office of Environmental Programs
201 West Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On March 6, 1987 at approximately 2015 hours, a valve located on a caustic scrubber line, developed a leak. The resulting leak allowed 10 gallons of a 25% caustic solution to spill onto the ground.

Afer discovering the leak, the leak was stopped and the contaminated dirt removed.

The above information was called into Mr. Paul Thompson on March 9, 1987 at approximately 2025 hours.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

RECEIVED
ORIGINAL
MAR 20 1987 (Red)
ENFORCEMENT DIVISION

FMC

March 19, 1987

Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On Saturday, March 13, 1987, I informed you that an overflow from MH-4 occurred. Upon further investigation, it was determined that seepage had occurred along our south shore line.

The seepage occurred when a salt solution was being pumped from the first wastewater basin to the nearby sewer. The sewer line backed up and seepage was noticed along the south shore line. When the seep was noted, use of the sewer was immediately discontinued.

This sewer system will remain out of service until a determination is made and identification of the problem is determined. Options for repair or abandonment will be made and corresponded to you.

A sample of the liquid was taken and analyzed for our NPDES permit parameters. The results were:

Parameter	Concentration (PPM)
Total Organic Carbon	320
Total Suspended Solids	62.0
Total Chromium	0.13
Total Copper	0.14
Total Zinc	0.04
Phenolics	7.0
Oil and Grease	51.3
FMC 30077 (Prenol)	<0.01 (ND)
FMC 30098 (Step I Product)	<0.01 (ND)
FMC 30099 (Step II Product)	0.1
FMC 39338 (Methyl DV Ester)	2.07
Carbon Tetrachloride	<0.00001 (ND)
pH	9.9

ORIGINAL
(Red)

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL
(Red)

FMC

~~March 30, 1987~~

Joseph S. Stang
State of Maryland
Office of Environmental Programs
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUEST

Dear Mr. Stang:

On March 27, 1987, a process pipeline containing Sodium Sulfide solution (Bi-product) failed. Upon observing the leak, the line was immediately taken out of service. Approximately 10 gallons of material leaked to the adjacent graveled area. This gravel was removed and the area was flushed with water.

The above information was communicated to Ms. Ruth Schelhaus, Enforcement Division within 1 hour of the incident.

If you have any questions, please contact me.

Sincerely,

C.A. Shaheen

C. A. Shaheen
Environnmental Engineer

CAS:ct

RECEIVED
MAR 30 1987
ENFORCEMENT DIVISION

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL
(Red)

April 1, 1987

FMC

Joseph S. Stang
State of Maryland
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On April 1, 1987 a railcar containing a 47% solution of Potassium Carbonate (raw material) was being unloaded. During this operation approximately 50 gallons of material vented from the top dip-tube. The venting was secured when observed, and immediately stopped. This material leaked to the adjacent graveled area beneath the railcar.

The contaminated area was immediately flushed with water in order to neutralize the material.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

RECEIVED
APR 3 1987
ENFORCEMENT DIVISION

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL (Red)

Rec 5/15/87 JTZ

FMC

May 15, 1987

Joseph S. Stang
State of Maryland
Office of Environmental PRograms
201 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Stang:

This letter is a follow-up to our telephone conversation of May 10, 1987 at approximately 7:00 PM, at which time I reported to you a leak of hydrochloric acid (HCl) from an elbow in an FRP line in a pipe rack to the gravel surface below. This line transfers HCl from a production area to storage, and flow was stopped immediately upon discovery.

The area of gravel affected was approximately 15 square feet, and we estimate the loss to be less than 100 gallons. The gravel area was neutralized with soda ash and flushed to our in-plant sewer system. Repairs to this line were completed on May 12, 1987, and service restored.

Should you have any comments or questions regarding this matter, please do not hesitate to call me.

Sincerely yours,

A. P. Dean

A. P. Dean
Sr. Environmental Engineer

APD:ct

cc: DWPalmer
DCLewis

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore, Maryland 21203
301 355 6400

ORIGINAL (Red)

FMC

June 12, 1987

Joseph S. Stang
State of Maryland
Department of Health and Mental Hygiene
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On June 11, 1987 at approximately 11:00 AM, a pump was transferring sulfuric acid from a railcar to storage. The operator observed that acid was leaking from the seal. The transfer was immediately stopped. After the pump stopped, the seal failed, releasing ~5-10 gallons of material to the adjacent gravel. The leak was valved off, neutralizing material was placed on the acid and the affected area flushed with water.

The above information was provided to Ms. Diane Lewis of your office.

If you have any questions, please contact me.

Sincerely yours,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

RECEIVED
JUN 18 1987
ENFORCEMENT DIVISION

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL (Red)

FMC

~~January 22, 1988~~

J. S. Stang
State of Maryland
Department of the Environmental
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This is a follow-up to the conversation you had with Messrs. D. W. Palmer and R T. Sebrosky on 1/16/88 regarding the release of Hydroxylamine Sulfate (HAS) solution.

The following is a description of the events leading up to the release.

During the unloading of an HAS railcar into a storage tank, an operator observed that a remote tank level indicator did not rise as much as experience told him it should. This was reported to the operations crew and an immediate inspection of the tank farm area revealed a large leak from a pressure indicator gauge. The operator immediately closed a valve upstream of the gauge to stop the leak.

An inspection revealed that approximately 20,000 gallons of HAS solution leaked into the plant's wastewater system and onto the graveled area. It was later verified that approximately 6700 gallons actually leaked to the graveled area, and the remainder was contained in the plant waste water system. The contaminated gravel was removed and placed in a dumpster. This material will be disposed of at a secure chemical landfill.

An incident investigation determined that a small leak had begun on 1/15/88 when the diaphragm on the oil filled pressure gauge ruptured exposing mild steel internals to the corrosive HAS solution. The leak grew larger as corrosion of the non-stainless steel parts of the gauge occurred.

Corrective measures to prevent a recurrence of such an incident have been implemented and include; increased checking of remote tank farm areas, possible valving off of remote pressure indicator gauges when not in actual use, and close inspection of equipment and tanks before and after a bulk transfer.

If there are any questions or comments regarding this matter, please do not hesitate to contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

RECEIVED
JAN 27 1988
HAZARDOUS WASTE
ENFORCEMENT TEAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

~~March 8,~~ 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This letter is to follow up my telephone conversation with Jeff Smith of your office at approximately 7:15 PM on March 2, 1988. Earlier that day, at 4:29 PM, an aerosol was vented from a reactor relief valve in the 7-Hydroxy Plant IV process area after the reactor over pressurized. The aerosol carried no more than 50 gal of methyl isobutyl ketone (MIBK) out of the reactor, which was deposited within the diked area and on nearby gravel. The State Waste Management Administration was contacted at 5:13 PM.

The process was shut down and cleanup began immediately after the spill. Paved areas, such as dike walls and floors and sidewalks were washed. Affected gravel was collected and placed in a dumpster for disposal at a secure landfill.

An investigation of the incident concluded that a malfunctioned level indicator caused the reactor to be filled excessively during raw material addition. The indicator has been repaired and will be checked more frequently to prevent another occurrence.

If you have any questions or require further information, do not hesitate to contact me.

Sincerely,

John J. Elbin for D.W. Palmer

D. W. Palmer
Environmental Manager

DWP:ct

RECEIVED

MAR 11 1988

HSWMA
ENFORCEMENT PROGRAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

~~June 20,~~ 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This letter is pursuant to my telephone conversation with Mr. Richard Johnson at 8:35 AM on June 17, 1988.

On June 17th at 7:50 AM, about 15 gallons of waste sodium sulfide solution sprayed from an overhead pipeline onto the gravel underneath. The leak occurred when a new gasket in a recently replaced section of the pipe failed. The leak was discovered immediately and the transfer pump was shut off.

The faulty gasket has been replaced and the other gaskets in the new pipe section have been inspected. The contaminated gravel was shoveled up and put into (12) 55-gallon drums. These will be sent to a hazardous waste landfill.

If you need any futher information, please feel free to call me.

Sincerely yours,

John J. Giblin

J. J. Giblin
Environmental Engineer

JJG:ct

RECEIVED
JUN 24 1988
HSWMA
ENFORCEMENT PROGRAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

August 5, 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:
This letter is pursuant to my telephone conversation with Art O'Connell on August 4, 1988 at 11:25 A.M.

