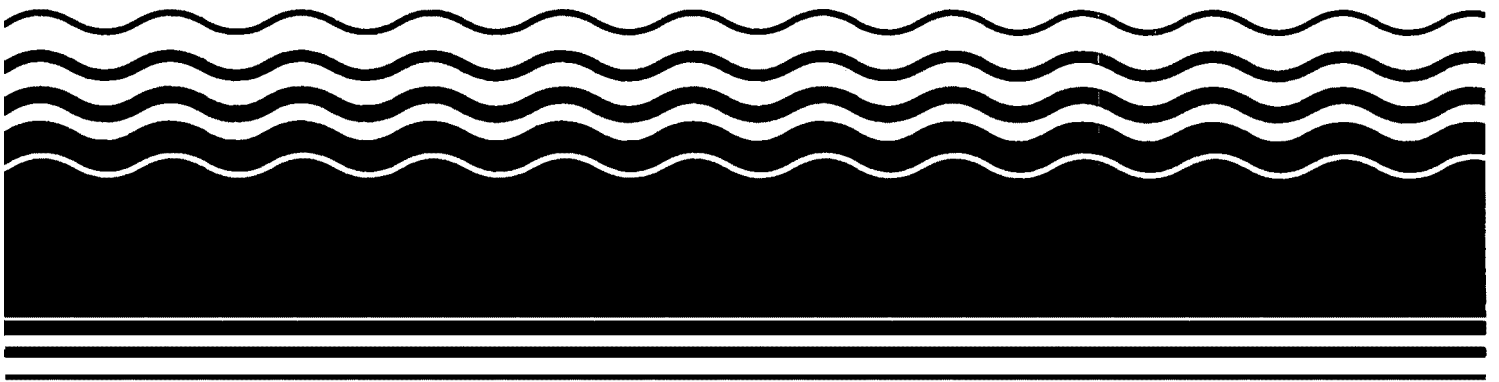




Superfund Record of Decision:

Woodland Township
Route 532 Dump, NJ



REPORT DOCUMENTATION PAGE		1. REPORT NO. EPA/ROD/R02-93/222	2.	3. Recipient's Accession No.	
4. Title and Subtitle SUPERFUND RECORD OF DECISION Woodland Township Route 532 Dump, NJ Second Remedial Action - Final				5. Report Date 09/28/93	
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7. Author(s)				8. Performing Organization Rept. No.	
9. Performing Organization Name and Address				10. Project Task/Work Unit No.	
				11. Contract(C) or Grant(G) No. (C) (G)	
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460				13. Type of Report & Period Covered 800/800	
				14.	
15. Supplementary Notes PB94-963809					
16. Abstract (Limit: 200 words) The 20-acre Woodland Township Route 532 Dump site is an abandoned, hazardous waste dump in Woodland Township, Burlington County, New Jersey. Land use in the area is predominantly undeveloped and commercial, with a wetlands area located onsite. The site is being remediated concurrently with another abandoned dump, the 12-acre Woodland Township Route 72 Dump site, located 3 miles from the Route 532 site. Both sites are located within the Pinelands Preservation Area District of New Jersey, and there is one residence within a 3-mile radius of the site. Both sites overlie the Cohansey and Kirkwood Aquifers; the Cohansey Aquifer is the major source of potable water for the area and was impacted by past disposal practices associated with the sites. From 1951 to 1962, several chemical manufacturing companies disposed of chemicals and other waste into onsite trenches or lagoons and burned various types of waste at the sites. The western half of the Route 532 site was organized into a series of bermed lagoons when the disposal began. A 1962 aerial photograph showed that most of the disposal areas had been regraded and that black liquid, previously dumped onsite, had breached the lagoon berm and was flowing into the nearby pine forest. A 1984 aerial photograph indicated that the site remained unchanged between 1962 and 1984; and that partially buried drums were located on the edges of the former lagoons and road on the western (See Attached Page)					
17. Document Analysis a. Descriptors Record of Decision - Woodland Township Route 532 Dump, NJ Second Remedial Action - Final Contaminated Medium: None Key Contaminants: None b. Identifiers/Open-Ended Terms c. COSATI Field/Group					
18. Availability Statement		19. Security Class (This Report) None		21. No. of Pages 30	
		20. Security Class (This Page) None		22. Price	

Abstract (Continued)

portion of the site, and partially buried drums and general refuse were piled along former roads on the eastern half of the property. No site controls were in place from 1962 to 1986. Surface soil, stream sediment, sludge, and debris were contaminated at both sites with waste, including tarry substances and paint residues. Leaching from these media has resulted in contamination of subsurface soil and ground water beneath both sites. A 1990 ROD addressed contaminated surface soil, sediment, sludge, debris, and ground water by excavating and disposing of any source contamination offsite, establishing a vegetative cover to prevent erosion, and treating and reinjecting ground water onsite, as OU1. This ROD addresses contamination of the subsurface soil, as OU3. Much of the contaminated subsurface soil, which had been acting as a source of continuing contamination to the ground water, was removed during excavation for the 1990 ROD. Recent EPA investigations indicated that natural processes have reduced the contaminants to below health-based risk levels; therefore, there are no contaminants of concern affecting this site.

The selected remedial action for this site is no further action, with ground water monitoring, because natural processes have reduced contaminants significantly at the site. Based on sampling and the risk assessment, EPA, in consultation with the State, determined that the site does not pose an unacceptable risk to human health and the environment and that exposure to hazardous substances contained in the subsurface soil will not occur under current or future use scenarios. However, it is possible that infiltration of precipitation may flush the remaining contaminants from the subsurface soil. If this occurs, the contaminants would be captured and treated by the ground water treatment system installed in the 1990 ROD. There are no present worth or O&M costs associated with this no action remedy.

PERFORMANCE STANDARDS OR GOALS:

Not applicable.

