Public Health Assessment for

SCIENTIFIC CHEMICAL PROCESSING INCORPORATED
CARLSTADT, BERGEN COUNTY, NEW JERSEY
CERCLIS NO. NJD070565403
NOVEMBER 16, 1993

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

THE ATSDR PUBLIC HEALTH ASSESSMENT: A NOTE OF EXPLANATION

This Public Health Assessment was prepared by ATSDR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) section 104 (i)(6) (42 U.S.C. 9604 (i)(6), and in accordance with our implementing regulations 42 C.F.R. Part 90). In preparing this document ATSDR has collected relevant health data, environmental data, and community health concerns from the Environmental Protection Agency (EPA), state and local health and environmental agencies, the community, and potentially responsible parties, where appropriate.

In addition, this document has previously been provided to EPA and the affected states in an initial release, as required by CERCLA section 104 (i)(6)(H) for their information and review. The revised document was released for a 30 day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The public health assessment has now been reissued. This concludes the public health assessment process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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PUBLIC HEALTH ASSESSMENT

SCIENTIFIC CHEMICAL PROCESSING INCORPORATED

CARLSTADT, BERGEN COUNTY, NEW JERSEY

CERCLIS NO. NJD070565403

Prepared by:

New Jersey Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

FOREWORD

The Agency for Toxic Substances and Disease Registry, ATSDR, is an agency of the U.S. Public Health Service. It was established by Congress in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act, also known as the *Superfund* law. This law set up a fund to identify and clean up our country's hazardous waste sites. The Environmental Protection Agency, EPA, and the individual states regulate the investigation and clean up of the sites.

Since 1986, ATSDR has been required by law to conduct a public health assessment at each of the sites on the EPA National Priorities List. The aim of these evaluations is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be stopped or reduced. (The legal definition of a health assessment is included on the inside front cover.) If appropriate, ATSDR also conducts public health assessments when petitioned by concerned individuals. Public health assessments are carried out by environmental and health scientists from ATSDR and from the states with which ATSDR has cooperative agreements.

Exposure: As the first step in the evaluation, ATSDR scientists review environmental data to see how much contamination is at a site, where it is, and how people might come into contact with it. Generally, ATSDR does not collect its own environmental sampling data but reviews information provided by EPA, other government agencies, businesses, and the public. When there is not enough environmental information available, the report will indicate what further sampling data is needed.

Health Effects: If the review of the environmental data shows that people have or could come into contact with hazardous substances, ATSDR scientists then evaluate whether or not there will be any harmful effects from these exposures. The report focuses on public health, or the health impact on the community as a whole, rather than on individual risks. Again, ATSDR generally makes use of existing scientific information, which can include the results of medical, toxicologic and epidemiologic studies and the data collected in disease registries. The science of environmental health is still developing, and sometimes scientific information on the health effects of certain substances is not available. When this is so, the report will suggest what further research studies are needed.

Conclusions: The report presents conclusions about the level of health threat, if any, posed by a site and recommends ways to stop or reduce exposure in its public health action plan. ATSDR is primarily an advisory agency, so usually these reports

identify what actions are appropriate to be undertaken by EPA, other responsible parties, or the research or education divisions of ATSDR. However, if there is an urgent health threat, ATSDR can issue a public health advisory warning people of the danger. ATSDR can also authorize health education or pilot studies of health effects, full-scale epidemiology studies, disease registries, surveillance studies or research on specific hazardous substances.

Interactive Process: The health assessment is an interactive process. ATSDR solicits and evaluates information from numerous city, state and federal agencies, the companies responsible for cleaning up the site, and the community. It then shares its conclusions with them. Agencies are asked to respond to an early version of the report to make sure that the data they have provided is accurate and current. When informed of ATSDR's conclusions and recommendations, sometimes the agencies will begin to act on them before the final release of the report.

Community: ATSDR also needs to learn what people in the area know about the site and what concerns they may have about its impact on their health. Consequently, throughout the evaluation process, ATSDR actively gathers information and comments from the people who live or work near a site, including residents of the area, civic leaders, health professionals and community groups. To ensure that the report responds to the community's health concerns, an early version is also distributed to the public for their comments. All the comments received from the public are responded to in the final version of the report.

Comments: If, after reading this report, you have questions or comments, we encourage you to send them to us.

Letters should be addressed as follows:

Attention: Chief, Program Evaluation, Records, and Information Services Branch, Agency for Toxic Substances and Disease Registry, 1600 Clifton Road (E-56), Atlanta, GA 30333.

SUMMARY

The Scientific Chemical Processing (SCP) site is located in Carlstadt Borough, Bergen County, New Jersey. A wide variety of organic and inorganic chemical contaminants (volatiles, acid extractables, base/neutrals, pesticides, polychlorinated biphenyls, phenolics, cyanides and petroleum hydrocarbons and metals) were found in site soils and ground water, and in surface water and sediments in the vicinity of the site. The extent and degree of contamination is most severe in the site soils and shallow ground water. Chemical contaminants have migrated from the subsurface soils and shallow ground water at the SCP site into the deeper aquifers and nearby Peach Island Creek. Most of the population do not live close to the site; the three closest residences are located about 1 mile from the site. Several businesses are situated in the immediate vicinity of the site. Off-site workers and nearby residents are potentially at risk from exposure to site contaminants. The local community is concerned about the potential health effects from contaminated surface water and other contaminated off-site areas, and site security. Potential human exposure pathways existed prior to the completion of the Interim remedy (June 1992). These were associated with the inhalation of resuspended soils and dust, and ingestion of or dermal contact with soils, surface water, and sediments. The Agency for Toxic Substances and Disease Registry (ATSDR) and the New Jersey Department of Health (NJDOH) have concluded that this site is an indeterminate public health hazard since data are not available for all environmental media to which humans may be exposed. However, there is no indication that humans are being or have been exposed to levels of contamination that would be expected to cause adverse health effects. During ground-intrusive remedial activities, measures should be taken to minimize and monitor the migration of site contaminants through the air to off-site areas.

The Scientific Chemical Processing site, Bergen County, New Jersey, has been evaluated by ATSDR's Health Activities Recommendations Panel for appropriate follow-up with respect to health activities. This site is not being considered for follow-up health activities at this time. However, the panel recommended that the NJDOH evaluate comments received during the public comment period to determine if community health education is needed. The NJDOH has evaluated the need for community health education. Since there were no comments received from the community during the public comment period, community health education is not indicated at this time.

BACKGROUND

A. Site Description and History

The Scientific Chemical Processing-Carlstadt (SCP) site is located at 216 Paterson Plank Road in Carlstadt Borough, Bergen County, New Jersey (Appendix A). The 5.9 acre site is bordered by Paterson Plank Road to the south, Gotham Parkway to the west, Peach Island Creek to the north, and an industrial facility to the east (Appendix B).

The property was purchased by Patrick Marrone in 1941 and was reportedly used for solvent refining and recovery. Subsequently, the property was sold to Inmar Associates, Inc. On October 31, 1970, Scientific Chemical Processing Company, Inc. leased the site to process industrial waste. Inmar Associates purchased adjoining land from Mr. Marrone on September 20, 1977 and leased it to SCP. Aerial photographs reveal that drummed materials were stored on the SCP site from as early as 1951 until 1978. When a New Jersey court ordered the facility to cease its operations in October 1980, over 300,000 gallons of mostly liquid hazardous materials were found at the site in drums and tanks, and on the staging platform. By December 1980, SCP had reportedly removed all storage drums from the site. Most of the work and storage areas on the site were unlined and/or had no spill containment provisions.

In 1983, the SCP site was placed on the National Priorities List. Three corporate officers of SCP were convicted in Federal District Court of mail fraud charges in 1983 resulting from the improper disposal of chemical wastes. At the same time, the owner and operators of the site were required to fully remediate the site as a result of a Civil Complaint filed by the State of New Jersey. Between 1983 and 1985, Inmar Associates removed approximately 250,000 gallons of hazardous materials from the site.

In the fall of 1985, the United States Environmental Protection Agency (USEPA) issued an Administrative Order to Inmar Associates requiring them to remove five hazardous waste tanks which remained on the site. At the same time, USEPA ordered 140 Potentially Responsible Parties (PRPs) to undertake a Remedial Investigation and Feasibility Study (RI/FS) of the site. Inmar removed four of the tanks from the site in 1986. The RI/FS was initiated in April 1987.

The SCP site is fenced on the east, west and south boundaries with a locked main entrance gate on Paterson Plank Road. To the north, the site is bordered by Peach Island Creek, a tidal waterway. As reported in the remedial investigation, a roll-off container holding one steel tank still remains on the site. The

tank which contains heavy metals, particularly lead, and polychlorinated biphenyl (PCB) contaminated sludge is discolored and appears to have been repaired. Two small buildings, a cut portion of a tank, and a few mounds of debris including those possibly generated from the demolition of other site structures, also remain on the site. Except for several remaining concrete slabs, the site is generally unpaved. Patches of discolored soil, discolored groundwater seeps and two potential sludge disposal areas have been observed.

The Agency for Toxic Substances and Disease Registry (ATSDR) issued a Preliminary Health Assessment for the site on January 4, 1989.

USEPA signed a Record of Decision in September 1990 for the first operable unit which addresses contamination of on-site soils and ground water above the clay layer. A dewatering system was selected as an interim remedy to reduce the migration of hazardous materials from the soil into the ground water and surface water until a permanent remedy can be selected and implemented. The interim remedy also includes a perimeter slurry wall to prevent further off-site contaminated ground water migration; a synthetic cap to prevent infiltration of precipitation and to contain contaminated site soils; and a new perimeter fence and warning signs to restrict site access. Construction of the interim remedy is expected to be completed by early 1992. A second operable unit will address contamination of surface water and ground water below the clay layer.

B. Actions Implemented During the Public Health Assessment Process

The following actions were taken at the site while the public health assessment process was in progress:

1. The USEPA completed the construction of the interim remedy (dewatering system, slurry wall, and synthetic cap) in June 1992. Most of the debris has been incorporated into the site and all piles, except the sludge pile in the northwest corner of the site, have been incorporated into the site. The dewatering operation has been initiated at the site.