On August 4 at 10:40 AM a relief valve on a vent line to the scrubber in the DV Ester/Cypermethrin building opened and discharged about 200 cubic feet of gas containing about 100 ppm hydrogen cyanide to the atmosphere. The relief valve reseated after 10 minutes.

The relief valve opened because the vent line was overpressurized, which was caused when a process filter was being blown out with nitrogen while the scrubber column was simultaneously operating in a flooded state.

The flowrate of caustic solution to the column was adjusted to correct the flooded condition.

If you need any futher information, please contact me.

Sincerely,

John J. Giblin

J. J. Giblin
Environmental Engineer

JJG:ct

RECEIVED
AUG 8 1988
HSWMA
ENFORCEMENT PROGRAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

February 28, 1989

Carrol James Leizear
Hazardous & Solid Waste
Management Administration
Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224

Dear Mr. Leizear:

As a follow-up to your visit of Friday, February 24, 1989, the damaged drum of soda ash found on the Building 34 - RCRA pad was overpacked that same afternoon.

Also, to aid in your familiarization of FMC Baltimore, I have enclosed a plot plan which is a little better in quality and more up-to-date than the one you may now have.

Sincerely,

A. P. Dean

A. P. Dean
Environmental Manager

cc: Mr. Joseph Stang

RECEIVED
MAR 3 1989
HSWMA
ENFORCEMENT PROGRAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

May 24, 1989

Mr. James Leizear
Maryland Department of the Environment
Hazardous and Solid Waste Management
Administration
2500 Broening Highway
Baltimore, Maryland 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Leizear:

This letter is pursuant to my phone conversation with you on May 24, 1989 at 10:45 AM to report an accidental release of methallyl chloride.

On May 24, 1989 at about 10:20 AM, a flange gasket in a pipeline containing methallyl chloride (MAC) in the Plant IV area failed, resulting in about 20 gallons of MAC spraying outside the containment area onto an adjacent sidewalk and gravel. The MAC line was immediately shut down. Maintenance has repaired the flange. Oil dry was applied to adsorb the spilled material and it and the contaminated gravel have been placed in drums and will be sent to a hazardous waste landfill. No injuries occurred from this incident.

If you have any questions, please feel free to call.

Sincerely,

Jack Giblin

John J. Giblin
Environmental Engineer

JJG:ct

RECEIVED
MAY 26 1989
HSWMA
ENFORCEMENT PROGRAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

RECEIVED

JUN 9 1989

HSWMA
ENFORCEMENT PROGRAM

FMC

June 5, 1989

Mr. James Leizear
Maryland Department of the Environment
Hazardous And Solid Waste
Management Administration
2500 Broening Highway
Baltimore, MD 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Leizear:

This letter is pursuant to our phone conversaton on June 1st to report an accidental spill of sodium sulfide solution.

On June 1, 1989, at approximately 10:30 a.m., a railcar being loaded with sodium sulfide solution, began leaking around its bottom fittings. The operator working at the scene immediately ceased the loading process and obtained assistance. A containment basin was set up underneath the leak with plastic sheeting and sand bags. Some rags were stuffed in the leak, which slowed its rate to about 1/2 gpm. The spilled liquid collected in the temporary basin was pumped back into the railcar, while simultaneously the railcar was pumped back into a tank, T-9107, in Bldg. 6 where the sulfide solution was generated. The railcar was emptied about 9:00 pm that evening. No injuries were caused by the spill or its cleanup.

The operator at the scene when the leak occurred estimated that about 50 gallons of solution spilled before the leak was contained. The soil contaminated by the spill was left in place because removing it from underneath the tracks would be technically difficult and because most of the spill was likely collected by a french drain system underneath the rail siding and diverted it into the plant sewer system and wastewater treatment plant. Higher sulfide levels in the wastewater treatment system later that day confirmed this.

The solution which spilled contained 15-18% sodium sulfide at a pH of 13.3. It is a by-product of the Ethion process and is sold to a paper manufacturing company for its own use.

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL
(Red)

FMC

October 3, 1988

Mr. Joseph S. Stang
Department of the Environment
Hazardous and Solid Waste Management
Administration
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This letter shall serve as the requested follow-up to your inspection of Wednesday, September 28, 1988, addressing the items which you identified and the efforts we intend to take to prevent any recurrence.

The containers adjacent to our old incinerator were sealed, labeled and moved to our permitted south waste storage area by September 29th. Ultimate disposition and disposal of these drums is presently being determined.

The drums found in Building 6 were all likewise relocated to our permitted north waste storage area on September 29th. The drums identified "Ethion..." are non-RCRA hazardous and most were actually in-process materials, stored in the building for recovery and further processing during our present Ethion campaign. The sulfide waste drums contained materials removed from a process tank and had been held in the building to decant water from the drums every few days. Laboratory work was completed on September 29th characterizing these drums as non-RCRA hazardous. Nevertheless, we will dispose of this material at only licensed facilities, as is our normal policy.

The two-drums found in poor condition on our south waste storage pad were repacked on the evening of September 28th and the drums found at the perimeter of this area moved the same evening. We have attempted to control the access to these storage areas so as to better manage waste shipments and housekeeping at the area. Obviously, better definition is required to preclude storage of materials immediately outside the area.

RECEIVED

OCT 11 1988

HSWMA
ENFORCEMENT PROGRAM

ORIGINAL
(Red)

Immediately following your inspection and again on September 30th, meetings were held with our unit and areas supervisors to review the circumstances which led to your findings, our regulatory obligations and procedures which we must employ to prevent any recurrences. I believe we have established a sound and credible regulatory history and have in place those standard operating procedures necessary to meet both the letter and intent of the law. Communicating and reaffirming these requirements and responding to those items you may request of us during inspections is critical in order to maintain this history.

During the first week of October we are developing the format of a training session which we intend to convey to all employees (and contractors) on the plant involved in our waste handling activities. Although this will duplicate our annual RCRA training it is clearly necessary. These sessions will cover waste identifications, labeling and dating, inspection procedures, storage requirements, procedures involved with the accumulation of wastes in production areas, obligations of contractors working for FMC contract administrators, etc. With the completion of the agenda all retraining will begin immediately and be documented and completed by early November.

We very much appreciate your return visit this week and our discussions which will improve this training and our understanding of this complex area. If you have any comments, questions or other recommendation on these issues please do not hesitate to contact me. Please be assured that your findings of last week will not be found again.

Sincerely,

A. Parker Dean

A. Parker Dean
Environmental Manager

APD:ct

ORIGINAL
(Red)

APPENDIX P

Revised: Nov. 1986

ORIGINAL
(Red)

SECTION 3

Inventory of Known Hazardous Wastes

Generated by, or known to exist on the
premises of, the Baltimore Plant

ORIGINAL
(Red)

T-6405 TMOA WASTE

	5/14/84	5/15/84
Methyl Acetate	7.3 %	7.3 %
Methanol	58.3 %	60.3 %
Acetonitrile	6.0 %	6.1 %
TMOA	ND	ND
Trimethyl triazine	0.8 %	0.7 %
Chlorotoluene *	26.1 %	25.0 %
Chloroform *	40 ppm	45 ppm
Carbontetrachloride *	2243ppm	2317ppm
Benzene *	23 ppm	24 ppm
Toluene *	61 ppm	61 ppm
Chlorobenzene *	34 ppm	34 ppm
Methylenechloride *	ND	ND

WASTE METHANOL

	5/14/84
Isoprene / Heptane	55 %
Methyl Acetate	1.4 %
Methanol	42 %
Methylenechloride *	28 ppm
Chloroform *	115 ppm
Carbontetrachloride *	5109 ppm
Benzene *	270 ppm
Toluene *	822 ppm
Chlorobenzene *	853 ppm

ORIGINAL
(Red)

2ND BASIN OIL P-2208

	5/14/84	5/16/84
7-H	0.5 %	1.0 %
ONP	35.7 %	32.1 %
Claisen	1.2 %	0.3 %
Isobutenyl	19.9 %	19.0 %
ONPME	1.5 %	6.7 %
7-Nitro	40.5 %	36.9 %
Tars	4.8 %	5.0 %
2-chlorophenol *	2690ppm	2303ppm

3RD BASIN OIL P-1205

	5/14/84	5/16/84
7-H	6.2 %	6.0 %
ONP	3.4 %	3.5 %
Claisen	4.7 %	4.5 %
Isobutenyl	4.6 %	4.5 %
ONPME	61.1 %	59.5 %
7-Nitro	11.7 %	12.1 %
Tars	4.3 %	5.0 %

ORIGINAL
(Red)

CLAISEN TAR P-2235

	5/14/84	5/16/84
ONPME	4.3 %	52.1 %
Tars	5.8 %	29.4 %
2,4-Dinitrophenol*	ND	165 ppm
4-Nitrophenol *	ND	780 ppm

Indications from the analytical data are that the sample taken 5/14/84 is mostly oil diluent.