ROD FACT SHEET

SITES

Name: Woodland Township Route 72 and Route 532 Sites
Location: Woodland Township, Burlington County, New Jersey
EPA Region: 2
HRS Score: Route 72 site - 31.17 (July 5, 1983)
Route 532 site - 34.98 (July 5, 1983)

SECOND OPERABLE UNIT RODS

Date Signed: September 28, 1993
Remedy for the subsurface soils: No further action

LEAD

Agency: NJDEPE Remedial and Enforcement Leads
Primary USEPA contact: Rick Robinson (212) 264-4425
Primary NJDEPE contact: Gwen Barunas (609) 633-1455

WASTE

No remedial action for the subsurface soils is necessary to ensure protection of public health and the environment.



State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028

Jeanne M. Fox
Acting Commissioner

Karl J. Delaney
Director

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO. 9261030909

OCT 1 1993

Mr. Larry Granite
Project Manager
USEPA Region II
26 Federal Plaza
New York, NY 10278

Dear Mr. Granite:

Re: Woodland Township Superfund Sites
Woodland Township, Burlington County

Enclosed please find a copy of the Subsurface Soils (Operable Unit 2) Record of Decision for the above referenced sites signed September 28, 1993. As we discussed on September 29, 1993, you will make copies of the document and distribute them to the appropriate people in your office.

If you have any questions, feel free to contact me at (609) 633-1455.

Sincerely,

Gwen Barunas, Case Manager
Bureau of Federal Case Management

enclosure

SUPERFUND RECORD OF DECISION

WOODLAND TOWNSHIP SUPERFUND SITES WOODLAND TOWNSHIP BURLINGTON COUNTY NEW JERSEY



PREPARED BY: N.J. DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY
SITE REMEDIATION PROGRAM
BUREAU OF FEDERAL CASE MANAGEMENT
SEPTEMBER 1993



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

JACOB K. JAVITS FEDERAL BUILDING

NEW YORK, NEW YORK 10278-0012

24 SEP 1993

Jeanne Fox, Acting Commissioner
State of New Jersey
Department of Environmental
Protection and Energy
401 East State Street, CN 402
Trenton, New Jersey 08625-0402

Re: Records of Decision
Woodland Township Route 532 and Route 72 Superfund Sites
Burlington County, New Jersey

Dear Commissioner Fox:

Draft Records of Decision (RODs) have been prepared for the
Woodland Township Route 532 and Woodland Township Route 72
Superfund sites located in Burlington County, New Jersey.

The United States Environmental Protection Agency (EPA)
concurs with the "No Further Action" remedy for the subsurface
soils at the sites, and has determined that, based on the
administrative record for the sites, the draft RODs are
consistent with Section 121 of the Comprehensive Environmental
Response, Compensation, and Liability Act, as amended, (CERCLA),
42 U.S.C. Section 9601 et seq. This finding shall not affect
EPA's right to take response and enforcement actions pursuant to
Sections 104, 106 and 107 of CERCLA.

Sincerely,

A handwritten signature in dark ink, appearing to read "William J. Muszynski", is written over the typed name.

William J. Muszynski, P.E.
Acting Regional Administrator

**WOODLAND TOWNSHIP SUPERFUND SITES
RECORD OF DECISION**

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ATTACHMENT 1 - FIGURES

- ATTACHMENT 2 - TABLES

ATTACHMENT 3 - RESPONSIVENESS SUMMARY

DECLARATION STATEMENT

RECORD OF DECISION

WOODLAND TOWNSHIP ROUTE 72 SITE

Site Name and Location

Woodland Township Route 72 Site, Burlington County, New Jersey.

Statement of Basis and Purpose

This decision document presents the selected remedial action for subsurface soils at the Woodland Township Route 72 site, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the administrative record for the site.

The U.S. Environmental Protection Agency concurs with the selected remedy.

Description of the Selected Remedy

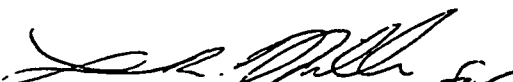
This is the second and final operable unit for the site. A previous Record of Decision, signed on May 16, 1990, addressed the remediation of contaminated surface materials, sediments and ground water at the site. This decision document addresses the subsurface soils.

The New Jersey Department of Environmental Protection and Energy has selected no further action for the second operable unit.

Declarations

No remedial action for the subsurface soils is necessary to ensure protection of public health and the environment.

The New Jersey Department of Environmental Protection and Energy will conduct a five-year review for this operable unit.



Jeanne M. Fox, Acting Commissioner
New Jersey Department of
Environmental Protection and Energy

9/28/93
Date

DECLARATION STATEMENT

RECORD OF DECISION

WOODLAND TOWNSHIP ROUTE 532 SITE

Site Name and Location

Woodland Township Route 532 Site, Burlington County, New Jersey.

Statement of Basis and Purpose

This decision document presents the selected remedial action for subsurface soils at the Woodland Township Route 532 site, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the administrative record for the site.

The U.S. Environmental Protection Agency concurs with the selected remedy.

Description of the Selected Remedy


This is the second and final operable unit for the site. A previous Record of Decision, signed on May 16, 1990, addressed the remediation of contaminated surface materials, sediments and ground water at the site. This decision document addresses the subsurface soils.

The New Jersey Department of Environmental Protection and Energy has selected no further action for the second operable unit.

Declarations

No remedial action for the subsurface soils is necessary to ensure protection of public health and the environment.

The New Jersey Department of Environmental Protection and Energy will conduct a five-year review for this operable unit.


Jeanne M. Fox, Acting Commissioner
New Jersey Department of
Environmental Protection and Energy

9/28/93
Date

DECISION SUMMARIES

Woodland Township Route 532 and Woodland Township Route 72 Sites

SITE NAME, LOCATION AND DESCRIPTION

The Woodland Township Route 72 site and Woodland Township Route 532 site are both located in Woodland Township, Burlington County, New Jersey (Figure 1). Both of the sites are situated within the Preservation Area District of the New Jersey Pinelands. The Route 532 site also falls within the designated "special agricultural area" of the Pinelands.

The Route 532 site is approximately 20 acres in size and is located on tax block 4210, lot 1. The site is at the end of an unpaved access road approximately 1/8 mile south of Route 532. The unnamed site access road meets Route 532 approximately 1 1/8 miles west of the intersection of Route 532 and Route 72. Goodwater Run, an intermittent stream, and Bayley Road border the site to the east. An unpaved forest fire control road runs along the southern edge of the site. Active commercial cranberry bogs are located approximately 1 mile west-southwest of the site.