2. As recommended in an earlier draft of this public health assessment, the USEPA completed the installation of a new perimeter fence on June 3, 1992 as part of the interim remedy.

3. As recommended in an earlier draft of this public health assessment, the USEPA conducted continuous ambient air sampling at the site perimeter during ground-intrusive remedial activities to monitor any potential exposure of the surrounding community to site contaminants. Remedial

workers complied with worker protection requirements to prevent exposure to on-site contaminants.

The completion of the interim remedy in June 1992, has effectively interrupted the potential exposure pathways identified in earlier drafts of this Health Assessment. In addition, installation of a complete perimeter fence has eliminated the potential for unauthorized site entry.

c. Site Visit

On March 15, 1991, a site visit was conducted by Laurie A. Pyrch from the New Jersey Department of Health (NJDOH), accompanied by the New Jersey Department of Environmental Protection (NJDEP) technical coordinator for the site and a representative from the Mid-Bergen Regional Health Commission.

The SCP site terrain was largely flat, unpaved, and sparsely covered with tall weeds and gravel. At the time of the site visit, large pieces of construction debris were scattered around most of the site. Several piles of construction debris and a tank trailer covered with a plastic tarp were located towards the center of the site. Two small buildings were situated near the front entrance. Approximately ten drums were stacked along one of these buildings.

There were several puddles of water on the site presumably due to a recent snowstorm and rainfall in the area. Surface water had also collected along the outside perimeter of the fence. A locked security fence surrounds the site on three sides. During the site visit, the fence was observed to be in fair condition except for the section adjacent to the truck terminal which was knocked down. This section of the fence is only accessible through the trucking terminal property and appears to be part of the fence that surrounds the truck terminal. There was a large gap between the fence and the main entrance gate. Two additional locked entrance gates were observed. Several warning signs were present on the fence; however, most were in poor condition and not always readable. There were large quantities of litter discarded along the inside and outside boundary of the fence.

Although we observed no evidence of trespassing, the site access is possible from the northern corner where Peach Island Creek meets the fence at Gotham Parkway. The potential for site access is limited along Peach Island Creek which borders the unfenced northeastern portion of the site. The Creek appeared to be several feet in depth and about 20 to 25 feet wide.

Numerous businesses and a new office building are located in the immediate vicinity of the site. Parking areas for several of these businesses are situated adjacent to the site.

D. Demographics, Land Use, and Natural Resource Use

Demographics

The Borough of Carlstadt occupies a total area of 4.2 square miles (Appendix C). According to 1980 census data, a total of 6,166 residents lived in the Borough resulting in an average population density of 1,468 persons per square mile. The majority of the population lives between approximately 1 to 2 miles from the site within the residential and commercial areas of the Borough and is served by the Hackensack Water Company. Several schools and libraries are located within the residential and commercial areas. Portions of East Rutherford, Hasbrouck Heights, Little Ferry, Lyndhurst, Moonachie, Rutherford, Teterboro, Woodbridge in Bergen County, and Secaucus in Hudson County, are also located within a 2-mile radius of the site.

Land Use

The three closest dwellings are situated about one mile from the site in the light industrial area which immediately surrounds the site. None of these units are known to have private wells. A bank, race track and stables, kennel, racket club, and various other businesses are located in the immediate vicinity of the site (Appendix D).

The Meadowlands Sports Complex, a large facility for professional sports and other public recreational activities, is located to the southwest of the site. Teterboro Airport is situated approximately 1.5 miles to the north.

Natural Resource Use

The site is located within the Piedmont Geologic province of New Jersey. The geology of the site in descending order consists of earthen fill material, peat, gray silt, naturally occurring clay, glacial till and bedrock (shale).

Ground water is contained within three geological strata underlying the site. At a depth of about 1 to 2 feet, the fill material is saturated due to the presence of the shallow aquifer. A clay layer separates the shallow aquifer from the underlying intermediate aquifer. The shallow aquifer is unconfined and ground water migrates downward through the clay layer into the intermediate aquifer. The intermediate aquifer is located within the glacial till under confined to semi-confined conditions. The deep aquifer is situated within the bedrock. A downward hydraulic gradient exists among all three aquifers.

The Hackensack River serves as recharge for the shallow and intermediate aquifers in the region. Since the Hackensack River is highly mineralized and of poor quality, the shallow and

intermediate ground water near the site are not used for drinking water purposes. The deep aquifer is the most prolific water-bearing unit and is used regionally as a source of potable water.

A NJDEP well permit survey identified a total of 57 wells located within a two-mile radius of the site (Appendix E). Of these, a total of two domestic wells and one well used for lavatory purposes were identified within about 1 to 2 miles of the site. According to the Hackensack Meadowlands Development Commission, no wells in the area are being used for potable water. The owners of the two domestic wells are both listed customers of the Hackensack Water Company. All three wells are known to be installed in the bedrock aquifer. Three non-domestic wells of unknown usage were identified, with one belonging to a food production business. All three wells are known to be installed in the bedrock aquifer. Two wells reported to be non-contact cooling/food processing wells were identified; one installed in the bedrock aquifer and one of unknown depth. The remaining 49 wells were reported as industrial or cooling wells.

The SCP site occupies a relatively flat, sparsely vegetated area of the Hackensack Meadowlands. The Meadowlands consists of an extensive area of salt water marshes. Two wetland areas in the vicinity of the site, Walden Swamp and Eight-Day Swamp, are drained by Peach Island Creek, a tributary of Berry's Creek which eventually joins with the Hackensack River. Peach Island Creek receives water from smaller tributaries and drainage ditches, and surface run-off from paved properties adjacent to the Creek. The Creek is about 0.2 to 3 feet deep adjacent to the site. There are no wetland areas on the site. Most of the site is located within the 100-year flood plain of Peach Island Creek and the entire site is within the 500-year flood plain.

A waterfront recreation zone is situated along Peach Island Creek and Berry's Creek. A variety of plant and animal species have been identified in the vicinity of these waterways, including Blue Crab and White Perch. Local surface water is also used for industrial water supplies.

E. State and Local Health Data

State and local data for health outcome information include the New Jersey State Cancer Registry, Birth Defects Registry, Vital Statistics Records, Renal Dialysis Network, and Hospital Discharge Reports.

COMMUNITY HEALTH CONCERNS

In general, community involvement in the site has been minimal (USEPA Community Relations Plan, 1986). According to

representatives of the Mid-Hudson Regional Health Commission, the lack of community concern is attributed to the absence of any residential neighborhoods close to the site.

Local officials and business community representatives have expressed some health concerns regarding the site (USEPA Community Relations Plan, 1986). On June 5, 1990, the USEPA and NJDEP held a public meeting to discuss the preferred interim remedy for the site (USEPA Record of Decision, 1990). Several health concerns were raised by the community at this meeting. These community health concerns are listed below and are addressed in the Public Health Implications Section.

1. Is it safe to eat vegetables grown in gardens downstream of Peach Island Creek?

2. Is it safe for children to play in Peach Island Creek?

3. What is the potential for exposure to contaminated soils and dust?

4. How will the health and safety of on-site remediation workers be protected?

Local officials and business community representatives are also concerned about inadequate site security (USEPA Community Relations Plan, 1986). At the public meeting, the community also expressed concerns about the potential contamination of off-site areas (EPA Record of Decision, 1990). Since the focus of the Public Health Assessment is on public health, NJDOH will refer these issues to the appropriate regulatory agency.

ENVIRONMENTAL CONTAMINATION AND OTHER HAZARDS

To identify possible facilities that could contribute to the contamination of environmental media near the SCP site, ATSDR and NJDOH searched the 1987 and 1988 Toxic Release Inventory (TRI). TRI is developed by the USEPA from the estimated annual releases of toxic chemicals to the environment (air, water, soil, or underground injection) provided by certain industries. Seventeen facilities located near the site reported emissions of toxic substances that are similar to site contaminants for 1987 and 1988. Figure 1 presents a summary of toxic chemical releases into the environment reported by these seventeen facilities.

Figure 1: Total Amounts of Toxic Chemical Emissions (in pounds/year), 1987-1988

Chemical	Air Release*	Water Release	Potable Water Transfer	Off-site Locations Transfer
Benzene	2000	0	500	0
Cadmium	250	0	0	0
Chromium	500	0	250	0
Chloroform	1000	0	500	0
Cyanide Compounds	1144	0	250	0
Phenol	16738	0	108	270
Mercury	1000	0	2075	1500
1,1,1-Trichloroethane	250	0	0	250
Toluene	631146	0	3274	203234
Xylene (Mixed Isomers)	117876	3	502	16523
Zinc (Fume or Dust)	252	1062	198	61420

* includes point and non-point air releases
Source: USEPA TRI Data, 1987-1988

A. On-Site Contamination

As part of the remedial investigation, samples were collected from soil (unsaturated fill, saturated fill, clay layers), groundwater (shallow, intermediate, deep aquifers), and surface water and sediments in Peach Island Creek.

Soil

During the remedial investigation, a total of 37 on-site soil borings were drilled at depths ranging from several feet to 62 feet below the ground surface. Twenty of these borings were drilled in June and July 1987; soil samples were collected from six borings for chemical analysis. Sampling results from these borings were rejected during a quality assurance review.

In November and December 1987, an additional 17 soil borings were drilled adjacent to the original borings. Three borings that were not used for chemical analyses during the original investigation were eliminated from this sampling round. At each location, soil samples were collected for chemical analysis from at least 3 depth intervals: 0 to 2 feet (unsaturated fill), 5 to 6 feet (saturated fill), and top of clay (upper one foot).

Additional samples were collected from within the clay in three borings (Table 1).

A wide variety of organic and inorganic chemical contaminants were detected in soils at high concentrations across the site in all strata sampled. The most commonly detected compounds include

volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), phenolics, petroleum hydrocarbons and metals. Acid extractable compounds, pesticides and cyanides are present to a lesser degree. In general, contaminant concentrations decrease with increasing depth.

