

Site Remediation Program Annual Report



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NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Dear New Jersey Resident,

Progress in brownfields redevelopment occurred last year in many cities and towns across the state as numerous industrial and commercial properties were cleaned up and transformed for productive reuse. In the first year of implementing the Brownfield and Contaminated Site Remediation Act signed into law in January 1998, the number of voluntary cleanups conducted by private parties increased 29 percent and included many innovative brownfield projects. The Department's involvement in some of these endeavors is highlighted in a special eight-page update included as part of this year's Site Remediation Program Annual Report. Dedicating resources to stimulate environmental investigation and cleanup at these tainted sites will help local economies grow and protect public health. It is a very exciting time for many local governments as they mesh local planning decisions with the powerful tools available to facilitate brownfield projects.

The Department reinforced in 1998 the importance of upgrading underground storage tank systems through a series of new inspection and enforcement measures. Because of the serious threat to ground water supplies, all owners and operators must adhere to state and federal requirements to implement leak detection and other measures designed to prevent contamination problems with underground storage tank systems. Continued enforcement of these critical regulations will remain a priority in 1999.

Planning for the April 1999 Environmental Exposition in Atlantic City also has been a satisfying experience. This event focuses on the state's growing use of environmental technologies to help us solve pollution problems and share this information with other states, the business community and the public. Check the Site Remediation Program's web page for the latest discussion on topics such as electronic data exchange, technology verification and innovative environmental technologies.

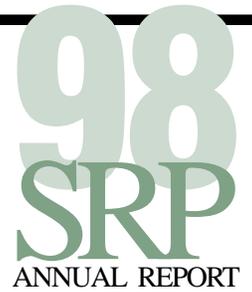
As we move towards the next century, completing ongoing remedial activities and spurring new investigations and cleanups remain a priority for the Department. As evidenced by the data in the cleanup progress section of this report, we are meeting this challenge with the help of numerous community leaders, local and county officials, private developers, the regulated community and the state Legislature. I look forward to working with you in the coming year to continue our efforts to protect New Jersey's environment and to encourage economic growth.

Sincerely,



Robert C. Shinn, Jr.
Commissioner

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Foreword



The Site Remediation Program's *Annual Report 1998* focuses on regulatory and legislative action and cleanups at contaminated sites across the state. Since 1986, this report has highlighted accomplishments and future goals related to the clean up of various types of contaminated sites, both publicly and privately funded. The Site Remediation Program also publishes the *Publicly Funded Cleanups Site Status Report*, *Known Contaminated Sites in New Jersey* and *Site Remediation Program Financial Plan Report*.

Look for more information concerning the Site Remediation Program on its web page at <http://www.state.nj.us/dep/srp> that is featured below.

The screenshot shows the NJDEP SRP website interface. At the top, it says "New Jersey Department of Environmental Protection Site Remediation Program". On the left is a "Quick Jumps" sidebar with buttons for "About SRP", "State Employee Phonebook", "Site Information Program", "Newsletter", "Publications", "Search SRP", "County Health Officers", and "USEPA". The main content area features a "NJ InTouch" and "DEP HOME" header, a "Help" button, and an "EXPO'99" announcement. Below this are several links with icons: "What's New! Web Additions, Events", "Superfund", "ISRA Industrial Site Recovery Act", "UST Underground Storage Tanks", "Brownfields", "KCS-NJ Known Contaminated Sites", "Voluntary Cleanup MOAs, etc.", "Emergency Response", "Regulations & Guidance plus Hazsite /EDS", and "Financial Assistance ECA, HDSRF, UST Fund". At the bottom, there is a "Disclaimers and Notices" link and a "NJDEP 24-Hour Hotline 609/292-7172" with a phone icon. A footer note asks for comments regarding the design or function of the NJDEP SRP web pages to be sent to srpweb@dep.state.nj.us.

I. Introduction

NJDEP launches UST enforcement program to protect ground water

The Site Remediation Program announced a new enforcement initiative in December 1998 targeting facilities that do not comply with state and federal requirements to upgrade underground storage tanks. Owners and operators of regulated tanks were required to implement release detection, corrosion protection, spill prevention and overfill protection to help safeguard drinking water, ground water and soils from contamination by a December 22, 1998 state and federal deadline.