The Route 72 site is approximately 12 acres in size and is located on tax block 5501, lot 15 and tax block 6301, lot 1. The site is 1/4 mile south of Route 72 along Crawley Road. Crawley Road is labeled as Sooeey Road on United States Geological Survey maps. Crawley Road meets Route 72 approximately 1 1/3 miles southeast of the intersection of Route 532 and Route 72. Pope Branch, an intermittent stream, is located approximately 500 feet to the north and 1,000 feet west of the site. An active commercial cranberry bog is located approximately 1/2 mile northwest of the site.

One private residence is located within a 3-mile radius of each site. The sites are approximately 3 miles apart, and are at an average elevation of 125 feet above mean sea level. The Route 532 site has approximately 20 feet of relief, while the Route 72 site has roughly 10 feet of relief. Both sites are characterized by loose sandy soils.

Both sites overlie the Cohansey and Kirkwood Aquifers. Of the two formations, the high-yielding Cohansey Aquifer is the major source of potable water for the area and was impacted by the past disposal practices associated with the sites. In addition, the Woodland Township sites are located in a regional recharge area for these aquifers. The Cohansey Aquifer also provides the base flow of many regional surface water bodies (e.g., streams, bogs). There are discontinuous clay layers beneath the sites.

In September 1983, both sites were proposed for inclusion on the National Priorities List (NPL) of Superfund sites. The sites were added to the NPL in September 1984.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Route 532 Site

Early records indicate ownership of the Route 532 site by Francis Estlow. In 1973, Estlow sold the property to Cohen, Weiss and Krell. In 1976, Airtime, Incorporated purchased the property and subsequently sold it to its present owners, Joseph and Albert Spitzer.

An aerial photograph from 1951 shows that a pine forest existed in the study area prior to the beginning of disposal operations. The exact date disposal began is unknown; however, it is estimated to have begun between 1951 and 1956. The western half of the Route 532 site was organized into a series of bermed lagoons when the disposal began. A 1956 photo indicated these lagoons contained black liquid waste. It was also evident from the photograph that this waste was released along an on-site road and flowed toward a depression.

By 1962, most of the disposal areas had been regraded. In a 1962 aerial photograph, new bulldozer scrape marks indicate that the disposal area was being enlarged. The black liquid, previously dumped on site, had also breached the lagoon berm and was flowing into the nearby pine forest. A second flow was observed extending from the eastern border toward the path of Goodwater Run.

A 1984 photograph indicated that the site remained essentially unchanged between 1962 and 1984. Denuded areas could be observed where the two liquid flows moved off site. The photograph also shows partially buried drums on the downslope edges of the former lagoons and road on the western half of the site. Partially buried drums and general refuse were piled along former roads on the eastern half of the property at that time. No site controls were in place from 1962 to 1986. In 1986, potentially responsible parties (PRPs) constructed a security fence to restrict site access.

Route 72 Site

The Route 72 site was owned by Francis Estlow until 1957, when the property was purchased by Rudolf Kraus. Rudolf and/or Eleanor Kraus also owned Industrial Trucking Services Corporation, the company that reportedly transported the waste materials to the sites for disposal. Cohen, Weiss and Krell purchased the property in April 1964. It is unclear from Woodland Township records when the property was acquired by its current owner, Airtime, Inc.

A 1951 aerial photograph of the site illustrates conditions prior to the waste disposal operation. Probable concrete pads, possible basement space, a utility building and a sidewalk can be observed. An unpaved road connected the site to the perimeter road of the Coyle Airport. Crawley Road and a fire road north of the site were also present.

A 1956 photograph shows several trenches elongated in an east-west direction on the northern third of the site. The trenches were located on both sides

of Crawley Road. The central portion of the site was covered with general refuse and stained soils. Small depressions containing standing liquid were evident on the western half of the site. The southern portion of the site west of Crawley Road contained a wide depression with standing liquid in it. The southern portion east of Crawley Road contained several shallow trenches oriented along a north-south axis.

Between 1956 and 1962, the site layout remained unchanged based on a 1962 photograph. However, the trenches were apparently deepened, and those in the northern and southern portions of the site contained a standing light-colored liquid.

A 1984 photograph did not identify any changes to the site since 1962. The outlines of trenches and depressions could be observed. Drums, stained soils, and general refuse were identifiable in the central portion of the site. Much of the pine forest at the edge of the site had regenerated, while on-site disposal areas remained unvegetated. This site was also uncontrolled between 1962 and 1986. In 1986, the PRPs constructed a security fence to restrict site access.

Enforcement History

The New Jersey Department of Environmental Protection and Energy (DEPE) was advised of environmental problems at the sites by the Burlington County Health Department in April 1979. The DEPE subsequently conveyed the information to the U.S. Environmental Protection Agency (EPA). At about the same time, a biologist investigating endangered species for the DEPE also reported environmental problems at the sites.

Due to the similarities of the two sites (i.e., PRPs, waste disposal practices, location and physical/chemical characteristics), enforcement efforts for the sites have been combined. The DEPE issued a directive on March 4, 1985 to the Rohm and Haas Company, the Minnesota Mining and Manufacturing (3M) Company, Hercules, Inc., and other companies identified as PRPs to arrange for the investigation and remediation of the sites. On March 27, 1985, the DEPE entered into an Administrative Consent Order (ACO) with Hercules, Incorporated to help pay for the investigative and administrative costs. On July 6, 1987, the DEPE entered into similar ACO with 3M, and Rohm and Haas Company.

On January 2, 1990, the DEPE entered into a second Administrative Consent Order (ACO II) with Hercules, 3M and Rohm and Haas. The purpose of this ACO was to compel the PRPs to remove liquids and sludges from isolated locations on the sites' surfaces.

A third order, ACO III, was signed with Hercules, 3M and Rohm and Haas on June 15, 1990. It required the PRPs to excavate for off-site disposal all visibly contaminated surface soils from both sites, as specified in the Record of Decision (ROD) dated May 16, 1990. The ROD estimated there was a total of 54,000 cubic yards of contaminated surface materials and sediments (soils, sludges, debris, etc.) and 19 cubic yards of radiologically contaminated surface materials at the two sites.