The most common volatile organic compounds (VOCs) at the site include methylene chloride, tetrachloroethene, toluene, trichloroethylene and xylenes. No trend is evident in the horizontal distribution of VOCs at each sampling interval. The highest total VOCs concentrations in the unsaturated fill were found in one soil boring located in the northeastern corner of site. This soil boring is believed to penetrate a sludge pit that extends through the fill. There is also no clear pattern to the vertical distribution of VOCs within the unsaturated and saturated fill, although in many cases the concentrations decrease in the saturated fill. In most borings, VOCs are found at substantially lower concentrations at the top of the clay and within the clay than in the fill. However, average VOC concentrations nearly double from the unsaturated fill to the saturated fill, and then decrease substantially at the top of the clay layer. VOCs do not generally decrease within the clay layer itself. VOCs appear to have migrated from the fill into and through the clay layer.

Elevated levels of acid extractable compounds (AECs), most notably phenol, occur primarily in the northeast corner of the site. One boring in this area is believed to penetrate a sludge pit. Excluding the sludge pit boring sample, the mean concentration of AECs tend to decrease with depth. Phenol appears to have migrated from the fill into the clay layer.

Pesticides occur primarily on the eastern side of the site. The vertical distribution of pesticides (excluding methoxychlor which was only detected in one sample) decrease with increasing depth. No pesticides were detected within the clay indicating that migration has not occurred.

Aroclor 1242 is the most prevalent PCB at the site. The vertical distribution of PCBs exhibits an overall trend of decreasing concentrations with increasing depth in most borings. The presence of PCBs in all depths sampled may be due to the presence of solvents in the soil which provide a transport mechanism for PCBs.

The vertical distribution of total cyanides reveals no definite pattern, although concentrations do generally decrease in the unsaturated and saturated fill, and top of clay, and were not detected within the clay.

The highest concentration of total phenolics detected in unsaturated and saturated fill occurred in the sludge pit boring

in the northwestern portion of the site. While no vertical trend exists within the fill, the concentrations generally decrease at the top of clay and within the clay. The presence of phenolics within the clay indicates that these substances have migrated from the fill unit.

Mean concentrations of total petroleum hydrocarbons and metals generally decrease at increasing depth indicating that these contaminants are migrating from the fill down into the clay.

Magnetometer Survey

A magnetometer survey of the site was unable to positively identify any underground ferromagnetic materials, such as tanks or drums, due to the large amounts of scrap metal and foundation reinforcing rods located throughout the site.

Ground Water

Two rounds of ground water samples were collected and analyzed from seven shallow monitoring wells and three intermediate monitoring wells in July and December 1987 (Table 2). Two sampling rounds for organics and one sampling round for inorganics were collected from a single deep monitoring well during the Spring and Summer of 1990 (Table 2).

Elevated concentrations of volatile organics, acid extractables, base/ neutrals, phenolics, cyanides, petroleum hydrocarbons and metals were detected in the shallow aquifer. No consistent pattern occurred between the summer and winter sampling events in the shallow ground water; some contaminants increased in concentration over time while others decreased. The contaminants present in the shallow ground water are similar to those found in the unsaturated and saturated fill indicating that contaminants have migrated from the subsurface soil into the shallow groundwater.

Similar volatile organics, acid extractables, base/neutrals, petroleum hydrocarbons and metals were found in the intermediate aquifer in lower concentrations than in the overlying shallow aquifer, fill materials and clay. Hence, it appears that migration of contaminants, primarily VOCs, has occurred through the clay layer and into the intermediate aquifer. The VOCs that are present in the intermediate aquifer at the highest concentrations include chloroform, 1,2-dichloroethane, tetrachloroethene and trichloroethene.

Both volatile organics and metals were detected in the deep aquifer indicating that contaminants have migrated from the intermediate aquifer into the deep aquifer.

Air

An air quality investigation was not conducted as part of the remedial investigation. However, ambient air monitoring was performed during the remedial field investigation for on-site worker health and safety purposes. VOCs were detected during ground-intrusive activities requiring respirator use (Level C protective clothing).

B. Off-Site Contamination

Surface Water

Four sampling stations were selected along Peach Island Creek: one adjacent to, and two downstream and one upstream from the site. Surface water samples were collected during low tide from each location during July and December 1987 (Table 3).

Volatile organics, phenolics, petroleum hydrocarbons and metals were detected in surface water samples. Most VOCs, the most prevalent contaminant found in Peach Island Creek, were measured at maximum concentrations either immediately adjacent to or downstream of the site and decreased in concentration with distance from the site. One exception is methylene chloride which increased in concentration at each downstream location during the December 1987 sampling event. No consistent temporal pattern in VOC concentrations occurred between the two sampling events; some concentrations increased, while others decreased. No patterns or trends were observed for other contaminants.

Most of the chemicals found in surface water were also detected in the shallow aquifer adjacent to the Peach Island Creek; however, surface water concentrations are lower than ground water concentrations. It appears that contaminants have entered the Creek from the shallow ground water beneath the site.

Sediments

Sediment samples were collected from four locations along Peach Island Creek adjacent to the locations for surface water sampling. At each location, two samples were taken: shallow (0 to 6 inches below stream bed surface) and deep (12 to 18 inches below stream bed surface) (Table 4).

Numerous organic and inorganic contaminants were detected in the sediment samples at all four sampling locations. In general, chemical concentrations decrease with distance from the site. The chemicals present in the sediment are similar to those found in the soils nearest the Creek indicating that contaminants have migrated from the site into the surface water.

VOC concentrations are generally highest adjacent to the site at each depth interval and are lower both downstream and upstream from the site. At most sampling locations, there is a decrease in VOC concentrations with increasing depth.

There is no vertical or horizontal trend with AEC concentration. However, no AECs were detected downstream from the site. Maximum concentrations of base/ neutral compounds (BNCs) are found upstream from and adjacent to the site in shallow and deep samples respectively. However, concentrations generally decrease downstream from the site at both sampling intervals. There is no trend in the vertical distribution of BNCs.

At both sampling intervals, Aroclor 1242 and total PCBs are highest adjacent to the site and decrease with distance downstream from the site. PCB concentrations increase with increasing depth at sampling locations adjacent to and downstream from the site.

Total phenolic concentrations are highest adjacent to the site and are generally lower both upstream and downstream of the site. No trend in the vertical distribution of total phenolics is observed.

The highest concentrations of total cyanides are found adjacent to the site in the shallow sediment samples and downstream from the site in the deep sediment samples. No horizontal trend occurs; however, lower concentrations of total cyanides are generally found downstream from the site than are found adjacent and upstream from the site. Total cyanide concentrations generally decrease with increasing depth.

Petroleum hydrocarbon concentrations (PHCs) are highest adjacent to and upstream from the site and generally decrease with distance downstream from the site. No trend in the vertical distribution of PHCs is observed.

Maximum concentrations of total metals are found upstream of the site in the shallow samples, and adjacent to and downstream from the site in the deep samples. No trend in the vertical distribution of total metals is observed.

Data Gaps

Off-site sampling of soil, ground water, air, and biota has not been conducted for this site.

C. Quality Assurance and Quality Control

In preparing the public health assessment, ATSDR and NJDOH relied on the information provided in the referenced documents and assumed that adequate quality assurance and quality control

measures were followed with regard to chain-of-custody, laboratory procedures, and data reporting. The validity of the analysis and conclusions drawn for the public health assessment is determined by the completeness and reliability of the referenced information.

D. Physical and Other Hazards

As discussed in the Site Description and History, and Site Visit Subsections, two small buildings, a cut portion of a tank, several debris piles, stacked drums, a large tank trailer remain on the site. These structures present a physical hazard to individuals, primarily children, who may trespass on the site.

PATHWAYS ANALYSES

To determine whether nearby residents are exposed to contaminants migrating from the site, NJDOH evaluates the environmental and human components that lead to human exposure. This pathways analysis consists of five elements: (1) a **source** of contamination; (2) transport through an **environmental medium**; (3) a **point of human exposure**; (4) **route of human exposure**; and (5) an **exposed population**.

NJDOH classifies exposure pathways into three groups: (1) **"completed pathways"**, that is, those in which exposure has occurred, is occurring, or will occur; (2) **"potential pathways"**, that is, those in which exposure might have occurred, may be occurring, or may yet occur; and (3) **"eliminated pathways"**, that is, those that can be eliminated from further analysis because one of the five elements is missing and will never be present, or in which no contaminants of concern can be identified. A summary of all the pathways for the SCP site are discussed below.

As discussed in the Site Description and History Subsection, many of the past industrial waste processing activities at the site have resulted in the contamination of on-site soils, ground water, and surface water and sediment. There are no complete exposure pathways associated with the site. The potential exposure pathways that were identified are discussed in the following subsection.

A. Potential Exposure Pathways

Soil Pathways

Past, present, and future exposure of site trespassers, especially children, to contaminated subsurface soils may occur through the ingestion, inhalation, and dermal contact. VOCs, pesticides, PCBs and metals were detected in on-site subsurface soils at levels of health concern. The perimeter fence and Peach

Island Creek serve to limit site access. However, the site is accessible from the northern corner where the fence meets the Creek at Gotham Parkway, and along the truck terminal where the fence is damaged. The likelihood of human exposure to soil contaminants should be minimized by the tall weeds and gravel covering the site. Weather conditions, including freezing subsurface temperatures and snow, should also reduce the likelihood of human exposures by minimizing contaminant migration. Since most of the population do not live near the site, site access by local residents is unlikely. However, the site is accessible along the northern and eastern perimeter and the possibility of human exposure to soil contaminants exists. The selected interim remedy, including the construction of a synthetic cap over the entire site and installation of secure fencing, expected to be completed by early 1992 should further restrict site access and should help to minimize the likelihood of exposure to on-site soil contaminants in the future.