SUPER TAR P-2236

	5/14/84	5/16/84
ONPME	15.8 %	34.9 %
Tars	55.8 %	44.0 %
2,4-Dinitrophenol *	123 ppm	217 ppm
4-Nitrophenol *	840 ppm	992 ppm

Added to original

ORIGINAL
(Red)

COOLING TWR SLUDGE

Components %	Sample Method Frequency	Test Method
30-60 Algae Residue	Grab/1/Yr.	
1 Chromate ION		1-M
500 ppm Zinc ION		1-M
Balance Water		

original

ORIGINAL (Red)

7-HYDROXY TAR

Components %	Sample Method Frequency	Test Method
100	Grab/1/6 months	F-V-9

original

ORIGINAL
(Red)

7-OH TAR ANALYSIS

C. A. Shaheen

The residue of 7-Hydroxy distillation where the 7-hydroxy is manufactured from ONP consists of dimer, trimers, tetramers and higher numbers of repeating units of the following basic building blocks (monomeric units).

(1) 2,2 Dimethyl - 2,3 - dihydrobenzofuranol

(2) 2,2 Dimethyl - 2,3 - dihydrobenzofuran

(3) Xylene

(4) 2,2 - Dimethyl - 2,3 - dihydro - 7 - amino benzofuran

90% of all tars analyzed are dimers and trimers of the 1st two compounds.

G.C. volatile compounds have been identified to a molecular weight of ~450. Non- G.C. volatile compounds are assumed to be tetramers, pentamers and higher number repeating units of rapidly diminishing concentration.

Two other tars of the 75% identifiable by gas chromatograph do not fit the above description. They are:

3% 2,2 - Dimethyl - 2,3 - dihydro - 3 - Keto benzofuranol

2% 2,2 - Dimethyl - 2,3 - dihydro - 3 - hydroxy benzofuranol

Added

ORIGINAL
(Red)

7-OH TAR PLANT # 1

	5/15/84	5/16/84
7-OH	2.4 %	2.3 %
Tars	51.2 %	46.6 %

7-OH TAR PLANT # 3

	5/14/84	5/16/84
7-OH	2.2 %	5.2 %
Tars	85.1 %	84.6 %

Added

ORIGINAL
(Red)

MAC WASTE

	5/14/84 T-1141	5/16/84 P-1142
IB	0.2 %	0.2 %
TBC	0.04%	.04%
ICC	1.5 %	1.7 %
MAC	6.3 %	5.2 %
DCIB (1)	45.4 %	49.2 %
DCIB (2)	32.4 %	33.2 %
TCIB (3)	14.1 %	13.4 %

DCIB (1) = 1,2-dichloro-2-methylpropane or dichloroisobutane

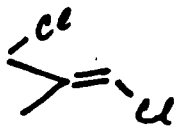
DCIB (2) = 3-chloro-2-chloromethyl-1-propene and
(cis/trans) 1-chloro-2-chloromethyl-1-propene

TCIB (3) = 1,2,3-trichloro-2-methylpropane

Added

DCIB(2)

3-chloro-2-chloromethyl-1-propene



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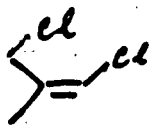


(cis/trans) 1-chloro-2-chloromethyl-1-propene

DCIB(1)

1,2-Dichloro-2 methyl-propane

AA-92660780

ORIGINAL
(Red)

WASTE METHANOL

Components %	Sample Method Frequency	Test Method
65-75 MeOH	Grab/1/6 month	DVE-1
2-4 TMOA		
1-2 MeAc		
4-6 Heptane		
≤1 Isoprene		
≤1 H_2O		
≤1 FMC 30098		
" 39338		

Original

PVC

ORIGINAL (Red)

STEP I BOTTOMS

Components %	Sample Method Frequency	Test Method
10-30 FMC 30098 30-60 FMC 30085 10-15 TMOA	Grab/1/6 months	DVE-1

Original

ORIGINAL
(Red)

4/26/85 CAS

CHLOROACETYLENICS

Composition	90
DV Ester	30 - 33
Heptane	25 - 30
Chloroacetylenics	25 - 30
Methyl Benzoate	5 - 10

ORIGINAL
(Red)

MDD003071875

CAS 12/28/83

C-1 Chemical and Physical Analysis (Update)

TMOA WASTE ORGANICS

Composition	%
Methanol	30-35
O-Chlorotoluene	30-35
Trimethyl-O-Acetate	12-14
Methyl Acetate	5-7
Sodium Chloride	1-2
Acetonitrile	1-2
Methyl Chloride	5-6
Acetamide	1-2
Sodium Methoxide	1.0

RCRA Classification - D001 - Ignitable Liquid

Added

ORIGINAL
(Red)

MDD003071875

CAS 12/28/83

C-1 Chemical and Physical Analysis (Update) (continued)

TMOA - Waste Filter Cake

Composition	%
Ammonium Chloride	75-80
Sodium Chloride	15-18
O-Chlorotoluene	6-8
Methanol	1.0
Trimethyl O-Acetate	1.0
Acetonitrile	10 ppm - 12 ppm

RCRA Classification - D001 - Ignitable Solid

Added

ORIGINAL
(Red)

DVE

STEP III BOTTOMS

Components %	Sample Method Frequency	Test Method
10-20 FMC 39338 10-20 FMC 30094 10-20 Trichloroproducts of FMC 30094 5-10 Methyl 3 Benzene 2,2 dimethylcyclopropane carboxylate Balance - polymers of FMC 39338	Grab/1/6 months	DVE-3

original

ORIGINAL (Red)

STEP III HEAD CUT

Components %	Sample Method Frequency	Test Method
40-50 FMC 39342 10-20 FMC 39338 10-15 Methyl Benzoate 25-40 FMC 39338 Analogs	Grab/1/6 months	DVE-3

ORIGINAL
(Red)

STEP II

Components %	Sample Method Frequency	Text Method
80-85 CCl_4 10-12 MeOH, MeAc, Isoprene 0-5% Chloroform TR - Methyl prenyl ether TR - Chlorobenzene	Grab/1/6/months	DVE-2

ORIGINAL
(Red)

DV ESTER BRINE

Components %	Sample Method Frequency	Test Method
10-15 NaCl	Grab/1/Month	#285
.1-.3 MeOH	" "	
.1-.2 Heptane	" "	DVE-3
.2-.5 polymers of FMC 39338	" "	
$\leq$100 ppm CCl_4		WW-2
Trace Na_2HPO_4		Standard Method 424
Balance - H_2O		

original

ORIGINAL
(Red)

SPENT CARBON

Components %	Sample Method Frequency	Test Method
.1-.5 CCl_4	Grab /1/6/month	DVE-2adapted
.1-1 Heptane	" "	
1-2 MeOH	Grab/1/6 month	
TR-FMC 30098		
" 39338	" "	WW-3 adapted
" 30099	" "	
Balance Carbon	" "	

original

ORIGINAL
(Red)

COPPER SLUDGE

Components %	Sample Method Frequency	Test Method
10-20 Na_2SO_4 1-3 $Mg(OH)_2$, NaOH	Grab/1/6 month	FMC - P-100
1-10 CuO .1-.3 Xylene 3-6 polymerized benzofuranols Balance H_2O		ASTM (D 1067) 31 FMC-M-1

original

ORIGINAL
(Red)

BASIN SLUDGE

Components %	Sample Method Frequency	Test Method
60-70 Water 12-18 $7NO_2$ 10-15 Isobutenyl 1-5 Isobutyl 1-5 Inorganic Salts Balance Polymerized Tars	Grab/1/Yr.	P-100 adapted

what basin sludge is this?

original

ORIGINAL (Red)

SODIUM BROMIDE

Components %	Sample Method Frequency	Test Method
5-15 NaEDTA		FMC - 30.1
25-35 NaBr	Grab/1/6 month	FMC - 30.7
50-70 H_2O		
50-75 ppm Ethion		FMC - 30.7

original

ORIGINAL
(Red)

ASBESTOS INSULATION

Components %	Sample Method Frequency	Test Method
100 Asbestos	Grab/1/Yr.	ASTM (D-628) 33