The excavation and off-site disposal of the surface materials was conducted in 1990. The actual amount of contaminated materials and sediments removed from the Route 72 and 532 sites was 37,200 and 60,200 cubic yards, respectively, compared to the ROD estimate of 54,000 cubic yards. Part of the reason for the higher volumes is that much of the contaminated subsurface soils was removed along with the removal of the visibly contaminated surface materials. These soils had been acting as a source of continuing contamination of the groundwater. The excavation of the soil was intended to minimize cross-media impacts of contaminated soil on the ground water. The removal of additional subsurface soils further reduced these impacts, thereby enhancing the effectiveness of the remedy.

Subsequent to the excavation of the contaminated surface materials, the sites were graded to prevent soil erosion. Protective vegetative and mulch covers were also established to prevent erosion. The May 1990 ROD calls for the final restoration of the sites after the remedial actions are completed.

On August 15, 1991, the fourth ACO (ACO IV) was signed with Hercules, 3M, and Rohm and Haas. The purpose of this ACO was to require the PRPs to extract and treat contaminated ground water as specified in the ROD and to perform a remedial investigation and feasibility study (RI/FS), and remedial action, if necessary, for the subsurface soils.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

A Community Relations Plan (CRP) was developed to ensure the public opportunities for involvement in site-related decisions. In addition, the CRP was used by the DEPE to determine, based on community interviews, activities to ensure public involvement and to provide opportunities for the community to learn about the sites.

On February 10, 1986, a public meeting was held to explain the initial RI/FS to the public and to report on progress being made at the site. The results of the RI/FS were presented in a public meeting held on January 31, 1990. A ROD, which selected a remedy for the contaminated surface materials, sediments and ground water, was signed on May 16, 1990.

The supplemental RI report and the Proposed Plan, which addressed the subsurface soils, were released to the public for comment in August 1993. These documents were made available to the public at the information repositories at the Woodland Township Municipal Building located on Main Street in Chatsworth, and at the Pinelands Commission located on Springfield Road in New Lisbon. A copy of the administrative record file for the sites is located at the previously-mentioned information repositories, as well as in the DEPE's Bureau of Community Relations, 401 East State Street in Trenton. The notice of availability for the above-referenced documents was published in The Burlington County Times on August 19, 1993. The public comment period on these documents was held from August 19, 1993 through September 17, 1993 (30 calendar days).

On August 31, 1993, the DEPE held a public meeting at the Woodland Township Municipal Building, to present the findings of the supplemental RI report and the Proposed Plan, and to respond to questions and comments from area residents and other attendees. A Responsiveness Summary is part of this ROD.

This decision document presents the selected remedial actions for the Woodland Township Route 532 and Route 72 sites, chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The remedial action decisions for these sites are based on the administrative record.

SCOPE AND ROLE OF OPERABLE UNIT

The remedial action described in the May 1990 ROD was the first of two planned operable units for the sites. As discussed above, the first operable unit action was to address the remediation of contaminated surface materials, sediments and ground water at the sites. The excavation and off-site disposal of the surface materials and sediments was completed in the Fall of 1990. The design of the ground water remedy is currently underway. After the ROD was signed, a study was conducted to more fully characterize the presence and extent of contamination in the subsurface soils (the second operable unit).

Based on the results of both the RI for the subsurface soils and risk assessments performed for the sites, no further action is necessary for the second operable unit.

SUMMARY OF SITE CHARACTERISTICS

The supplemental RI is comprised of two rounds of subsurface soil sampling. The locations of the sampling are shown in Figures 2 and 3. A summary of the subsurface soil data and a comparison to the DEPE's proposed cleanup criteria is presented in Tables 1 and 2. Continuous split spoon samples were collected from grade until the water table, refusal (blow counts exceeding 200) or a depth of 20 feet, whichever came first. The first round of sampling was conducted in 1991. The samples were collected on a regularly spaced grid (50 x 50 feet) that covered the disturbed area of both sites. The sampling results are as follows:

Route 72

Two locations were identified as having contaminants exceeding the DEPE's then proposed cleanup criteria for subsurface soils. The DEPE determined that the proposed cleanup criteria were not applicable or relevant and appropriate requirements for the Route 532 and Route 72 sites. However, since the proposed cleanup criteria were useful in evaluating the sampling results, they were regarded as "to be considered" information.

At one location, bis (2-ethylhexyl) phthalate, xylenes, and chlorobenzene exceeded the criteria; the other location had trichloroethene, xylenes, and chlorobenzene exceeding the criteria.

Route 532

Four locations were identified as having contaminants exceeding the DEPE soil cleanup criteria. Three locations contained one or more of the following organic compounds: bis (2-chloroethyl) ether, carbon tetrachloride, 1,2-dichloroethane, tetrachloroethene and xylenes. Zinc exceeded the proposed soil cleanup criteria at one location.

The quantity of soil exceeding the soil cleanup criteria was estimated to be 3,000 to 4,000 cubic yards total for both sites.

The second round of sampling was conducted in 1993. The purpose of this effort was to further delineate the contaminated areas that were identified in the 1991 sampling round. The distance between soil sampling locations ranged from 10 to 35 feet depending on the area under investigation. The results of the 1993 work are as follows:

Route 72

Three sample locations were identified as having one or more of the following compounds exceeding soil cleanup criteria: chlorobenzene, styrene, xylenes, and bis (2-ethylhexyl) phthalate. The volume of soil exceeding the criteria is approximately 400 cubic yards.

Route 532

Two sampling locations were identified as having xylenes and tetrachloroethene at concentrations exceeding soil cleanup criteria. The estimated volume of soil exceeding the criteria is 400 cubic yards.

The 1993 subsurface soil sampling program better delineated the extent of residual contamination at the two sites.

SUMMARY OF SITE RISKS

A risk assessment was performed to evaluate the potential risks to human health associated with the Woodland Township Route 532 and Route 72 sites in their current state. Because the remedy for the surface materials and sediments has already been implemented, and the 1990 ROD included remediation of the ground water at the sites, the risk assessment evaluated the potential impacts associated with the subsurface soils.