Air Pathways

The business and residential community in the immediate vicinity of the site may potentially be exposed to site contaminants through the inhalation of resuspended surface soils and dusts, and the inhalation of chemical volatilized from surface soils, particularly when remedial activities begin. VOCs, pesticides, PCBs, and metals were detected in subsurface soils at levels of health concern. The relatively high vapor pressures of organic compounds detected at the site indicate that they will readily volatilize into the air from surface soil. Pesticides, PCBs, and metals are susceptible to transport through resuspension due to their tendency to adsorb onto soil particles. The predominant winds in the area are from the southwest. The contaminants that are susceptible to air transport through volatilization and resuspension of soil particles may migrate toward the light industrial area to the northeast of the site. The majority of the population do not live near the site. However, three homes are located about one mile to the northeast of the site. Several existing businesses and a new office building are also located in the pathway of predominant winds.

The selected interim remedy, including the construction of a synthetic cap over the entire site, expected to be completed by early 1992 should help to minimize the likelihood of exposure to contaminants in the air in the future. Appropriate air monitoring will be conducted during the implementation of the interim remedy to control migration of site contaminants to off-site areas.

Surface Water and Sediment Pathways

Past, present, or future exposure of area residents to contaminated surface water and sediments through ingestion,

inhalation and dermal contact during recreational use (i.e., fishing, swimming, wading) of Peach Island Creek is unlikely. The contaminants found in the soil and ground water at the site were also found in Peach Island Creek indicating that contaminants have migrated into nearby surface water. VOCs, PCBs and metals were found in sediment samples at levels of health concern. VOCs are very mobile in water and are subject to leaching and ground water transport. PCBs and metals are susceptible to transport through surface soil erosion due to their tendency to adsorb onto soil particles. Although the area surrounding Peach Island Creek has been designated a water front recreation zone, the Creek is situated in a highly urbanized area and recreation use of the Creek by local residents is unlikely. However, the Creek may be used infrequently for recreational purposes, especially by children. The selected interim remedy, including the construction of a slurry wall around the entire site, expected to be completed by early 1992 should control the migration of site contaminants to Peach Island Creek in the future.

Fish Pathways

Past, present and future exposure of people to site contaminants through the ingestion of fish from Peach Island Creek is unlikely. PCBs and metals were detected in sediments at levels of health concern. Although the area surrounding the Creek has been designated a waterfront recreation zone, the Creek is situated in a highly urbanized area. Fishing by local residents is unlikely. However, the Creek may be used infrequently for recreational purposes, including fishing. The selected interim remedy, including the construction of a slurry wall around the entire site, expected to be completed by early 1992 should control the migration of site contaminants to Peach Island Creek in the future.

Private Well Pathways

The potential exposure of potable well users to site contaminants through ingestion, inhalation and direct contact may occur if ground water is utilized in the future. Past and present exposure of residents and workers to site contaminants is unlikely since the population near the site is served by the Hackensack Water Company. Several of the contaminants detected in subsurface soils have migrated into the shallow, intermediate, and deep aquifers indicating that these contaminants have migrated downward. The shallow aquifer is located within the fill material at a depth of about 1 to 2 feet. Contaminants have migrated through the clay layer into the underlying intermediate aquifer. VOCs were the primary contaminant found in ground water underlying the site at levels of health concern. VOCs are very mobile in water and are subject to leaching and ground water transport. Since the shallow and intermediate aquifers near the

site are highly mineralized and of poor quality, they are not used for drinking water purposes. None of the NJDEP survey wells were identified in the shallow or intermediate aquifers. Although there are six wells of unknown depth, they are identified as industrial or cooling wells. All NJDEP survey wells of known depth were identified in the deep aquifer. However, none of these wells are being used for drinking water purposes.

The selected interim remedy, including a dewatering system, perimeter slurry wall, and synthetic cap expected to be completed by early 1992 should minimize further off-site migration of contaminated ground water.

PUBLIC HEALTH IMPLICATIONS

As discussed in the Environmental Contamination and Other Hazards, and Pathways Analyses Sections, the local community may potentially be exposed to contaminants of concern through inhalation of, ingestion of and dermal contact with contaminated soils, and ingestion of and dermal contact with surface water and sediments.

In this section, NJDOH will discuss the health effects in persons potentially exposed to specific contaminants, evaluate state and local health databases, and address specific community health concerns. To evaluate health effects, ATSDR has developed a Minimal Risk Level (MRL) for contaminants commonly found at hazardous waste sites. The MRL is an estimate of daily human exposure to a contaminant below which non-cancer, adverse health effects are unlikely to occur. MRLs are developed for each route of exposure, such as ingestion and inhalation, and for the length of exposure, such as acute (less than 14 days), intermediate (15 to 364 days), and chronic (greater than 365 days). ATSDR presents these MRLs in Toxicological Profiles. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. In the following discussion, NJDOH uses Toxicological Profiles for the contaminants of concern. When a chronic MRL is not available, NJDOH uses a USEPA's Reference Dose (RfD). The RfD is an estimate of daily human exposure to a contaminant for a lifetime below which (non-cancer) health effects are unlikely to occur.

A. Toxicological Evaluation

As discussed in the Pathway Analyses Section, there are no completed exposure pathways associated with this site. Since chronic human exposure to site contaminants is unlikely, carcinogenic and non-carcinogenic health effects would not be expected to occur.

On-site Soil (0 to 2 feet)

Long-term exposure to contaminants found in unsaturated fill (0 to 2 feet) may result in adverse health effects. The following exposure estimates are based on an ingestion rate of 100 milligram of soil per day for a 70 kilogram adult. In the absence of surface soil data (0 to 2 inches), exposure estimates assume that contaminants of concern are equally distributed in the unsaturated soil layer.

Polychlorinated biphenyls (PCBs), dieldrin and aldrin are categorized by USEPA as probable human carcinogens. Lifetime exposure to PCBs through ingestion at maximum concentrations found in unsaturated fill would result in an very high increased risk of developing cancer. Exposure estimates for PCBs exceed ATSDR's chronic oral MRL of 0.000005 mg/kg/day. Several studies have examined the health effects of long-term exposure to PCBs. Chronic oral exposure of monkeys to PCBs resulted in a decrease in antibody levels, reduction in average birth weight, decrease in performance in spatial discrimination tests.

Long-term exposure to maximum concentrations of dieldrin or aldrin in unsaturated soil would each result in a moderate increased risk of cancer. Exposure estimates for dieldrin slightly exceed ATSDR's chronic oral MRL of 0.00005 mg/kg/day and ingestion exposure for aldrin slightly exceeds USEPA's chronic oral RfD of 0.00003 mg/kg/day. Therefore, non-carcinogenic health effects are unlikely to occur from chronic exposure to dieldrin or aldrin.

Lifetime exposure to arsenic, classified as a human carcinogen by USEPA, at maximum levels found in unsaturated fill would result in a low increased risk of developing cancer. Likewise, tetrachloroethene (PCE) is reasonably anticipated to be a carcinogen by the National Toxicology Program; lifetime exposure would result in a low increased cancer risk. Using the highest contaminant concentration found in unsaturated soil, ingestion exposure for arsenic does not exceed USEPA's chronic oral RfD of 0.0003 mg/kg/day. Ingestion exposure to PCE at maximum concentrations does not exceed the chronic oral RfD of 0.01 mg/kg/day. Therefore, non-carcinogenic health effects are unlikely to occur from chronic exposure to arsenic or PCE.

There would be no apparent increased risk of developing cancer from ingestion exposure to maximum concentrations of trichloroethene (TCE) or benzo(a)pyrene for a lifetime. There are no chronic oral MRLs available for comparison for TCE or benzo(a)pyrene. However, ingestion exposure to TCE does not exceed the intermediate MRL of 0.1 mg/kg/day nor does benzo(a)pyrene exposure exceed the acute MRL of 0.1 mg/kg/day.

Based on maximum contaminant concentrations, long-term oral exposure to 1,2-dichloroethane or benzene would not result in an increased cancer risk. There is no chronic oral MRL for 1,2-dichloroethane for comparison; however, ingestion exposure does not exceed the acute oral MRL of 0.005 mg/kg/day. There is no oral MRL or RfD available for benzene. Neither an MRL nor RfD has been developed for ingestion exposure to lead.

B. Health Outcome Data Evaluation

Health outcome data was not evaluated since there are no completed exposure pathways associated with the site, and since no specific health outcome issues have been expressed by the community.

C. Community Health Concerns Evaluation

We have addressed community health concerns as follows:

1. Is it safe to eat vegetables grown in residential gardens downstream of Peach Island Creek?

   Surface water samples were collected from Peach Island Creek in the vicinity of the site. Most VOCs, the most prevalent contaminant found in surface water, were measured at maximum concentrations either immediately adjacent to or downstream of the site and decreased in concentration with distance from the site. According to the Carlstadt Land Use Map (Appendix C), there are no residential zones located immediately downstream of the Creek. Therefore, it is unlikely that the site provides a potential source of contamination to nearby residential gardens via surface water. Since the area in the vicinity of the SCP site is highly urbanized, local garden vegetables may be impacted by other sources of contamination. The selected interim remedy, including the construction of a slurry wall around the entire site, expected to be completed by early 1992 should control the migration of site contaminants to Peach Island Creek in the future.

2. Is it safe for children to play in Peach Island Creek?

   Surface water and sediment samples were collected from Peach Island Creek in the vicinity of the site. Numerous organic and inorganic contaminants were found in surface water and sediment adjacent to the site at levels of health concern. Human exposure to site contaminants in surface water and sediment may occur through ingestion, inhalation and direct contact. Recreational use of Peach Island Creek should be prohibited. The selected interim remedy, including the construction of a slurry wall around the entire site, expected to be completed by early 1992 should control the

migration of site contaminants to Peach Island Creek in the future.

3. What is the potential for exposure to contaminated soils and dust?

Subsurface soil samples were collected from the site. VOCs, pesticides, PCBs and metals were detected in on-site subsurface soils at levels of health concern. Since the site is accessible along the northern and eastern perimeter, the possibility of human exposure to soil contaminants through the ingestion, inhalation, and dermal contact exists. However, ground cover on the site should reduce the likelihood of human exposures by minimizing contaminant migration. Since most of the population do not live near the site, site access by local residents is unlikely.