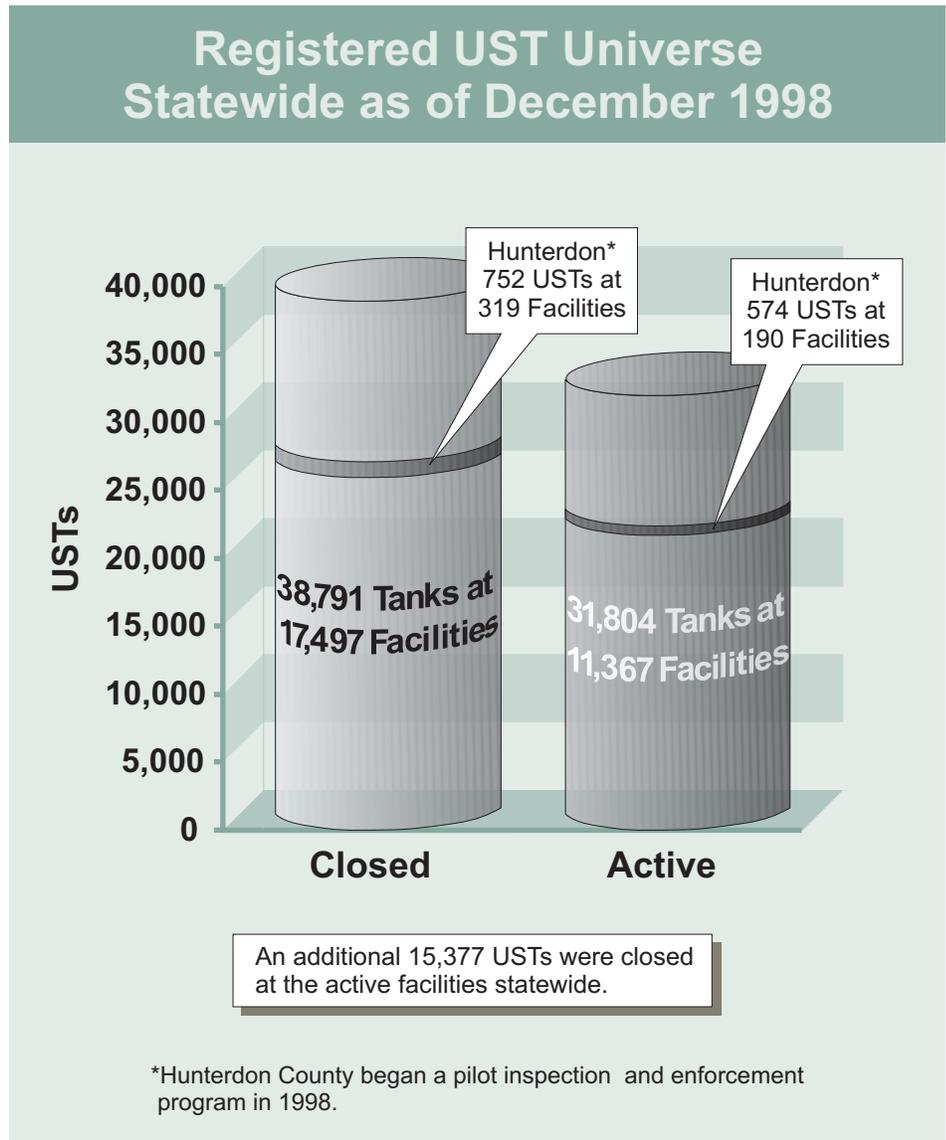
Owners and operators can achieve compliance by either documenting that necessary upgrades have been performed, or going into temporary closure until the new safeguards are operational. NJDEP's registry of underground tanks at active facilities is depicted in Figure 1, including a breakout of Hunterdon County where a pilot enforcement program by local health officials is underway.

Penalties will be imposed for every month a facility is out of compliance. It is against state regulations for a supplier to fill tanks at a facility that is not properly registered. Statewide facility information, which will be updated weekly, will soon be listed on the Site Remediation Program's Internet site. NJDEP plans to make specific facility compliance information available to distributors in 1999.