To evaluate human health risks, a four-step process was utilized for assessing site-related risks for a reasonable maximum exposure scenario. These steps are: *Hazard Identification* - identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration; *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated soil) by which humans are potentially exposed; *Toxicity Assessment* - determines the types of adverse health effects associated with exposures to site contaminants, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative (e.g., one-in-a-million excess cancer risk) assessment of site-related risks.

The risk assessment began with selecting contaminants of concern which would be representative of site risks. These contaminants included bis (2-ethylhexyl) phthalate, DDT, 1,2-dichloroethane, polycyclic aromatic hydrocarbons, chlorobenzene, ethylbenzene and zinc. These chemicals of potential concern are shown in Table 3. The concentrations of the chemicals of potential concern used in the risk assessment are shown in Tables 4 and 5.

The baseline risk assessment evaluated the health effects which could result if a current or future trespasser were exposed to contamination as a result of dermal absorption of constituents following dermal contact, incidental ingestion of contaminants, inhalation of volatile organics, and inhalation of fugitive dusts. The assumptions used for each exposure pathway are shown in Tables 6, 7 and 8.

For risk assessment purposes, individual contaminants are typically separated into two categories of health hazard depending on whether they exhibit carcinogenic or noncarcinogenic effects. Current federal guidelines for acceptable exposures are an individual lifetime excess carcinogenic risk in the range of 10^{-4} to 10^{-6} , representing a probability of approximately one in ten

thousand to one in one million that an individual could develop cancer due to exposure. The noncarcinogenic effects (e.g., systemic effects) posed by each contaminant are summarized as a "Hazard Index" (HI) for a particular exposure pathway. The HI compares the chronic exposures to contaminants within an exposure pathway to their respective reference doses, the reference dose being a measure, with many built-in safety factors, of a contaminant's threshold for causing toxicity. Generally, only Hazard Indices greater than 1.0 are identified with potential adverse health effects.

The results of the baseline risk assessment indicate that, for all pathways evaluated, the subsurface soils at the site pose an acceptable risk. For the Route 72 site, the total carcinogenic risks for the soil pathway are 5.0×10^{-13} and 3.5×10^{-10} for the probable and worst cases, respectively. This carcinogenic risk is well below the DEPE's target carcinogenic risk of 1×10^{-6} . The Hazard Index was estimated to be 0.003 for the most probable case and 0.57 for the worst case. Current federal guidelines for acceptable exposures are a maximum Hazard Index equal to 1.0.

For the Route 532 site, the total carcinogenic risks for the soil pathway are 2.9×10^{-12} and 2.6×10^{-10} for the most probable and worst cases, respectively. The total noncarcinogenic hazard indices are 0.0067 for the most probable case and 0.061 for the worst case. As with the Route 72 site, the carcinogenic and noncarcinogenic risks are well below the current federal and state guidelines. The hazard indices and cancer risks associated with the potential exposure pathways are presented in Tables 9, 10, 11 and 12.

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental sampling and analysis;
- environmental parameter measurement;
- fate and transport modeling;
- exposure parameter estimation; and
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the medium sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental sample analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of contaminants. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks, and is highly unlikely to underestimate actual risks related to the site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment Addendum.

Ecological risks were characterized prior to the May 1990 ROD. Subsequent to the remedial action in 1990, native vegetation has grown at the sites. Therefore, it is likely that the presence of contaminants in the subsurface soils do not pose significant risks to this vegetation.

DISCUSSION OF THE "NO FURTHER ACTION" REMEDY

The DEPE has selected "No Further Action" for the subsurface soils at both sites because of the following:

- Based on the risk assessment addendum, no unacceptable exposures to hazardous substances contained in the subsurface soils will occur under current or future use scenarios. The calculated carcinogenic risks were not greater than the DEPE's acceptable risk of 1×10^{-6} or EPA's acceptable risk range of 1×10^{-4} to 1×10^{-6} , while the calculated non-carcinogenic risk did not exceed the Hazard Index of 1.0.
- Soil flushing studies conducted by Rutgers University on behalf of the PRPs indicate that the soils at both sites are amenable to flushing. It is possible that the infiltration of precipitation may flush the remaining volatile contaminants from the subsurface soils; these contaminants (i.e., xylenes, tetrachloroethene, and chlorobenzene) would be captured and treated by the ground water treatment system.
- The potential exists for natural processes such as biotic and abiotic degradation, flushing and volatilization to reduce the low level concentrations of contaminants in the subsurface soil, including those exceeding the soil cleanup criteria. Two sampling locations at the Route 532 site had notable reductions in the level of contaminants between the 1991 sampling event and the 1993 sampling event, indicating that natural processes are reducing the low level concentrations remaining.

- The no further action with monitoring remedy complies with the DEPE's cleanup criteria through natural attenuation. Although hazardous substances are not present above health-based levels in the subsurface soils, the DEPE has decided to conduct monitoring and a five-year review to ensure that the remedy continues to be protective of human health and the environment.

In summary, the DEPE and EPA believe that no remediation of the subsurface soils is necessary to ensure protection of human health and the environment.

U.S. EPA ACCEPTANCE

EPA concurs with the No Further Action remedy. EPA's letter of concurrence is attached to this ROD.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the preferred remedial approach presented in the Proposed Plan.

WOODLAND TOWNSHIP ROUTE 532/WOODLAND TOWNSHIP ROUTE 72 SITES
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

1. Subsurface Soil Investigation, Route 72 and Route 532 Sites, Woodland Township, Burlington County, New Jersey, prepared by EEC Environmental, Inc., November, 1992.
2. Subsurface Soil Contaminant Characterization, Route 72 and Route 532 Sites, Woodland Township, Burlington County, New Jersey, Volumes I and II, prepared by Harding Lawson Associates, May 18, 1993.
3. Evaluation of Human Health Risk Following Soil Remediation at the Route 72 and Route 532 Sites, Woodland Township, Burlington County, New Jersey, prepared by ENVIRON Corporation, July, 1993.