The business and residential community near the site may potentially be exposed to site contaminants through the inhalation of resuspended surface soils and dusts, and the inhalation of chemicals volatilized from surface soils, particularly when remedial activities begin. The contaminants that are susceptible to air transport may migrate toward the industrial area and several homes located toward the northeast of the site.

The selected interim remedy, including the construction of a synthetic cap over the entire site and installation of secure fencing, expected to be completed by early 1992 should further restrict site access and should help to minimize the likelihood of exposure to on-site soil contaminants in the future. Appropriate air monitoring will be conducted during the implementation of the interim remedy to control migration of site contaminants to off-site areas.

4. How will the health and safety of on-site remediation workers be protected?

The federal Occupational Safety and Health Administration (OSHA) regulations require that on-site remedial workers are provided with adequate protective equipment and training, and follow appropriate guidelines as specified in the site Health and Safety Plan. Ambient air monitoring was performed during the remedial field investigation for on-site worker health and safety purposes. Protective clothing, including the use of a respirator, was required during ground-intrusive activities. During the construction of the selected interim remedy expected to be completed by early 1992, workers will be required to wear proper personal protective equipment in accordance with the site Health and Safety Plan.

Public Comment Period

The New Jersey Department of Health conducted a public comment period for the Public Health Assessment for the SCP site from July 6, 1993 to August 6, 1993. The Public health Assessment was placed in local repositories to facilitate commentary and reaction from the public at large. Additionally, the Document was circulated to the Mid-Bergen Regional Health Commission for the purpose of soliciting commentary by local health officials.

A summary of commentary received by the NJDOH and associated responses are contained in Appendix F.

CONCLUSIONS

Based on the information reviewed, ATSDR and NJDOH have concluded that this site is an indeterminate public health hazard since there is no indication that humans are being or have been exposed to levels of contamination that would be expected to cause adverse health effects. However, data are not available for all environmental media to which humans may be exposed. The selected interim remedy, including the construction of a synthetic cap and slurry wall, and the installation of a new perimeter fence, expected to be completed by early 1992 should minimize the likelihood of exposure to site contaminants in the future.

The potential for site access is present along the unfenced northeastern boundary of the site and along the damaged section of the fence that borders the trucking terminal. Site trespassers, especially children, may potentially be exposed to contaminated soils through inhalation, dermal contact and ingestion. As discussed in the Site Description and History, and Site Visit subsections, various structures present a physical hazard to individuals, primarily children, who may trespass on the site.

The business and residential community in the immediate vicinity of the site are potentially at risk from exposure to contaminated soils through inhalation of volatilized chemicals, inhalation of resuspended soils and dusts, and dermal contact with soils and dusts. During site remedial activities, the nearby business and residential community, and remedial workers, will have an increased risk of exposure to contaminated soil through these routes.

Area residents, especially children, may potentially be exposed to contaminants in the surface water and sediments of Peach Island Creek through ingestion, inhalation or dermal contact, and through the ingestion of fish.

The three area aquifers are not presently being used for drinking water purposes in the vicinity of the site; however, the bedrock aquifer is being used regionally for drinking water.

RECOMMENDATIONS

Soil samples should be collected in the immediate vicinity of the site to ensure that contaminants have not migrated to off-site areas through wind dispersion or surface run-off.

The potential use of Peach Island Creek for recreational purposes, particularly in the immediate vicinity of the site, should be discouraged by restricting access to the area. The consumption of fish from the Creek should be prohibited unless it is first determined that bioaccumulation of contaminants has not resulted in a significant public health hazard.

Additional on-site groundwater samples should be collected from the bedrock aquifer. Off-site groundwater sampling should be conducted to further define the extent, degree and direction of contaminant migration horizontally within each aquifer.

Institutional controls should be implemented to prevent future use of contaminated ground water for drinking water supplies until remedial activities have reduced contaminant concentrations to below levels of public health concern.

HEALTH ACTIVITIES RECOMMENDATION PANEL (HARP) RECOMMENDATION

The Scientific Chemical Processing site, Bergen County, New Jersey, has been evaluated by ATSDR's Health Activities Recommendations Panel for appropriate follow-up with respect to health activities. This site is not being considered for follow-up health activities at this time. However, the panel recommended that the NJDOH evaluate comments received during the public comment period to determine if community health education is needed.

PUBLIC HEALTH ACTIONS

The Public Health Actions (PHA) section contains a description of actions to be taken for the Scientific Chemical Processing site by the ATSDR and the NJDOH at and in the vicinity of the site following the completion of this public health assessment. The purpose of the PHA section is to ensure that this public health assessment not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous

substances in the environment. The ATSDR and the NJDOH are committed to follow up on these activities to ensure that it is implemented. The public health actions to be implemented are as follows:

1. Based on the ATSDR Health Activities Recommendations Panel evaluation, this site is not being considered for follow-up health activities at this time. The NJDOH has evaluated the need for community health education. Since there were no comments received from the community during the public comment period, community health education is not indicated at this time.

2. The USEPA will address data gaps associated with the extent of off-site contamination during the implementation of the second operable unit remedial investigation.

3. The NJDOH will reevaluate and expand the Public Health Actions plan, when needed. New environmental, toxicological, or health outcome data, or the results of implementing the above proposed actions may determine the need for additional actions at this site.

4. ATSDR will provide an annual follow up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this health assessment, and will be provided to persons who request it.

ATSDR will reevaluate and expand the Public Health Action Plan (PHAP) when needed. New environmental, toxicological, health outcome data, or the results of implementing the above proposed actions may determine the need for additional actions at this site.

CERTIFICATION

The Public Health Assessment for Scientific Chemical Processing, Inc., site was prepared by the New Jersey Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the public health assessment was initiated.

Technical Project Officer, SPS, RPB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Public Health Assessment and concurs with its findings.

Division Director, DHAC, ATSDR

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REFERENCES

Environmental Protection Agency Region II. Hazard Ranking System Report, Scientific Chemical Processing-Carlstadt Site. New York, NY: Environmental Protection Agency, 1982.

Environmental Protection Agency Region II. Community Relations Plan, Scientific Chemical Processing-Carlstadt Site. New York, NY: Environmental Protection Agency, 1986.

Environmental Protection Agency Region II. Public Health Assessment of the Scientific Chemical Processing (SCP) Site, Carlstadt, NJ. New York, NY: Environmental Protection Agency, 1988.

Environmental Protection Agency Region II. Remedial Investigation, Scientific Chemical Processing-Carlstadt Site. New York, NY: Environmental Protection Agency, 1990.

Environmental Protection Agency Region II. Declaration for the Record of Decision, Scientific Chemical Processing-Carlstadt Site. New York, NY: Environmental Protection Agency, 1990.

Interviews:

Mid-Bergen Regional Health Commission, New Jersey, Health Officer.

Mid-Bergen Regional Health Commission, New Jersey, Sanitary Inspector.

Mid-Bergen Regional Health Commission, New Jersey, Sanitary Inspector Trainee.

New Jersey Department of Environmental Protection, Site Technical Coordinator.

New Jersey Department of Environmental Protection, Community Relations Officer.

Environmental Protection Agency Region II, New York, Public Affairs Specialist.

Environmental Protection Agency Region II, New York, Project Manager.

File Reviews

Table 1: Subsurface Soil Concentration Range (mg/kg)
November and December 1987

Chemical	Unsaturated Fill	Saturated Fill	Top of Clay	Within Clay	Comparison Value ppm	Source
Volatile Organics:						
Benzene	0.32-53.9	0.01-52.3	0.05-1.01	nd	24	CREG
Chlorobenzene	0.28-336	0.01-258	0.12-0.12	6.72-52.3	14,000	RMEG
Chloroform	0.004-17.8	39.60-379	0.57-234	0.01-333	110	CREG
1,2-Dichloroethane	0.02-10.2	0.18-290	0.11-6.5	3.70-69.9	7.7	CREG
1,1-Dichloroethene	0.08-0.18	nd	nd	nd	1.2	CREG
Methylene Chloride	0.01-2.39	0.02-14.9	0.02-20.8	0.05-124	93	CREG
Tetrachloroethene	0.06-4290	0.01-1690	0.13-917	0.02-785	0.036	CREG
Toluene	0.01-3380	0.02-2410	0.01-216	0.01-715	140,000	RMEG
1,2-Trans-Dichloroethene	0.004-0.24	0.02-512	0.02-12.2	6.58-38.2	14,000	RMEG
1,1,1-Trichloroethane	2.49-2.49	30.40-1770	3.86-57.6	0.02-287	none	none
Trichloroethene	0.05-2060	0.10-1670	0.05-363	0.03-1560	64	CREG
Vinyl Chloride	nd	0.03-0.03	nd	nd	14	EMEG
Base/Neutrals:						
Benzo[a]pyrene	1.00-9.39	0.13-108	0.10-4.74	nd	0.096	CREG
Pesticides:						
Aldrin	0.28-57	1.2-1.2	nd	nd	0.041	CREG
Dieldrin	0.46-57	0.05-0.94	0.03-0.21	nd	35	EMEG
PCB Aroclors (total):					0.091	CREG
Aroclor 1242	0.33-15,000	0.08-350	0.02-5.4	0.08-0.37		
Aroclor 1254	4.10-12	0.18-3.5	0.16-2.2	nd		
Aroclor 1260	9.90-48	2.1-10	0.04-1	nd		
Aroclor 1248	4.10-23	7.6-9.7	0.26-2.6	nd		
Conventional Analysis Data:						
Cyanides, Total	0.7-34	0.9-32	3.5-3.5	nd	none	none
Petroleum Hydrocarbons	290-81,600	36-29,600	51-5,780	52-102	none	none
Phenolics, Total	0.2-600	1.5-683	0.1-65	1.4-1.6	none	none
Metals:						
Arsenic	2.7-60	1.2-62	1.1-18	1.1-5.5	0.4	CREG
Chromium	19-870	12-542	12-56	17-33	3500	RMEG
Lead	140-2,750	18-2,810	8.6-916	9.6-17	none	none
Mercury	0.4-21.3	0.1-13.6	0.1-13.6	nd	none	none
Zinc	130-4,170	67-1,870	22-44,400	42-87	none	none

nd -not detected
CREG -Cancer Risk Evaluation Guide for $1x10^{-4}$ excess cancer risk
EMEG -Environmental Media Evaluation Guide (ATSDR)
RMEG -Reference Dose Media Evaluation Guide
Source: USEPA Remedial Investigation, SCP-Carlstadt Site, 1990