Owners and operators of state-regulated heating oil storage tanks with a capacity of more than 2,000 gallons were offered a conditional five-year extension in 1998. These parties had to apply to NJDEP in 1998 for the extension and have their system's integrity tested before August 31, 1999.

NJDEP has conducted an aggressive outreach program since 1996 to help owners and operators achieve compliance. To date, nearly \$20 million has been provided to private parties and local governing bodies to help meet the up-

Figure 1



grade requirements and perform any necessary cleanups. Figure 2 shows the cumulative amount of loans and grants NJDEP and EDA have awarded since the program began in 1997.

The current enforcement initiative involves state and federal officials conducting random inspections to monitor underground storage tank systems statewide. To assist in this massive compliance effort, a tank inspection pilot program, funded by the U.S. Environmental Protection Agency (USEPA), was launched by the Hunterdon County Health Department as part of NJDEP's

County Environmental Health Act program. Four other counties are being considered for state-funded inspection programs.

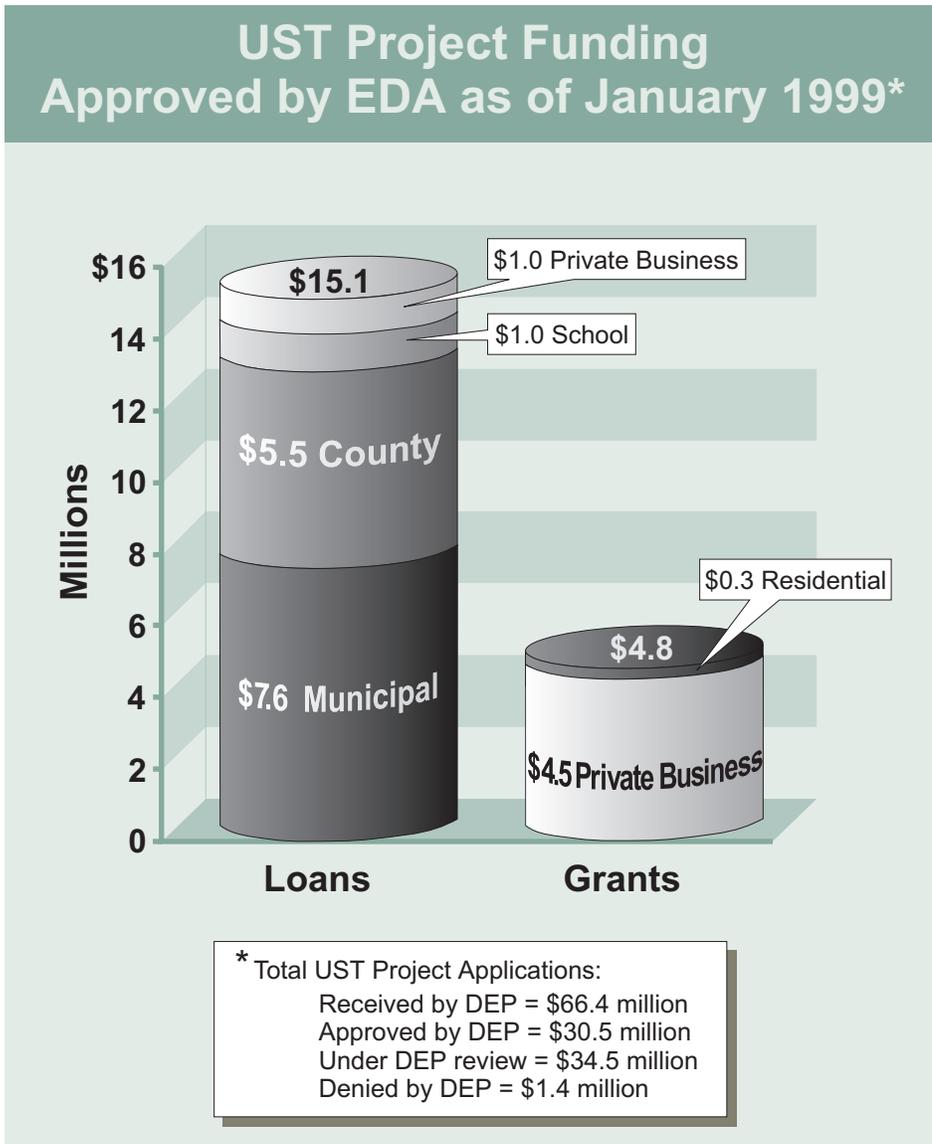
In addition, through its tank registration database, NJDEP will update and check information on the status of 31,804 active underground storage tanks at 11,367 facilities statewide. NJDEP records show that only a third of active facilities comply with the new upgrade requirements. However, field inspections indicate about 60 percent of facilities visited are in compliance. NJDEP has solicited owners and operators, through mass mailings, to update tank registration information.