Non-Hazardous in Maryland

Original

ORIGINAL
(Red)

7 NO_2 BOTTOMS

Components %	Sample Method Frequency	Test Method
30-50 $MgCl_2$ 50-70 7 NO_2 .5-.8 ONP	Grab/1/6/months	Filtration F-II-B-8

original

ORIGINAL (Red)

CONTAMINATED LAB GLASSWARE

Components %	Sample Method Frequency	Test Method
90-95 Glass 5-10 Plastic Caps .5-1 Various DHS	Grab/As required	Source determined

ORIGINAL
(Red)

7-NITRO SPILLAGE

Components %	Sample Method	Frequency	Test Method
90-93 $7NO_2$	Grab	1/6 months	
1-4 Claisen	"	"	F-IIB-8
1-4 Isobutenyl	"	"	"
0-1 ONP	"	"	"

original

ORIGINAL
(Red)

BASIN LIQUID

Components %	Sample Method Frequency	Test Method
40-50 ONPME	Grab/1/Yr.	F-IIB-1
2-5 ONP	" "	"
10-40 Water	" "	"
10-20 $7NO_2$ Tars	" "	"
10-20 Sand, Dirt, Carbon		Filtration

ORIGINAL
(Red)

ONP SPILLAGE

Components %	Sample Method Frequency	Test Method
5-10 ONP 90-95 Dirt/Gravel	Grab/As Required	FRM-I-1 Filtration

ORIGINAL
(Red)

P_2S_5 SWEEPINGS

Components %	Sample Method Frequency	Test Method
75-90 P_2S_5	Grab/1/Yr.	Monsanto #12,389 or Outside Lab Filtration
10-25 Dirt/Sand		

ORIGINAL
(Red)

EMPTY POUNCE DRUMS

Components %	Sample Method Frequency	Test Method
< .1 Pounce 90-92 C.S. Drum 8-10 Liner	Grab/As Required	Pounce - 1

ORIGINAL (Red)

ALLYL ALCOHOL/ETHER

Components %	Sample Method Frequency	Test Method
80-95 Diallyl Ether 4-10 Allyl Alcohol remainder H_2O	1/transfer to incinerator	G.C.

ORIGINAL
(Red)

MONOMERS RESIDUE

Component %	Sample Method Frequency	Test Method
95 Diallyl Phthalate (DAP) or 95 Diallyl Isophthalate (DAIP) or 95 Diallyl Maleate (DAM)	1/transfer to incinerator	FMC - 23 G.C.
remainder DAP, DAIP, or DAM polymers		

ORIGINAL
(Red)

OIL B

Component %	Sample Method Frequency	Test Method
80-90 Dithioic esters remainder Dithioic salts	grab/as required	FMC - 30.5

ORIGINAL
(Red)

POUNCE ORGANICS

Component %	Sample Method Frequency	Test Method
70-80 MeOH 10-20 n-Octane remainder H_2O + HCl	1/transfer to incinerator	FMC - Pounce - 7

ORIGINAL
(Red)

CYPERMETHRIN STEP I WASTE

Components %	Sample Method/Frequency	Test Method
NaCl 10-15	Grab-1/campaign	FMC - FRM - 40
MeOH 5-10		G.C. A%
FMC 30062 800-1500 ppm		FMC - CYP - 1
FMC 39338 1300-2000 ppm		FMC - CYP - IV-B
Water - Balance		ASTM (D-2777) 31

ORIGINAL
(Red)

CYPERMETHRIN STEP II WASTE

Components %	Sample Method/Frequency	Test Method
NaCl 3-6	Grab-1/campaign	FMC - FRM -40
Na_2SO_3 10-15		Outside Lab
Na_2SO_4 1-2		Outside Lab
NaOH 0-1		FMC - 285
Heptane 30-50		FMC - CYP - 1
DV Acid Chloride 1-5		FMC - CYP - III-B

ORIGINAL
(Red)

CYPERMETHRIN STEP III WASTE

Components %	Sample Method/Frequency	Test Method
NaCN 1-3	Grab-1/campaign	STD Method 412B
NaCl 10-15		FMC - FRM - 40
Na_2CO_3 5-10		ASTM - (D513) 31
FMC 51055 3-8		FMC - CYP - IIIB
Cypermethrin 500-800 ppm		FMC - CYP - XI

ORIGINAL
(Red)

CYPERMETHRIN WASTE - OIL DRY/SAMPLE JARS, MISC.

Components, %	Sample Method/Frequency	Test Method
Cypermethrin 100-800 ppm	Grab-1/campaign	FMC - - CYP - XI
NaCN 1-2		STD Method 412-B
FMC 39338 1-3		FMC - CYP - IVB
MeOH 1-3		GC A%
NaOH 0-1		FMC 285
Oil Dry - Balance		Filtration

ORIGINAL
(Red)

CYPERMETHRIN SPENT CARBON

Component %	Sample Method/Frequency	Test Method
Activated Carbon 98-99	Grab-1/campaign	Filtration
Heptane, Methanol - Balance		GC A%

ORIGINAL
(Red)

CYPERMETHRIN WASTE HEPTANE

Component %	Sample Method/Frequency	Test Method
Heptane 60-80	Grab-1/Campaign	FMC - CYP - 1
DV Acid Chloride 5-10		FMC - CYP - 1
Water Balance		Karl Fisher

ORIGINAL
(Red)

CYPERMETHRIN FILTER CAKE

Component %	Sample Method/Frequency	Test Method
Filter Aid 90-98	Grab-1/campaign	Filtration
NaCN 1-2		STD Method 412B
Cypermethrin 500-800 ppm		FMC - CYP - XI
DV Ester 300-500 ppm		FMC - Pounce 4 Rev. 2
Heptane 0-1		FMC - CYP -1

ORIGINAL
(Red)

CYPERMETHRIN SODIUM CYANIDE WASTE

Component %	Sample Method/Frequency	Test Method
NaCN 10-20	Grab-1/Campaign	STD Method 412B
Water Balance		Karl Fisher

ORIGINAL
(Red)

I.C. General Inspection Requirements

All hazardous waste management areas are inspected on a daily basis for malfunctions and deterioration, operator errors, and discharges that may cause a release of hazardous waste or constituents to the environment or pose a threat to human health. A written inspection log has been developed for all hazardous waste management areas of this facility, (See Attachments). Inspections are done on a daily basis, during periods of operation or as required. These inspection logs are maintained under lock and key in the operating area and will be kept for a period of three (3) years. All inspection forms are signed and dated by the inspector. Any problem areas discovered will be remedied on a schedule which insures that the problem will not lead to an environmental or human health hazard.

ORIGINAL (Red)

TABLE 1

Facilities containing Hazardous Wastes

Item Number	Material	Volume (Gal.)	Location
T-203	90% Carbon Tet	3000	Bldg. 34 Area
T-353	Chloroacetylenics	1000	
T-411 (2), 412 (2), 413	Methanol	10,000 ea.	
T-440	Brine	100,000	
T-551	3% Carbon Tet	10,000	
T-556	3% Sodium Cyanide	5,000	
T-17	Isopropanol	5,000	Bldg. 91 Area
T-18	Organics	3,000	
T-23	Treated Waste Water	5,000	
T-23	" " "	5,000	
T-22	" " "	10,000	
Fire Water Pond	Pounce Contamination	38,000	
Waste Water Storage	" "	30,000	
T-21	Untreated Waste Water	10,000	
T-9273	Oil B	10,000	Building 6 Area
T-3466	Oil B	13,000	
T-3469, 3470 3471	Sodium Bromide	13,000 ea.	
T-17363, 17364	Sodium Sulfide	12,000 ea.	
T-17373	Sodium Sulfide	10,000	
T-20447	Sodium Sulfide	100,000	

Page 2

ORIGINAL (Red)