Table 2: Groundwater Concentration Range (mg/l)
July and December 1987, and Spring/Summer 1990

Chemical	Shallow Aquifer	Intermediate Aquifer	Deep Aquifer*	Comparison Value ppm	Source
Volatile Organics:					
Benzene	0.57-7.27	nd	nd	0.0012	CREG
Chlorobenzene	0.12-6.56	0.006-0.63	nd	0.7	RMEG
Chloroform	0.61-614	0.014-28.6	0.83	0.35	EMEG
1,2-Dichloroethane	0.09-473	0.009-11.2	0.46	0.00038	CREG
1,1-Dichloroethene	0.4-0.4	0.098-1.22	0.002	0.32	EMEG
Methylene Chloride	0.03-200	0.007-2.14	0.21	2.1	EMEG
Tetrachloroethene	8.24-24.5	0.018-10.6	0.002	0.00067	CREG
Toluene	0.10-90.9	0.006-0.01	0.015	7	RMEG
1,2-Trans-Dichloroethene	0.33-64.7	0.015-1.22	0.003	0.7	RMEG
1,1,1-Trichloroethane	0.93-81.2	0.013-3.45	0.008	0.2	LTHA
Trichloroethene	0.01-161	0.013-34.5	0.31	0.0032	CREG
Vinyl Chloride	0.25-7.29	0.054-0.054	0.056	0.0007	EMEG
Base/Neutrals:					
Benzo[a]pyrene	0.09-0.09	nd	nd	0.0000048	CREG
Pesticides:					
Aldrin	nd	nd	nd	0.0000021	CREG
Dieldrin	nd	nd	nd	0.0000022	CREG
				0.00018	EMEG
PCB Aroclors (total):					
Aroclor 1242	0.002-17	nd	nd		
Aroclor 1254	nd	nd	nd		
Aroclor 1260	nd	nd	nd		
Aroclor 1248	nd	nd	nd		
Conventional Analysis Data:					
Cyanide, Total	0.03-4.52	nd	nd	none	none
Petroleum Hydrocarbons	3.6-2270	1.3-1.3	nd	none	none
Phenolics, Total	0.06-42.5	nd	nd	none	none
Metals (dissolved):					
Arsenic	0.02-1.6	nd	nd	0.00002	CREG
Chromium	0.03-0.42	nd	0.028	0.18	RMEG
Lead	nd	nd	0.003	0.015	MCL(A)
Mercury	0.0002-0.0002	nd	nd	none	none
Zinc	0.02-0.69	0.02-0.03	0.008	2.1	LTHA

* -maximum concentrations
nd -not detected
CREG -Cancer Risk Evaluation Guide for $1x10^{-6}$ excess cancer risk
EMEG -Environmental Media Evaluation Guide (ATSDR)
RMEG -Reference Dose Media Evaluation Guide
LTHA -Lifetime Health Advisory for drinking water (EPA)
MCL(A) -Action level for drinking water (EPA)
Source: USEPA Remedial Investigation, SCP-Carlstadt Site, 1990

Table 3: Surface Water Concentration Range
July and December 1987

Chemical	Surface Water (mg/l)	Comparison Value ppm	Source
Volatile Organics:			
Benzene	nd	0.0012	CREG
Chlorobenzene	0.008-0.012	0.7	RMEG
Chloroform	0.002-0.004	0.35	EMEG
1,2-Dichloroethane	0.005-0.015	0.00038	CREG
1,1-Dichloroethene	nd	0.32	EMEG
Methylene Chloride	0.004-0.017	2.1	EMEG
Tetrachloroethene	nd	0.00067	CREG
Toluene	0.02-0.05	7	RMEG
1,2-Trans-Dichloroethene	0.003-0.035	.7	RMEG
1,1,1-Trichloroethane	0.005-0.013	.2	LTHA
Trichloroethene	0.004-0.004	0.0032	CREG
Vinyl Chloride	nd	0.0007	EMEG
Base/Neutrals:			
Benzo[a]pyrene	nd	0.0000048	CREG
Pesticides:			
Aldrin	nd	0.0000048	CREG
Dieldrin	nd	0.0000022	CREG
PCB Aroclors (totals):		0.00018	EMEG
Aroclor 1242	nd		
Aroclor 1254	nd		
Aroclor 1260	nd		
Aroclor 1248	nd		
Conventional Analysis Data:			
Cyanides, Total	nd	none	none
Petroleum Hydrocarbons	6.63-7.18	none	none
Phenolics, Total	0.061-0.133	none	none
Metals (dissolved):			
Arsenic	nd	0.00002	CREG
Chromium	nd	0.18	RMEG
Lead	nd	0.015	MCL(A)
Mercury	0.0006-0.0006	none	none
Zinc	0.039-0.150	2.1	LTHA

nd -not detected
CREG -Cancer Risk Evaluation Guide for $1x10^{-6}$ excess cancer risk
EMEG -Environmental Media Evaluation Guide (ATSDR)
RMEG -Reference Dose Media Evaluation Guide
LTHA -Lifetime Health Advisory for drinking water (EPA)
MCL(A) -Action level for drinking water (EPA)
Source: USEPA Remedial Investigation, SCP-Carlstadt Site, 1990

Table 4: Sediment Concentration Range
July and December 1987

Chemical	Sediment (mg/kg)	Comparison Value ppm	Source
Volatile Organics:			
Benzene	0.033-1.99	24	CREG
Chlorobenzene	0.047-17.1	14,000	RMEG
Chloroform	3.69-3.79	110	CREG
1,2-Dichloroethene	1.96-1.96	7.7	CREG
1,1-Dichloroethene	nd	1.2	CREG
Methylene Chloride	0.043-3.69	93	CREG
Tetrachloroethene	304-953	0.036	CREG
Toluene	4.51-2970	140,000	RMEG
1,2-Trans-dichloroethene	1.61-1.61	14,000	RMEG
1,1,1-Trichloroethane	75.5-222	none	none
Trichloroethene	1.89-9950	64	CREG
Vinyl Chloride	nd	14	CMEG
Base/Neutrals:			
Benzo[a]pyrene	0.148-0.757	0.096	CREG
Pesticides:			
Aldrin	nd	0.041	CREG
Dieldrin	11-11	35	EMEG
PCB Aroclors (total):		0.091	CREG
Aroclor 1242	8.8-770		
Aroclor 1254	5.2-5.2		
Aroclor 1260	2.8-22		
Aroclor 1248	19-42		
Conventional Analysis Data:			
Cyanides, Total	1.2-205	none	none
Petroleum Hydrocarbons	4400-25,900	none	none
Phenolics, Total	12-315	none	none
Metals (dissolved):			
Arsenic	15-37	0.4	CREG
Chromium	156-1170	3500	RMEG
Lead	96-520	none	none
Mercury	0.34-139	none	none
Zinc	411-3680	none	none

nd -not detected
CREG -Cancer Risk Evaluation Guide for $1x10^{-6}$ excess cancer risk
EMEG -Environmental Media Evaluation Guide (ATSDR)
RMEG -Reference Dose Media Evaluation Guide
Source: USEPA Remedial Investigation, SCP-Carlstadt Site, 1990