NJDEP currently is overseeing cleanup work at more than 3,800 sites where tanks have leaked. In just the past four years, 3,000 leaking tanks have been removed statewide under NJDEP oversight.

Failure of an owner or operator to make the tank upgrades or take advantage of the compliance options will result in the revocation of the tank's registration, the inability to legally receive product from the supplier, and possible enforcement actions against the tank owner/operator and the supplier.

State and federal environmental agencies recognized more than 10 years ago that upgrading or replacing underground storage tank systems results in fewer leaks and less damage to the environment. Discharges of hazardous substances have occurred at 45 percent of reported regulated underground storage tank closings in New Jersey.

Figure 2



Laws and Deadlines

- 1984 – Federal UST Law Adopted
- 1986 – State UST Law Adopted
- 1988 – Federal UST Regulations Promulgated
- 1990 – State UST Regulations Promulgated
- December 1990 – Piping System Monitoring Required
- December 1993 – Leak Detection Monitoring Required
- November 1997 – State UST Regulations Amended
- December 1998 – Spill, Overfill and Corrosion Prevention Required

Figure 3

UST Compliance Outreach

March 1996	Mass Mailing	Don't Wait Until 1998 Information Package
September 1996	UST Workshops	Five Held Statewide
August 1997	UST Finance Act	Makes Grants and Loans Available
February 1998	Mass Mailing	Funding Availability and Self Audit Checklist
September 1998	UST Workshops	Two Held Statewide
November 1998	Mass Mailing	Final Notice with Compliance Information

About half of those releases impact ground water in addition to contaminating soil.

A federal underground storage tank law was passed in 1984 and regulations adopted in 1988. A state law was passed in 1986 and regulations adopted in 1990. Various laws and outreach efforts by the Department are highlighted in Figure 3. About 85 percent of state regulated tanks are also federally regulated. USEPA and NJDEP share information about tank facilities and conduct joint compliance inspections statewide.

Pesticide Task Force releases draft report

The Historic Pesticide Contamination Task Force formally issued a draft report for public comment in January 1999 that recommends how to modify New Jersey's

cleanup process to address the risks presented by historical pesticide contamination. The report also provides guidance on when and where sampling should be conducted to determine if a problem exists with historic pesticide use, such as the location for a planned housing development or an active school playground. These recommendations are highlighted on page seven.

NJDEP Commissioner Robert C. Shinn Jr. formed the Task Force in April 1996 to help the Department identify technically and economically viable alternative strategies that will protect human health and the environment at sites with contamination due to historical use of pesticides. The primary concern with historical pesticide residues is human health risk from inadvertent ingestion of contaminated soil, particularly by children. The presence of moder-

ately elevated pesticide residuals in soil presents not only potential health concerns, but also marketplace concerns.

Initial public comments included a broad range of concerns that mirrored the serious issues Task Force members had been discussing for the past two years. The Task Force held a final meeting in 1999 and is forwarding its report to the NJDEP commissioner for further action. NJDEP also committed to targeting specific school and park areas with a known history of farm activities for state-sponsored testing.

Several years ago, increasing development of New Jersey's remaining farmland resulted in many developers and lenders requiring that sites proposed for development undergo an evaluation of environmental conditions. In fact, it was such a requirement that triggered the investigation into potential impacts of pesticide residues. No requirement exists for testing agricultural soil prior to development.