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ATTACHMENT 1 - FIGURES

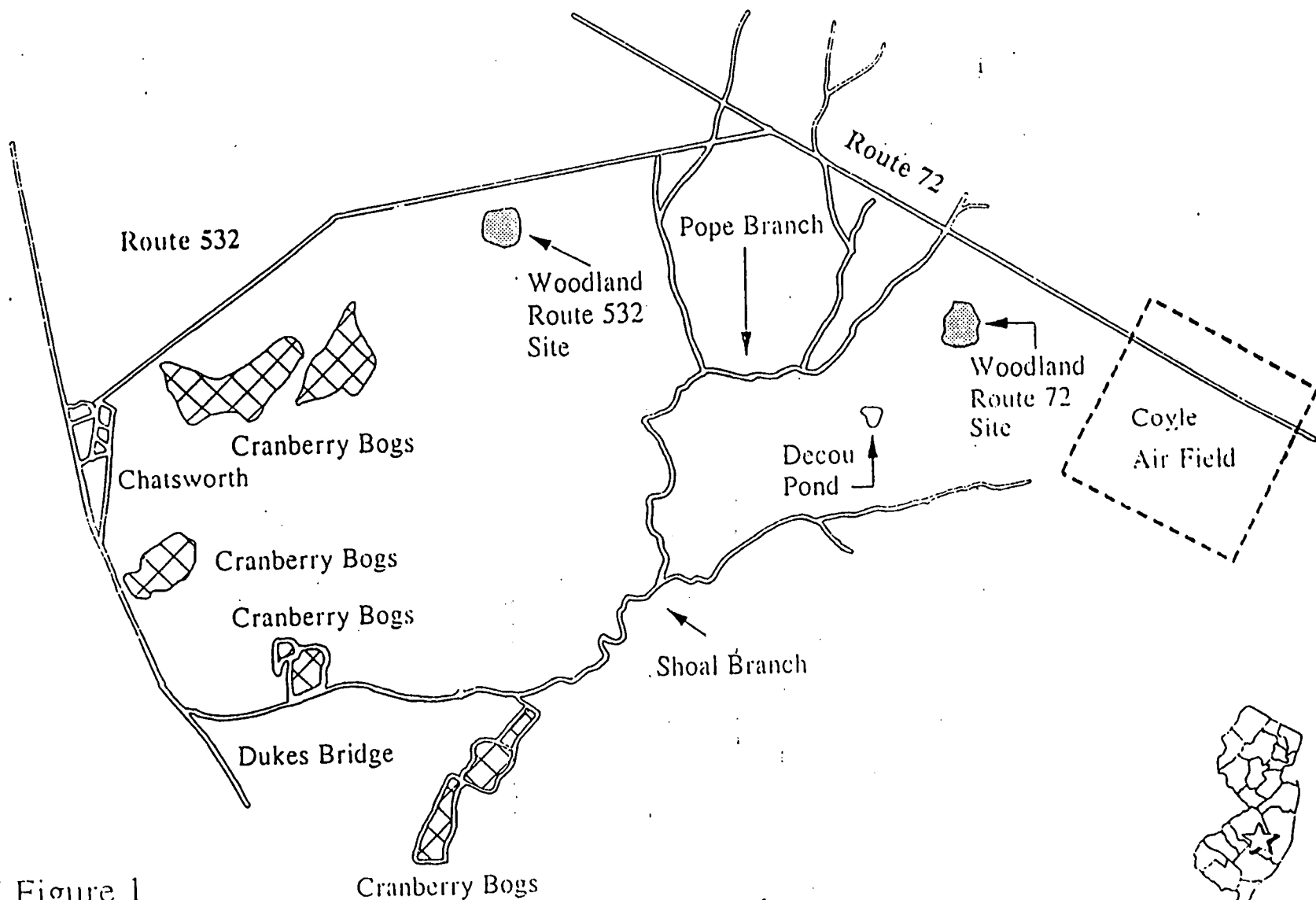


Figure 1

Scale: 1 inch = Approx. 3000 feet

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ATTACHMENT 2 - TABLES

TABLE I
SOIL SAMPLING LOCATIONS
EXCEEDING NJDEPE TBC CRITERIA (3/8/93)
ROUTE 72 SITE

Location	Depth Below Grade	Parameter	Concentration (ppm)	TBC Criteria (ppm)	TBC Criteria Applied
7NL-13	4-6'	bis(2-ethylhexyl)phthalate	320	49	Residential
		Chlorobenzene	4.5	1	Ground Water
		Xylene (Total)	40	10	Ground Water
		Styrene	46	23	Residential
7NL-13/10E	6-8'	bis(2-ethylhexyl)phthalate	81	49	Residential
7NL-13/10S	6-8'	bis(2-ethylhexyl)phthalate	205	49	Residential
		Chlorobenzene	1.5	1	Ground Water
		Xylene (Total)	20.5	10	Ground Water

NOTES:

Concentrations for 7NL-13/10S were determined by calculating the average of the original and duplicate samples.

SOURCE: Harding Lawson Associates (Project No. 19008)

TABLE 2
SOIL SAMPLING LOCATIONS
EXCEEDING NJDEPE TBC CRITERIA (3/8/93)
ROUTE 532 SITE

Location	Depth Below Grade	Parameter	Concentration (ppm)	TBC Criteria (ppm)	TBC Criteria Applied
5NJ-11	0-2'	Tetrachloroethene	40	1	Ground Water
		Xylene (Total)	170	10	Ground Water
5NJ-12	2-4'	Tetrachloroethene	1.2	1	Ground Water
		Xylene (Total)	51.5	10	Ground Water
NOTES:					
Concentrations for 5NJ-12 were determined by calculating the average of the original and duplicate samples.					
SOURCE: Harding Lawson Associates (Project No. 19008)					

**Table 3: Substances of Concern for the Route 72 and Route 532 Sites
Public Health Evaluation**

Substance	Route 72 Site	Route 532 Site
DEHP ^a	X	X
DDT ^b	X	X
1,2-dichloroethane	X	
1,1,2,2-tetrachloroethane		X
PAHs ^c	X	
Chlorobenzene	X	
Ethylbenzene	X	X
Lead	X	X