APPENDICES

Appendix A: Site Location Map-SCP Site

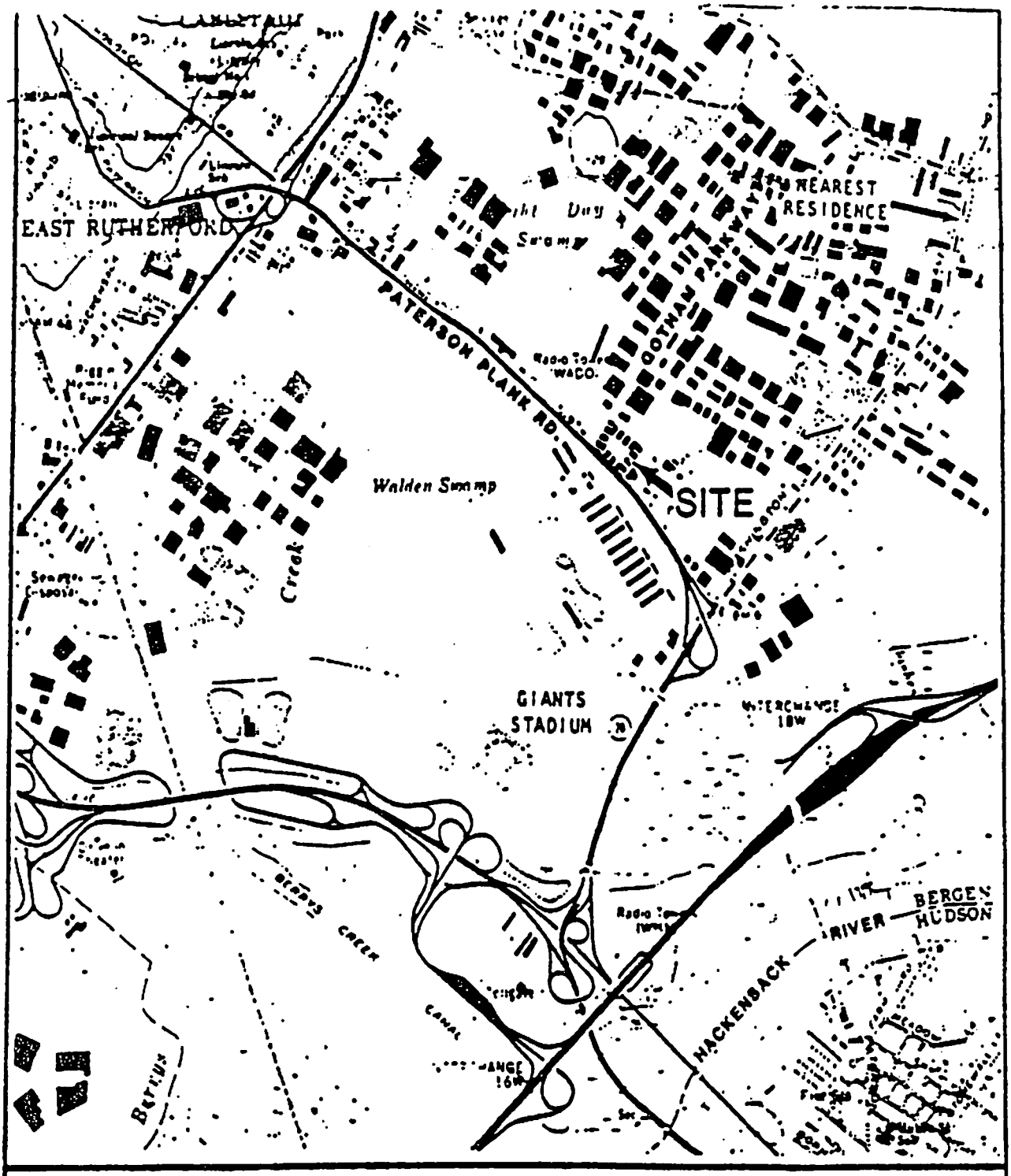
Appendix B: Site Layout-SCP Site

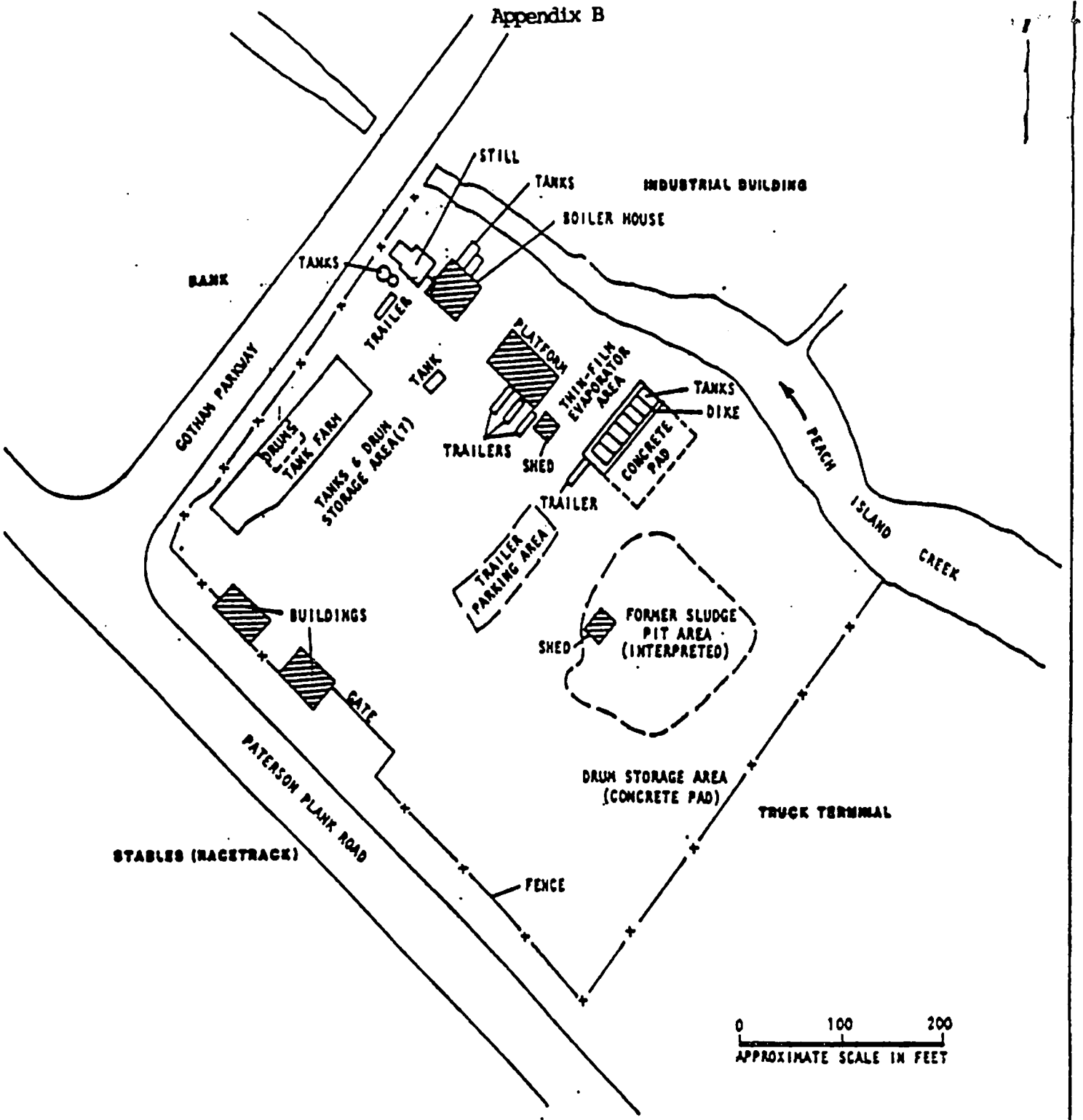
Appendix C: Land Use Map-Carlstadt, NJ

Appendix D: Industry in the Vicinity of the SCP Site

Appendix E: Approximate Well Locations in the Vicinity of the Carlstadt Site

Appendix F: Public Comment Period Response Summary

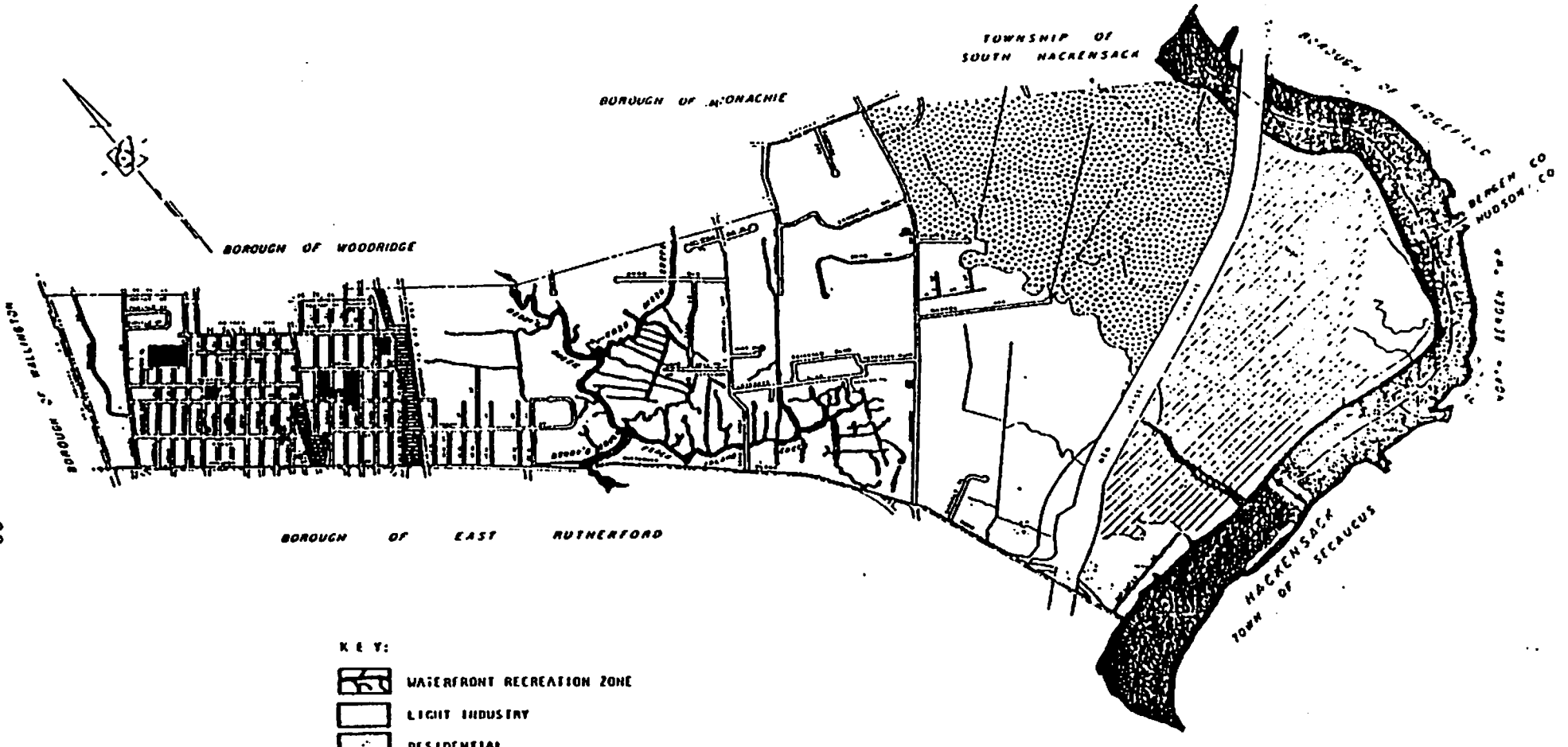

EAST RUTHERFORD
PATERSON PLANK RD.
NEAREST RESIDENCE
SITE
Walden Swamp
Creek
GIANTS STADIUM
HACKENSACK RIVER
BERGEN
HUDSON
NEW JERSEY
QUADRANGLE LOCATION
SITE LOCATION MAP
SCP SITE
CARLSTADT, NEW JERSEY
0
2000
4000 FEET
N
REFERENCE:
U.S.G.S. 7.5' QUADRANGLE:
WEEHAWKEN, N.J.-N.Y.-1967,
PHOTO REVISED 1981
DAMES & MOORE



SITE LAYOUT
SCP SITE

CARLSTADT, NEW JERSEY

NOTES:
1. ALL DRUMS, MOST TANKS AND TANK TRAILERS HAVE BEEN REMOVED AND SOME FACILITIES HAVE BEEN DISMANTLED SINCE OPERATIONS CEASED IN 1979.
2. BASE MAP REFERENCE: AERIAL PHOTOGRAPH NO. 3818-6-35, MARCH 27, 1984, SCALE: 1" = 100'±