The Department estimates that up to five percent of the state's acreage may be impacted by the historical use of arsenical pesticides. The presence of pesticide residues may be a concern in currently operating farms and orchards as well as properties that have already been developed. Research conducted by the Department indicates similar problems exist in other states and countries.

During their deliberations, Task Force members focused on how the Department determines risk and sets cleanup criteria. While supporting the overall report, the Task Force members, individually, would place different emphasis on the various conclusions, findings and recommendations. Many members continue to have questions about various elements of the report. The Task Force believes that

implementation of the remedial options identified in the report are protective of human health and the environment. The Task Force agreed to offer certain recommendations while the Department continues to evaluate relevant environmental data, conduct needed research, monitor economic impacts of these policies and revisit these recommendations as needed.

The Task Force focused its efforts on several pesticides of concern based upon their extensive agricultural use during a number of years in New Jersey, their persistence in the environment after application, and their presence in sites across the state in concentrations that exceed the Department's residential soil cleanup criteria. The pesticides of concern, which have not been widely used in many years, are arsenic, lead, DDT (and its metabolites, DDE and DDD), dieldrin and aldrin.

During the last 100 years, the agricultural community has routinely and consistently applied pesticides to control pests in order to increase crop yield. Application rates, duration of use and persistence in soil are the major factors contributing to the likelihood that residual pesticides may be present in soil at concentrations above the Department's unrestricted soil cleanup criteria.

Once the areas of likely application are identified, it is then important to determine the behavior or fate of the pesticides in the environment to obtain a better idea of where and in what form pesticide residuals are expected to occur. Other environmental factors, which influence a pesticide's environmental fate, include its ability to become bound to the soil and its solubility. There are also human factors that influence where these residuals are likely to be found, such as site use and soil management.

One of the inherent problems with the presence of arsenic and lead, in contrast to the organochlorine pesticides, is that these are two naturally occurring metals and that it is often difficult to distinguish between concentrations from the application of pesticides and those that occur naturally.

The Task Force was unable to determine the potential economic impacts that may result from its recommendations because New Jersey is the first state in the nation to take actions to control exposure from historical pesticide contamination. However, both the Task Force and Department believe that it was very important to proceed with this evaluation and develop recommendations to educate the public and to make recommendations to mitigate risk from historical pesticide contamination in a timely manner.

Recommendations also included remedial options for new and existing development sites such as the consolidation and covering of contaminated soil on site under roads and structures or capping contamination with clean soil.

The Task Force recommended that the Department allow contaminated soil to be blended with clean soil from on- or off-site sources to achieve concentrations at or below the Department's residential soil cleanup criteria. This represents a substantial departure from current state policy, and the Task Force recommended soil blending as a remedial option only at sites with historical pesticide contamination.

Pesticide Task Force Recommendations

- Sampling of former agricultural areas, and any necessary remediation, should be conducted prior to site development;**
- Sampling of former agricultural areas, and any necessary remediation, should be conducted for areas with exposed soil that are intensively used by children, such as schools, daycare centers and playgrounds;**
- Sampling and remediation at sites that have already been developed, except as noted above, should be conducted where the current or potential future occupant desires. The Department should provide guidance concerning sampling methods and exposure control alternatives to any person concerned with historic pesticide contamination;**
- The Department should provide an appropriate sampling methodology specifically designed for the investigation of pesticide residues in soil at agricultural properties;**
- The Department should authorize a remedial alternative involving soil blending for pesticide residues in soil in former agricultural areas when it is protective of human health. The Task Force recognizes that soil blending represents a substantial departure from current state policy. Therefore, the Task Force recommends that soil blending apply only to historical pesticide contamination sites.**

Direct billing and cost recovery increase in State Fiscal Year 1998

NJDEP collected more than \$31.5 million from private parties in State Fiscal Year 1998, a 31 percent increase from the previous year. These monies were collected either through cost recovery actions for publicly funded cleanup projects or through direct billing for Department oversight costs on current privately funded remedial activities.