Notes:

^a bis(2-ethylhexyl)phthalate

^b DDT and its metabolites

^c PAHs included the potential carcinogens benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, indeno(1,2,3-cd)pyrene, and chrysene

**Table 4 : Exposure Point Concentration of Substances of Concern
In Surface Soil
Route 72 Site**

	Pre-Remediation		Post-Remediation ^a	
Carcinogen	Most probable ^b concentration (ug/kg)	Worst case ^c concentration (ug/kg)	Most probable ^b concentration (ug/kg)	Worst case ^c concentration (ug/kg)
DDT ^d	4,008	2,000,000	0.1	13.8
PAHs ^e	1,770	2,670	ND	ND
1,2-Dichloroethane	291	1,600	ND ^f	ND ^f
Chlorobenzene	5	5	7.4	4,500
Ethylbenzene	5	6	10.4	28,000 ^g
bis(2-ethylhexyl)phthalate	13,645	2,300,000	1,797	320,000 ^g
Lead	184,310	18,126,000	4,033 ^h	271,754 ^h
Zinc ⁱ	1,600,000	230,000,000	35,020	345,000

Notes:

^a 1991 and 1993 data combined

^b Geometric mean concentrations used for most probable case

^c Maximum concentrations used for worst case

^d DDT metabolites include DDD and DDE geometric mean concentrations were summed to represent the most probable concentration

^e PAHs included in the study are the potential carcinogens benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, indeno(1,2,3-cd)pyrene, and chrysene

^f No value exceeded the detection limit

^g Found at 6-8 feet in 1993

^h Estimated using zinc percent reduction as a surrogate

ⁱ Included to estimate lead soil concentrations

**Table 5 : Exposure Point Concentration of Substances of Concern
in Surface Soil
Route 532 Site**

	Pre-Remediation		Post-Remediation ^a	
Carcinogen	Most probable ^b concentration (ug/kg)	Worst case ^c concentration (ug/kg)	Most probable ^b concentration (ug/kg)	Worst case ^c concentration (ug/kg)
DDT ^d	5,148	412,000	0.45	4.4
1,1,2,2-tetrachloroethane	76	100	ND ^e	ND ^e
Ethylbenzene	9	19	8	32,000
bis(2-ethylhexyl)phthalate	10,710	300,000	757	55,000
Lead	94,210	1,323,000	6,729 ^f	37,930 ^f
Zinc ^g	290,000	610,000,000	20,730	1,720,000

Notes:

- ^a 1991 and 1993-data combined
- ^b Geometric mean concentrations used for most probable case
- ^c Maximum concentrations used for worst case
- ^d DDT metabolites include DDD and DDE geometric mean concentrations were summed to represent the most probable concentration
- ^e No value exceeded the detection limit
- ^f Estimated using zinc percent reduction as a surrogate
- ^g Included to estimate lead soil concentrations

Table 6 : Assumptions for Volatile Organics		
Parameter	Most Probable Case	Worst Case
1. Frequency of contact	2 hours/week for 10 weeks/year	4 hours/week for 20 weeks/year
2. Breathing rate	1.7 m ³ /hour	1.7 m ³ /hour
3. Duration of exposure	6 years	6 years
4. Percent absorbance	100%	100%
5. Body weight	45 kg	45 kg

Table 7 : Assumptions Used in Estimating Exposure to Direct Contact with Contaminated Soils		
Parameter	Most Probable Case	Worst Case
1. Frequency of contact	2 hours/week for 10 weeks/year	4 hours/week for 20 weeks/year
2. Duration of exposure	6 years	6 years
3. Average skin area over period of exposure	5,000 cm ²	5,000 cm ²
4. Average weight over period of exposure	45 kg	45 kg
5. Quantity of soil contacting skin per exposure event	2 gm	10 gm
6. Direct application absorption rate	12%/12 hours	12%/12 hours
7. Incidental ingestion of contaminated soil	50 mg/day	100 mg/day
8. Percentage of ingested soil absorbed	100%	100%
9. Exposure point concentration	Geometric mean concentration	Maximum concentration

Table 8 : Assumptions for Respirable Particulate Exposure

Parameter	Most Probable Case	Worst Case
1. Breathing rate	1.7 m ³ /hour	1.7 m ³ /hour
2. Frequency of contact	2 hours/week for 10 weeks/year	4 hours/week for 20 weeks/year
3. Percent retention of particulates in the lungs	30%	75%
4. Percent absorbance of contaminant	100%	100%
5. Duration of contact	6 years	6 years

**Table 9 : Risk Assessment for Potential Carcinogens
Route 72 Site**

Substance	Dermal		Ingestion		Inhalation VOCs		Inhalation Particulates		Total	
	Probable	Worst	Probable	Worst	Probable	Worst	Probable	Worst	Probable	Worst
DDT	N/A	N/A	5.0E-13	3.5E-10	N/A	N/A	5.0E-17	1.4E-13		
PAHs	--	--	N/A	N/A	N/A	N/A	N/A	N/A		
DEHP	N/A	N/A	N/A	N/A	N/A	N/A	1.3E-13	2.8E-13		
Total Soil	--	--	5.0E-13	3.5E-10	--	--	1.4E-15	4.2E-13	5.0E-13	3.5E-10

-- Not detected.

Table 10 : Hazard Assessment for Noncarcinogens
Route 72 Site

Substance	Dermal		Ingestion		Inhalation VOCs		Inhalation Particulates		Total	
	Probable	Worst	Probable	Worst	Probable	Worst	Probable	Worst	Probable	Worst
Chlorobenzene	2.1E-4	1.3E-1	N/A	N/A	N/A	N/A	N/A	N/A		
Ethylbenzene	N/A	N/A	N/A	N/A	5.4E-7	2.2E-2	N/A	N/A		
Lead	N/A	N/A	3.3E-3	4.2E-1	N/A	N/A	7.7E-7	6.0E-4		
Total	2.1E-4	1.3E-1	3.3E-3	4.2E-1	5.4E-7	2.2E-2	7.7E-7	6.0E-4	3.5E-3	5.7E-1

-- Not detected.