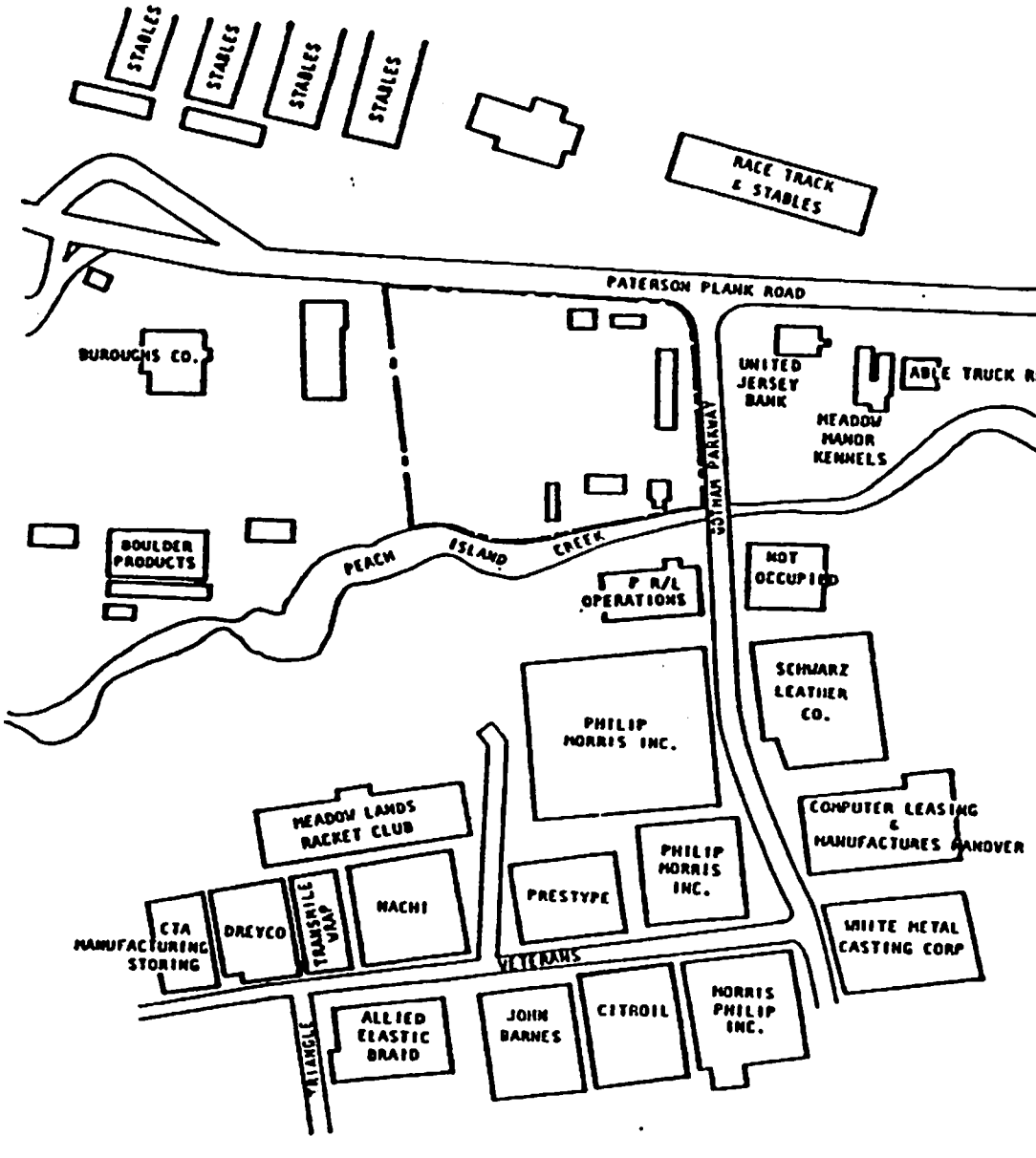


LAND USE MAP

CARLSTADT, N.J.

REFERENCE:
MASTER PLAN, BOROUGH OF CARLSTADT
BERGEN COUNTY, N.J.; DIPPER ASSOCIATES,
DECEMBER 1987, PLATE 7.

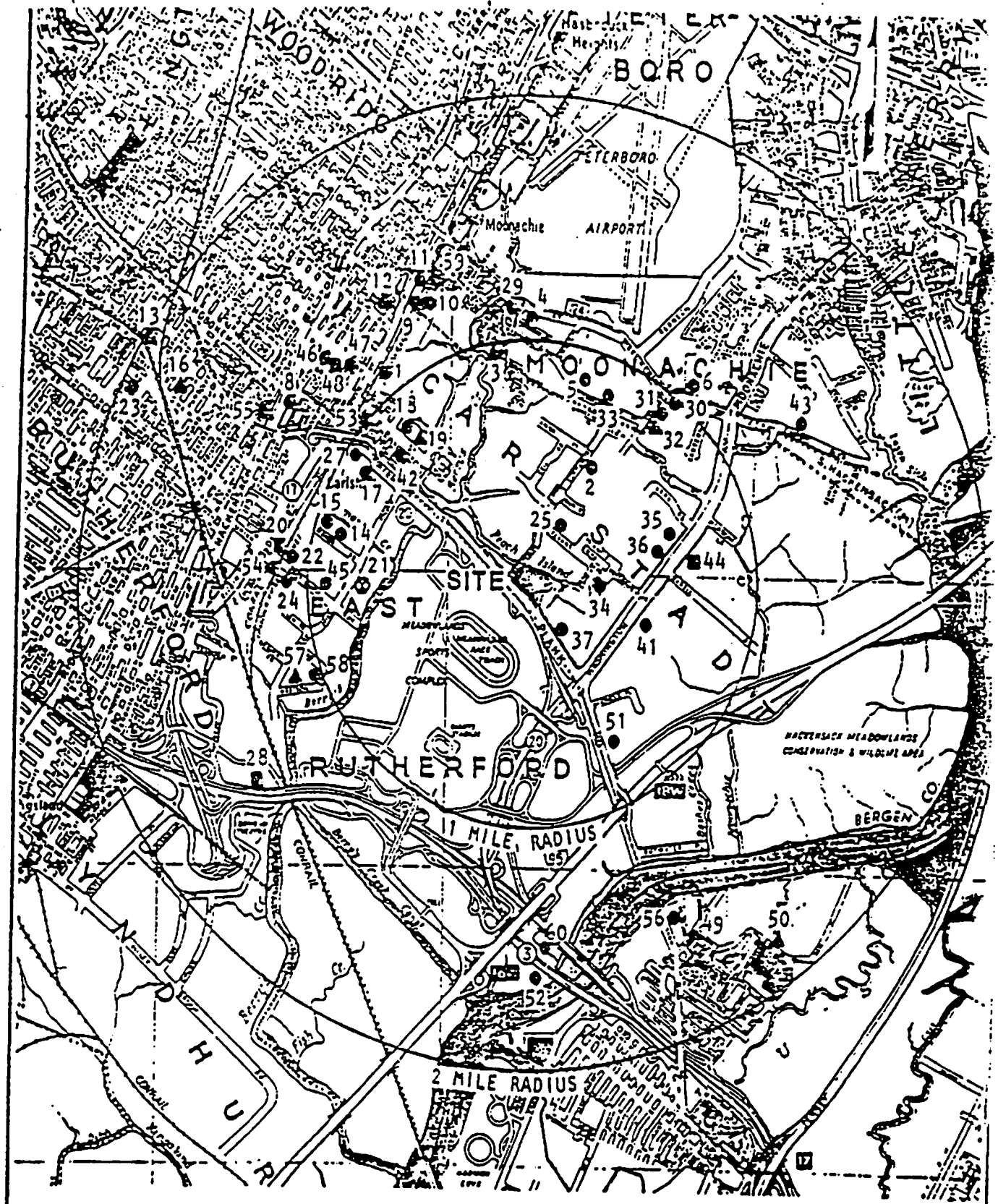
DAVIS & MOORE



INDUSTRY IN THE VICINITY OF THE SCP SITE

CARLSTADT, N.J.

(FEBRUARY, 1986)



APPROXIMATE WELL LOCATIONS IN THE VICINITY OF THE CARLSTADT SITE

0 2000 4000 6000 FEET

KEY:

- ● INDUSTRIAL WELLS
- ▲ DOMESTIC OR FOOD PROCESSING WELLS
- ⊙ IRRIGATION WELLS
- ■ UNKNOWN PURPOSE WELLS

DAMES & MOORE

APPENDIX F

Response Summary

This response summary represents those comments and reactions to the Public Health Assessment received during the Public Comment Period described in the Community Concerns Evaluation Section. In some cases similar commentary was received from various sources, while other concerns are specific to individuals or groups. Comments and concerns have been grouped by content where possible and are followed by the consequent response.

Numerous comments were received from the legal firm representing the group of responsible parties. Those comments pertinent to the health assessment process are presented below.

Comment

Numerous references were made to the fact that an interim remedy for the site (including a high density polyethylene membrane) was been completed in June 1992.

Response

The significance of this remedy with respect to potential exposure pathways has been noted in the Actions Implemented During The Health Assessment Process Section.

Comment

A comment was received challenging the use of 100 mg/day (of soil) as an appropriate ingestion rate in the toxicological evaluation section.

Response

ATSDR recommended the use of 100 mg/day as the appropriate ingestion rate at the time this evaluation was performed. Presently, the ATSDR recommended the use of 50 mg/day (for a 70 kg adult) as the appropriate rate. Even utilizing the higher rate of 100 mg/day calculated exposure doses were not at a level where adverse health effects would be expected.

Comment

A comment was received to the statement that "Many of the contaminants detected in subsurface soils ... have migrated into deep aquifers (Private Well Pathways subsection of Potential Exposure Pathways Section).

Response

The word *several* has been substituted for the word *many* in the text.