Facilities containing Hazardous Wastes

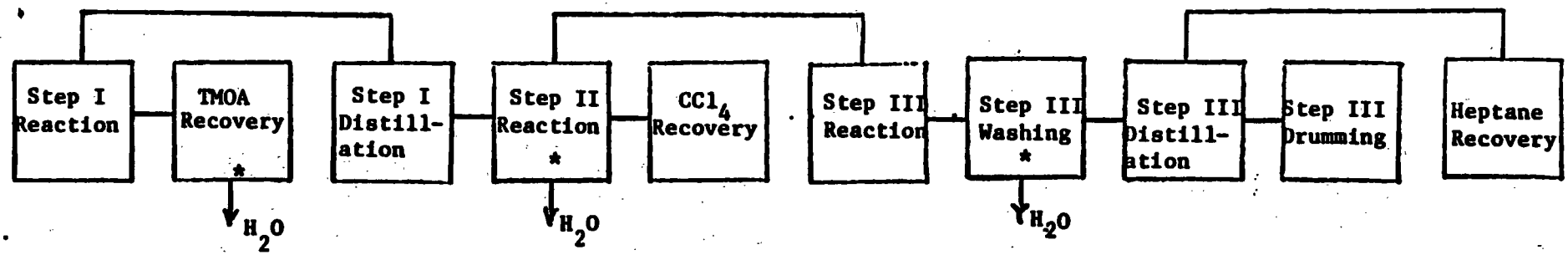
Item Number	Material	Volume	Location
V-2230, 2231, 2232	Coal Filters	8,000 ea.	W. of J. Zink Inci
Calgon Vessels (4)	Activated Carbon	9,000 ea.	Calgon Bldg. - N. 7-Oil Shop
T-600; 17183; 17184; 590; 593	Allyl Ether	10,000 ea.	Bldg. 9 Area
T-2209	7-Oil Oil (Decanter)	1,160	7-Oil Area
T-2203A, 2203B	Waste Organics	20,000 ea.	
T-2204A, 2204B	Waste Organics	4,300 ea.	
V-1211, 1212, 1518, 1519, 3211, 3212, 3518, 3519	7-Oil Tar (Tar Receivers)	190 ea.	
V-211, 212		60 ea.	
T-1221, 1221A, 1221B 1221C, 1221D, 1221E, 1221F	Tar Buggies	150 ea.	
T-1281-3	Settling Tank	5,160	
T-2201	Waste Tar	2,500	
T-1210, 3210	Emergency Quench Pit	11,500	
Effluent Basins (3)	7-Oil Tar, Ether, Xylene Sludge	101,600 Total	
Retention Basin (North and South)	7-Oil Oils, Grease, Sludge	1,000,000 Total	
T-2501, 2502, 4301	Waste Water	1,500,000 each	
T-506	N. Copper Settler	50,000	
T-1827	S. Copper Settler	60,000	
T-3570A, B. C	Copper Waste Water	102,430 each	

ORIGINAL
(Red)

Facilities containing Hazardous Wastes

Item Number	Material	Volume	Location
T-3571	Copper Waste Water	540,000	
T-3567	Copper Sludge	10,150	
T-1723	Aqueous Waste	210	

2. BLOCK DIAGRAM



* = Potential Spill Area

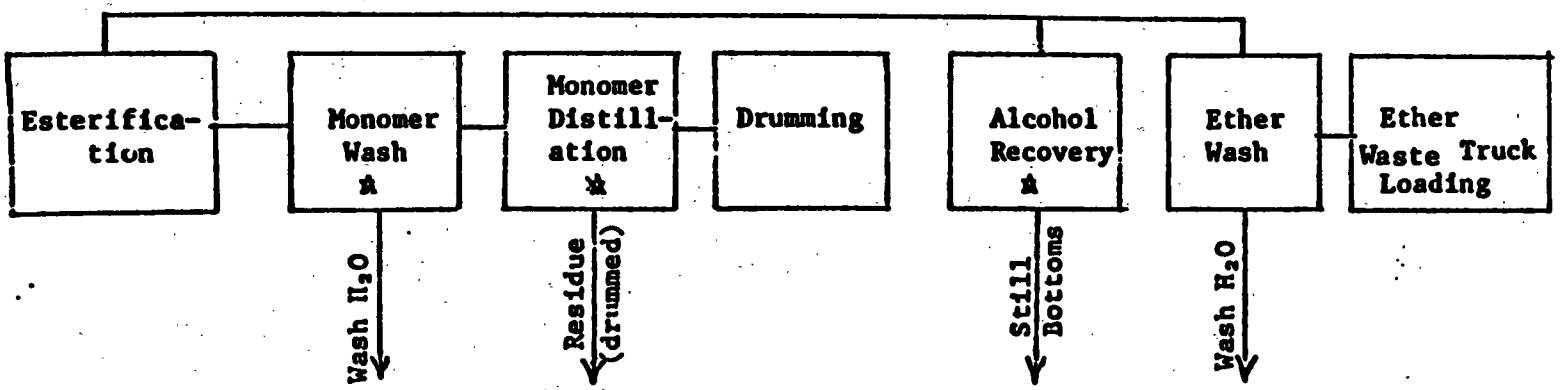
1. Name - DV Ester
2. Pollution Potential - High
3. Spill Receiving System - Containment Area, Sump
4. Counter Measures - Recovery and/or Contract Disposal
5. Removal - Available
6. Reporting - Environmental Incident Report
7. Start-up/Shut-down Wastes - No S-U/S-D Wastes
8. Frequency of upsets/failures - Unknown
9. Location

	Continuous	Intermittent	Infrequent
a. Pump Shafts			
b. Agitators			
c. Valve Stems			
d. Vent Systems			X
e. Sampling Prints		X	
f. Level Controllers			X
g.			
h.			

10. Inspection/Maintenance-Adequate
11. Previous Incidents -
12.

ORIGINAL (Red)

BLOCK DIAGRAM



☆ = Potential Spill Area

1. Name - Monomers

2. Pollution Potential - High

3. Spill Receiving System - WTS

4. Counter Measures - NP

5. Removal - A (If contained)

6. Reporting - Environmental Incident

7. Start-up/Shut-down Wastes No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts			x
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			x
f. Vacuum jet dschg.		x	
g.			
h.			

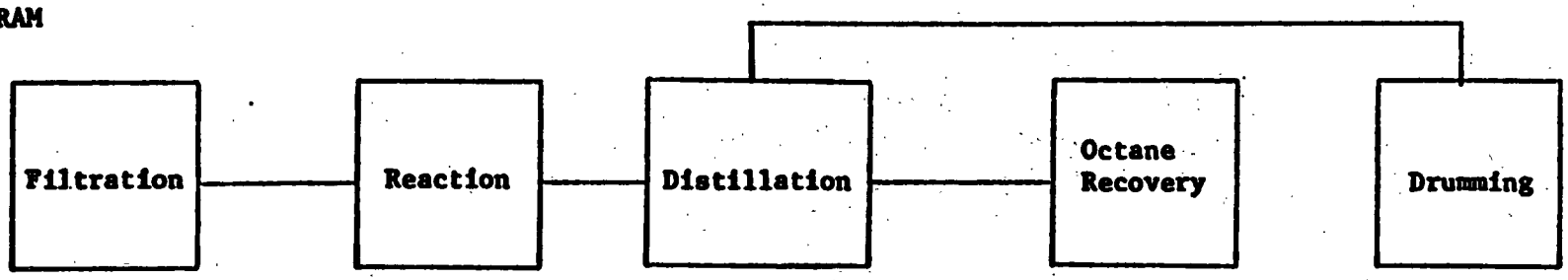
10. Inspection/Maintenance - Adequate

11. Previous incidents -

12.

ORIGINAL (Red)

BLOCK DIAGRAM



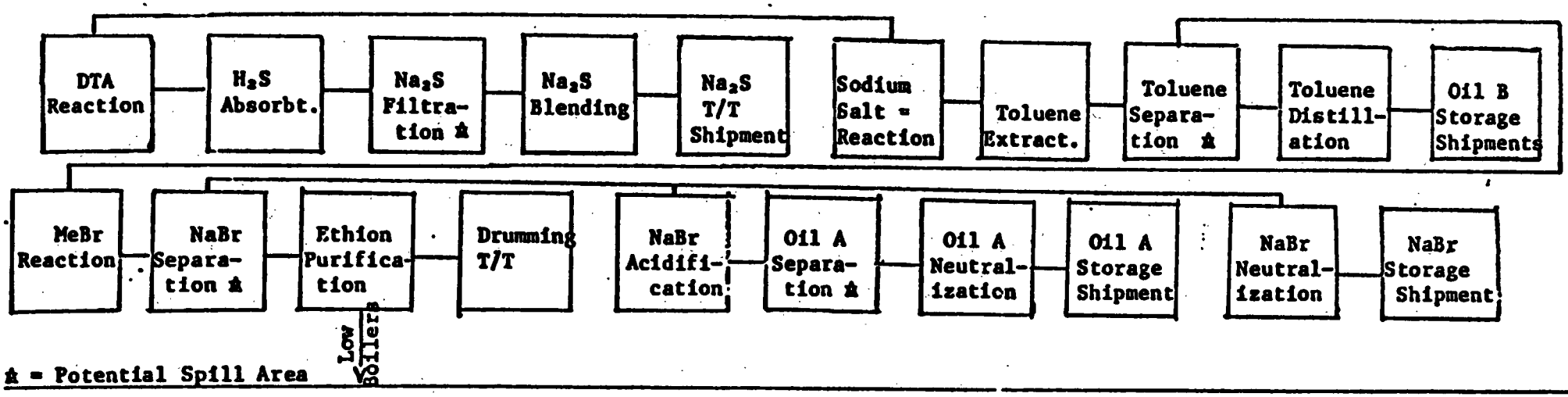
* = Potential Spill Area

1. Name - Pounce (FMC 33297)
2. Pollution Potential - High
3. Spill Receiving System - Containment Area
4. Counter Measures - Recovery and/or Special Disposal
5. Removal - A
6. Reporting - Environmental Incident
7. Start-up/Shut-down Wastes - No S-U/S-D Wastes
8. Frequency of upsets/failures - Unknown
9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts			
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			
f.			
g.			
h.			