[illegible]

Substance	Dermal		Ingestion		Inhalation VOCs		Inhalation Particulates		Total	
	Probable	Worst	Probable	Worst	Probable	Worst	Probable	Worst	Probable	Worst
Ethylbenzene	4.9E-9	2.0E-4	N/A	N/A	3.1E-7	2.9E-4	N/A	N/A		
Lead	N/A	N/A	6.7E-3	6.0E-2	N/A	N/A	1.3E-6	8.6E-5		
Total	4.9E-9	2.0E-4	6.7E-3	6.0E-2	3.1E-7	2.9E-4	1.3E-6	8.6E-5	6.7E-3	6.1E-2
-- Not detected.										

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ATTACHMENT 3 - RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY WOODLAND TOWNSHIP ROUTE 532 AND ROUTE 72 SUPERFUND SITES

INTRODUCTION

This Responsiveness Summary provides a summary of significant comments received from the public, regarding the Proposed Plan for the Woodland Township Route 532 and Route 72 Superfund sites.

The public comment period extended from August 19, 1993 through September 17, 1993 to provide interested parties the opportunity to comment on the Proposed Plan for the sites. During the comment period, the New Jersey Department of Environmental Protection and Energy (NJDEPE) held a public meeting on August 31, 1993 at 7:00 PM at the Woodland Township Municipal Building to discuss the results of the Remedial Investigation for subsurface soils and to present the preferred remedial alternative.

OVERVIEW

The preferred remedial alternative, which was presented in the August 1993 Proposed Plan, addresses the subsurface soils with the recommendation of "No Further Action". All visibly contaminated surface soils have already been excavated from both sites and disposed of off-site by the Potentially Responsible Parties (PRPs) in accordance with the 1990 Record of Decision (ROD). The "No Further Action" with monitoring remedy for the subsurface soils will comply with NJDEPE cleanup criteria through natural attenuation. Infiltration of precipitation may flush the remaining volatile contaminants from the subsurface soil; treatment of contaminated ground water, another component of the 1990 ROD, is planned for the future. The engineering design for this system is currently underway.

One comment was received during the public comment period from the Pinelands Commission supporting the preferred remedial alternative presented in the Proposed Plan. This comment was based upon the understanding that any degradation of ground water caused by the flushing of contaminants from the subsurface soils will be addressed in the proposed plan for remediation of ground water. With the Record of Decision of which this Responsiveness Summary is a part, the preferred remedial alternative identified in the Proposed Plan becomes the selected remedy for the sites.

BACKGROUND ON COMMUNITY INVOLVEMENT

Community interest in the Woodland Township Route 532 and Route 72 dump sites has been minimal since the sites were placed on the Superfund National Priorities List in 1983. Most likely, the low population density in the area contributes to the lack of citizen involvement with the sites. There is only one residence in the immediate vicinity, although there is evidence of public recreational activities. (Footprints and tire tracks from trail motorcycles have been found on and around the sites.) In 1986, fences were erected around both the Route 532 and Route 72 sites by the potentially responsible parties (PRPs) for the Woodland sites. Route 72 is heavily traveled in the summer months as an access route to the New Jersey Shore area but there is minimal local traffic. There were some complaints of noxious odors during the 1950s

and 1960s when waste disposal was being carried out; however, there has only been one subsequent complaint, also of odors, in 1979. Two reported incidents exist of residents wandering onto the sites and requiring medical attention as a result of dermal contact with contaminated materials. Local and county officials acted as the primary catalysts in bringing the sites to the attention of the NJDEPE, initially requesting assistance in sample analyses and visiting the sites with NJDEPE officials.

Some of the key community issues surrounding these sites include concern for the integrity of the Cohansey Sand Aquifer, the potential for surface water contamination threatening a number of commercial cranberry bogs in the area, concern for endangered species such as the timber rattle snake and the corn snake, and an overall concern for the ecology of the area as part of the significant New Jersey Pinelands Preservation Area within the Pinelands National Reserve.

Community relations activities conducted for the Woodland Township dump sites to date have included:

- NJDEPE preparation of a Community Relations Plan (July 1984).
- NJDEPE conducted a public meeting at the Chatsworth Fire Hall to discuss the initiation of the Remedial Investigation/Feasibility Study (RI/FS) on February 10, 1986. Approximately 30 people attended, including local residents and officials, PRP representatives and media representatives.
- NJDEPE conducted potable well sampling episodes in 1985 at the one residence located in the immediate vicinity of the sites and again in June 1988 in the area of Dukes Bridge.
- NJDEPE sampled the fall cranberry harvests in both 1988 and 1989 with the assistance of the Chatsworth Cranberry Association and Ocean Spray, Inc.
- NJDEPE conducted a second public meeting at the Chatsworth Elementary School on January 31, 1990 to discuss the results of the RI/FS and the preferred alternatives preliminarily selected by NJDEPE and USEPA to clean up the sites. Approximately 35 people attended, including local residents and officials, the New Jersey Pinelands Commission's Executive Director and media representatives. A transcript of this meeting, together with other site-related documents which are not enforcement-sensitive (e.g., RI/FS reports, Proposed Plan) form the administrative record, which is available for public review at the following information repositories:

Woodland Township Municipal Building
Main Street
Chatsworth, NJ 08019

New Jersey Pinelands Commission
P.O. Box 7, Springfield Road
New Lisbon, NJ 08064

**New Jersey Department of Environmental Protection and Energy
Division of Publicly Funded Site Remediation
401 East State Street
Trenton, NJ 08625**

- In June 1990, the Woodland Private Study Group, a consortium comprising of 3M, Rohm and Haas and Hercules Incorporated, prepared the first of several "Woodland Sites Reports" serving as a community information newsletter.
- NJDEPE conducted a third public meeting at the Woodland Township Municipal Building on August 31, 1993 to discuss the results of the remedial investigation and the preferred alternative for remediation of subsurface soils at the sites. The Township Engineer was the only person attending. A transcript of this meeting, together with other site-related documents which are not enforcement-sensitive, are available for review at the same information repositories mentioned above.