10. Inspection/Maintenance - Adequate
11. Previous incidents -
12. Comments -

ORIGINAL (Red)



☆ = Potential Spill Area

1. Name - Ethion, Sodium Bromide Recovery
   Sodium Sulfide Recovery

2. Pollution Potential - Ethion - High
   NaBr - Med.
   Na_2S - High

3. Spill Receiving System - WTS

4. Counter Measures - NP

5. Removal - A (If Contained)

6. Reporting - Environmental Incident

7. Start-up/Shut-down Wastes No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts			x
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			x
f. Piping			x
g.			
h.			

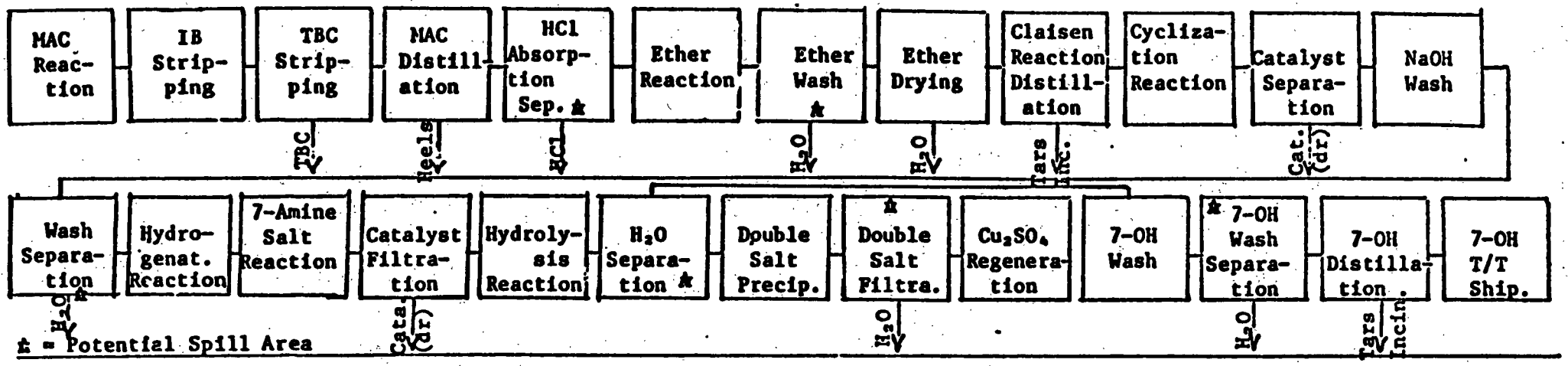
10. Inspection/Maintenance - Adequate

11. Previous incidents -
    Oct. 1971, Toluene Recovery System, Unknown, 1, Effect Unknown
    Quantity (500 gals)

12.

ORIGINAL (Red)

BLOCK DIAGRAM



★ = Potential Spill Area

1. Name - 7-Hydroxy

2. Pollution Potential - High

3. Spill Receiving System - WTS

4. Counter Measures - NP

5. Removal - A (If Contained)

6. Reporting - Environmental Incident

7. Start-up/Shut-down Wastes - No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts		x	
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			x
f. Level Controllers			x
g.			
h.			

10. Inspection/Maintenance - Adequate

11. Previous incidents -

12.

ORIGINAL (Red)

ORIGINAL
(Red)

Section 4.0 - Wastewater Treatment System

It is plant policy to operate all production units at conditions that result in the minimum discharge of pollutants in the wastewater streams. All wastewater streams from the various production units (south of Patapsco Avenue) flow to the plants' wastewater treatment facility prior to discharge into Curtis Bay. A description of this facility including appropriate maintenance and operational items are given in the following sections.

The Pounce manufacturing facility (north of Patapsco Avenue) is surrounded by curbing that directs any wastewater to a sump. The sump contents are pumped into holding tanks. No wastewater is discharged to an outfall that does not meet the NPDES permit requirements for this operation.

ORIGINAL (Red)

Section 4.1 - Description

The waste water treatment facility is divided into two parts, the plant general and the 7-OH treatment systems. The plant general system treats the following streams:

PLANT GENERAL SYSTEM

1. Wastewater from all production units other than 7-OH.
2. Clean wastewaters from the 7-OH unit.
3. Storm water from the central plant area not including the southeast section or northern plant areas.
4. Wastewater from the 7-OH units after its specific treatment.

These streams are collected in manhole 105, neutralized in pH adjustment tank T-2505, equalized in equalization tank T-2501, contacted with acid gases from incinerator B-2201, neutralized again in the pH adjustment basin and then pumped to an underwater discharge point in Curtis Bay from the final surge basin.

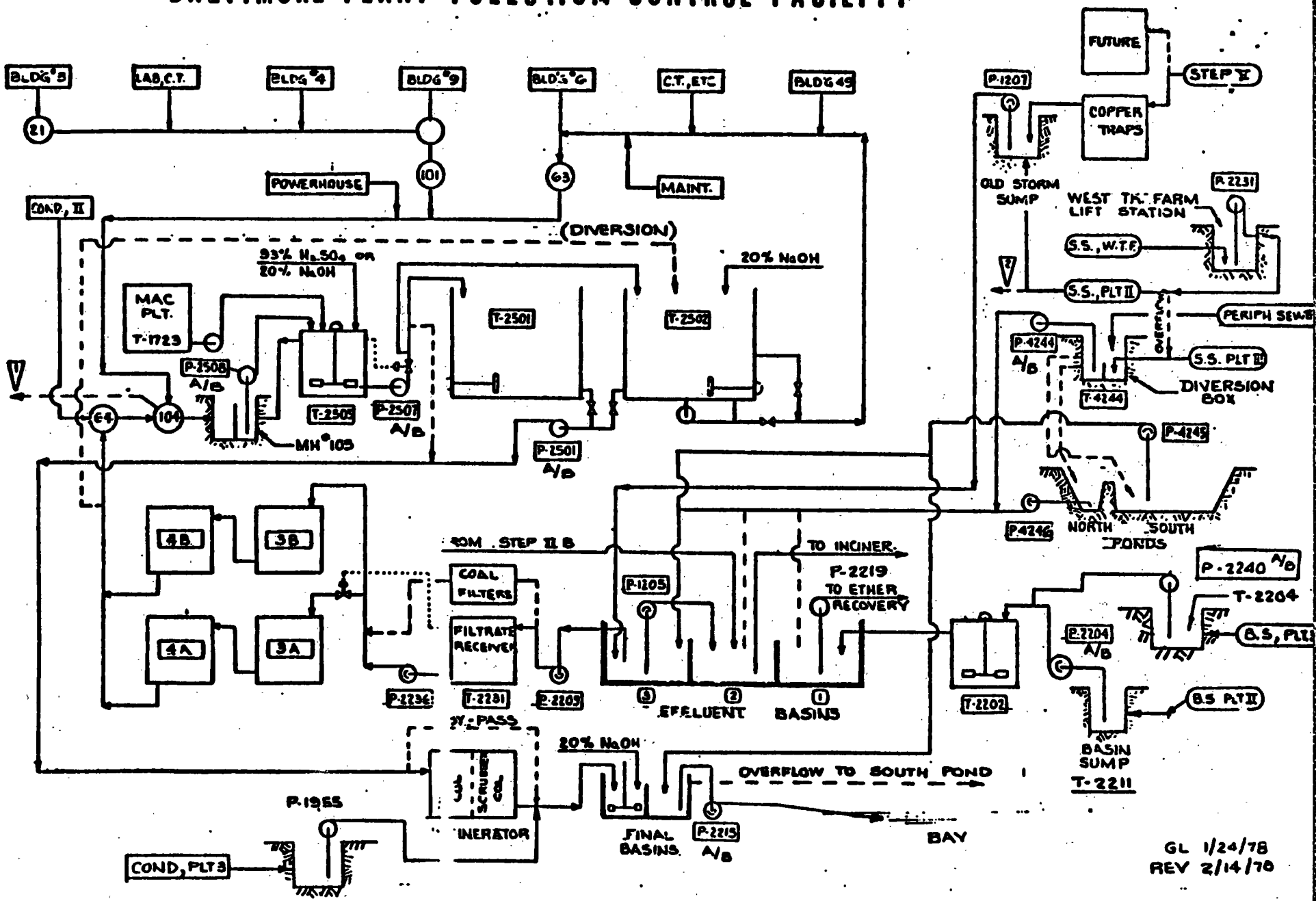
The 7-OH treatment system treats the following streams:

1. Wastewater from the 7-OH unit.
2. Storm water from the 7-OH area.

Storm waters are collected in two retention ponds. Wastewaters are collected in the basin waste lift sumps T-2211 and T-2204. Both streams are then pumped into settling basins for removal of heavy oils, treated for reduction of entrained oils and then discharged to the plant general manhole 105. Heavy oils removed by settling are burned in incinerator B-2201.

Two full time operators are required for these treatment systems. A schemetic of the combined wastewater systems is included in this section.

BALTIMORE PLANT POLLUTION CONTROL FACILITY



LEGEND

PUMP — MANHOLE — PIPE LINE — EMERGENCY — B.S. BASIN SEWERS

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

NOV 20 1980

Hazardous Waste Division

FMC

FMC - Baltimore, Maryland

PLANT CLOSURE PLAN

PURPOSE: The following procedure has been prepared to comply with Resource Conservation and Recovery Act (RCRA) regulations listed 5/19/80, to become effective 5/19/81. This plan must be updated annually (and amended as required) according to procedures described in the RCRA Regulations and must be kept at the plant site at all times.

A. Standards

The facility must be closed in a manner that minimizes the need for further maintenance and controls, minimizes or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water, or surface waters or to the atmosphere.

B. Schedule

Upon finalization of the decision to cease operation of the plant as a production or storage facility, the following must be done.

1. Submit this closure plan to the EPA Regional Administrator located at the following address:

   US EPA, Region 3
   Solid Waste Program
   6th & Walnut Streets
   Philadelphia, Pennsylvania 19106
   Phone: 215-597-9814

   This must be done at least 180 days before the expected date at which closure is to begin.

2. The above mentioned Regional Administrator will notify, approve or disapprove this plan within 90 days of receipt, and after providing FMC and the affected public (through a newspaper notice) the opportunity to submit written comments.

3. Within 90 days after receiving the final volume of hazardous waste, FMC must treat all hazardous wastes in storage or in treatment or remove them from the site or dispose of onsite in accordance with the closure plan.

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC - Baltimore, Maryland

FMC

PLANT CLOSURE PLAN

Upon finalization of the decision to cease operation, the following must be performed:

1. Notify personnel of impending closure date_____.

2. Cancel incoming material orders and shipments.
   Date complete_____.

3. Terminate production
   Schedule completion_____.
   Ethion line date complete_____.
   Schedule completion_____.
   Monomers line date complete_____.
   Schedule completion_____.
   DV Ester line date complete_____.
   Schedule completion_____.
   7-Hydroxy line date complete_____.
   Schedule completion_____.
   Pounce line date complete_____.
   Schedule completion_____.
   Arrivo line date complete_____.
   Schedule completion_____.

4. Ship out products from warehouses.
   Scheduled completion date_____.
   Date completed_____.

5. Ship out, or return excess raw materials, empty containers, pallets, bags, drums, etc.
   Scheduled completion date_____.
   Date completed_____.

C. Procedure

1. Remove all hazardous waste residues from any tanks, discharge control equipment (such as dust collectors), or discharge containment structures. Place in approved containers for treatment or disposal.

2. Testing procedures and results must document the condition of the liquid (wash & waste water) surface impoundment to verify its status.

   (a) If non-hazardous no further action is necessary.

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

FMC - Baltimore, Md.

Plant Closure Plan

(b) If test results prove the liquid a hazardous waste, all standing liquid must be pumped up and placed in drums or tank vehicles for treatment or disposal. Also, waste, waste residues, and all underlying or contaminated surrounding soil will be excavated and placed into approved disposal contianers also for treatment or disposal. as dictated by the proper authority.

3. Remove all incinerator residues (including but not limited to ash, scrubber waters and scrubber sludges) from the incinerator. Place in approved containers and test. If test results so indicate, treat the waste so as to render it no longer hazardous, or store until disposed of in an approved manner.

D. Waste Inventory

The maximum inventory of stored waste is anticipated not to exceed 600 drums, (30,000 gal. or comparable volume), placed 4 drums per pallet. The areas used for palletized waste storage may range from approximately 1000 - 5000 sq. ft. of storage area, depending upon stacking height. One storage area is located north of 7-Hydroxy Plant I and another is located east of B-34.

E. Decontamination (Part I)

1. The estimated volumes of hazardous wastes that would have to be disposed of, their disposal costs, primary and alternate disposal sites are given below.

CAS 1/28/86

Waste Description	Estimated on hand inventory	Unit Cost C ($)	Total Disposal Cost (K $)	Disposal Site
T-2501/2502/4301 Solid Residue	1,000,000 P	0.10	100	C.W.M. - N.Y.
Lab Glassware	10 D	650.00	6.5	Rollins - N. J.
DVE Brine	20,000 G	0.16	3.2	Chem-Clear, MD
DVE Step I/II/III Residues	10,000 P	0.33	3.3	Rollins - N. J.
DVE Carbon Tet	15,000 P	0.14	2.1	Rollins - N. J.
DVE/Cyp./Calgon Carbon	10 D	650.00	6.5	Rollins - N. J.
DVE Misc. Solid	10 D	88.00	.880	C.W.M. - ALA
Cyp. Wate (Aq.)	40,000 P	0.04	1.6	DuPont - N. J.
Cyp. Filter Cake	10 D	88.00	.88	C.W.M. - ALA
Cyp. - Misc. (solid)	10 D	88.00	.88	C.W.M. - ALA
Empty Cyanide Drums	100 D	48.00	4.8	C.W.M. - ALA
Sodium Cyanide Waste (Aq.)	500 G	3.00	1.5	C.W.M. - ALA
Empty Drums (Misc.)	300 D	48.00	14.4	C.W.M. - ALA
Pounce Waste (Solid)	10 D	650.00	6.5	Rollins - N.J.
DV Acid Chloride	4000 G	.19	.760	DuPont - N. J.

Hazardous Waste Division
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Waste Description	Estimated on hand inventory	Unit Cost C ($)	Total Disposal Cost (K $)	Disposal Site
Ammonium Chloride Filter Cake	80 D	77.00	6.2	GSX - S.C.
TMOA Organic Waste	20,000 P	.16	3.2	Rollins - N.J.
Copper Sludge	100,000 G	1.00	100 K	SCA - N.J.
7-Hydroxy Tar/Misc.	50 D	77.00	3.9 K	GSX - S.C.
ONP Spillage	2 D	77.00	.16 K	GSX - S.C.
7-Nitro Bottoms	50 D	77.00	3.9 K	GSX - S.C.
MAC Column Packing	80,000 P	.10	8.0 K	GSX - S.C.
Basin Sludge	200 D	230.00	46 K	C.W.M. - ALA
Sodium Bromide Waste (Aq.)	15,000 G	.55	8.3 K	SCA - N. J.
Sulfide Tank Washings	2,000 G	3.00	6.0 K	SCA - N. J.
Oil "B"	50,000 P	.19	9.5 K	Rollins - N. J.
P_2S_5 Sweepings	12 D	NO OUTLET AT THIS TIME		
Sodium Sulfide/Bromide Sludge	200 D	230.00	46 K	C.W.M. - ALA
Ethion Filter Cake	30 D	650.00	2.3	GSX - S. C.
Phthalic Anhydride Spillage	10 D	650.00	6.5	Rollins - N.J.
Cooling Tower Sludge	5 D	650.00	3.3	Rollins - N.J.
Diallyl Phthalate Waste	5 D	650.00	3.3	Rollins - N. J.
Pounce Resin	5 D	650.00	3.3	Rollins - N. J.
	GRAND TOTAL		$413,660	

D = Drums
P = Pounds

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FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

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FMC

FMC - Baltimore, Maryland

PLANT CLOSURE PLAN

2. Prior to cleanup and subsequent decontamination all known wastes and areas suspect of contamination will be tested to determine toxicity. Areas and wastes requiring further attention will be treated in the following manner.

   a. Waste Materials

      Waste materials will be subject to treatment so as to render them no longer considered as hazardous wastes or so as to render them suitable for placement in an approved dump location.

   b. Process Equipment, Incinerator, Emission Control Equipment

      Process equipment will be decontaminated in the following manner:

      1. All equipment will be drained or emptied of all process residue. Such materials will be handled in an appropriate manner and placed in suitable containers.

      2. All equipment will be vacuumed or washed or appropriately disposed of. The wash solution will be a caustic solution or another suitable decontamination solution.

   c. Buildings

      All buildings which have been used for chemical storage or production will be checked for contamination. Those found to be contaminated will be decontaminated using current appropriate methods or razed and suitably disposed of.

      NOTE: All areas subject to decontamination activities will be subject to laboratory testing to assure that decontamination activities have been successful.
      Decontamination procedures will be repeated as required until acceptable results have been obtained.

   d. Miscellaneous Containers

      Dispose of combustible containers (usually bags) suspected to be contaminated by incineration.

      Cans or drums, suspected of contamination should be triple-rinsed using solvent (usually water) used in making up the tank mix. This operation should be performed if possible during phase-out of the production process prior to shutdown. Triple rinsing must consist of rinsing the container three times with enough solvent to equal 10 percent of the volume of the container. The container should be disposed of in a proper manner as dictated

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by the proper authorities.

It is further suggested that small cans or jugs (plastic or steel) be crushed or shredded if possible so as to minimize the bulk volume at the disposal site.

e. Cost Estimate for Facility Closure

Cost estimates have been provided by the following companies who may be used to annually update these costs.

Disposal Site Costs	Abbreviation
1. E. I. DuPont de Nemours, Inc. Chambers Works Deepwater, New Jersey 08023 Phone (609) 299-5000	DuPont, N. J.
2. Chem-Clear 1910 Russell Street Baltimore, Maryland 21230 Phone (301) 685-3910	CC
3. Chemical Waste Management, Inc. P. O. Box 55 Emelle, Alabama 35459 Phone (205) 652-9531	CWM
4. GSX Services Route #1, Box 255 Pinewood, SC 29125 Phone (803) 452-5003	GSX
5. Rollins Environmental Services, Inc. P. O. Box 221 Bridgeport, New Jersey 08014 Phone (609) 467-3100	CWM
6. SCA Chemical Service Co. Earthline Division 100 Lister Avenue Newark, New Jersey 07105 Phone (201) 465-9100	SCA

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FMC - Baltimore, Maryland

PLANT CLOSURE PLAN

E. Decontamination (Part II)

Total Closure Cost $787,360

Note:

A. If test borings and/or water monitoring indicate other areas of contamination, cost of removal, disposal, shipping, etc. must be added to costs supplied above.

B. The Baltimore, Maryland plant site is operated under the effluent guidelines of the plants' NPDES permit. The plant would continue to abide by the NPDES permit requirements and effluent limitations during the entire post closure operation.

CERTIFICATE OF CLOSURE

When closure is completed, FMC must submit to the Regional Administrator (see address, page 1) certification both by the owner (FMC) and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

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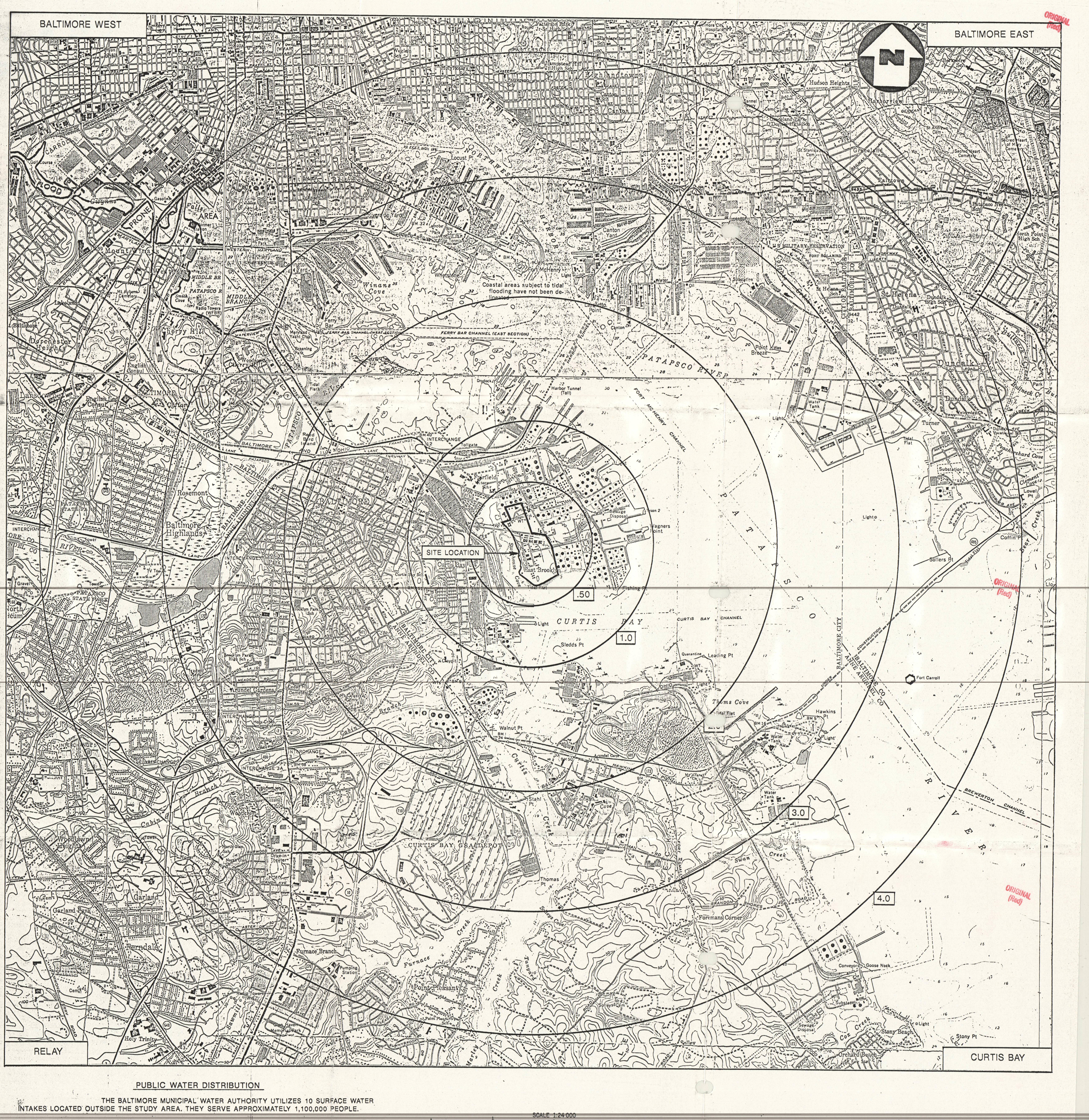
PLATE 1



PUBLIC WATER DISTRIBUTION

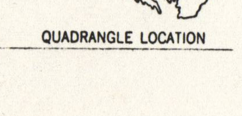
THE BALTIMORE MUNICIPAL WATER AUTHORITY UTILIZES 10 SURFACE WATER INTAKES LOCATED OUTSIDE THE STUDY AREA. THEY SERVE APPROXIMATELY 1,100,000 PEOPLE.

THE ANNE ARUNDEL COUNTY WATER AUTHORITY UTILIZES GROUNDWATER WELLS LOCATED OUTSIDE THE STUDY AREA. THEY SERVE APPROXIMATELY 120,830 PEOPLE.

THERE ARE NO KNOWN PRIVATE HOME WELLS IN THE STUDY AREA.

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 1.1 FEET



QUADRANGLE LOCATION

FOUR MILE RADIUS MAP

FMC CORPORATION, CURTIS BAY, MD