Cost recovery occurs after a publicly funded cleanup when NJDEP seeks to recoup past costs from a responsible

party. NJDEP also recovers its oversight costs when a responsible party conducts and pays for a cleanup with Site Remediation Program approval. Similarly, when a party undertakes a voluntary cleanup, often as part of a redevelopment project, and seeks the Site Remediation Program's input, the costs to the program are recovered.

The Site Remediation Program uses a semiannual billing cycle to recover its oversight costs from private parties conducting remedial activities. This shifts the burden of paying NJDEP's administrative costs to review and approve investigation and cleanup reports from

Record Settlement for Chemical Control Cleanup

NJDEP and the Attorney General's Office received a record-setting \$17.4 million in December 1998 from more than 200 allegedly responsible parties for the Department's past costs associated with cleaning up the Chemical Control Corporation site in Elizabeth. This represents the largest cost recovery settlement in the history of the New

Jersey Spill Fund, which was established in 1977. Nearly \$22 million of the \$26 million NJDEP spent at the site has now been recovered, with \$4.1 million previously received from allegedly responsible parties. This settlement reached through negotiation rather than litigation brings closure to one of the most notorious environmental disasters in the state's history. The Chemical Control hazardous waste treatment facility caught fire in April 1980, requiring the largest NJDEP emergency response action and subsequent cleanup ever carried out under the Spill Compensation and Control Act. The Spill Act provides funds for cleanups and the legal means to recover the state's costs from those responsible for polluting the environment.



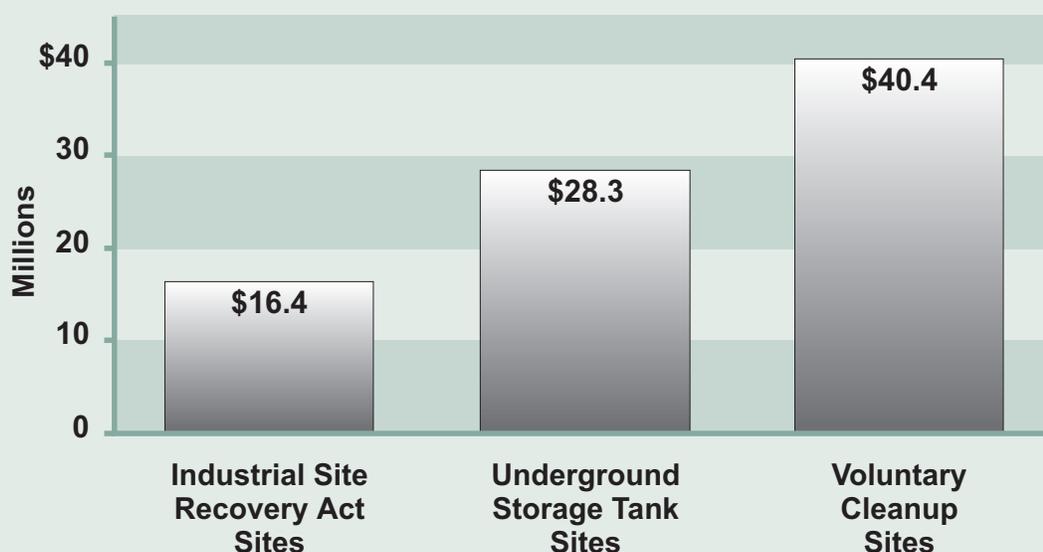
NJDEP Commissioner Robert C. Shinn Jr. and Deputy Attorney General Francine Kaplan display the record cost recovery check at a December 1998 press conference in the State House.

New Jersey taxpayers to responsible parties or developers. In State Fiscal Year 1998, responsible parties and other private parties conducting voluntary cleanups paid more than \$14.5 million for NJDEP oversight costs through direct billing. This amount reflects a 22 percent

increase from the previous year that can be attributed to increased activity in NJDEP's popular Voluntary Cleanup Program.

Cost recovery efforts occur within NJDEP's Site Remediation Program and Division of Law in the Department of

Responsible Party Cleanup Costs at No Further Action Sites in SFY98



Responsible parties complete \$85 million in cleanups under NJDEP oversight

Under the state's Voluntary Cleanup, Underground Storage Tank and Industrial Site Recovery Act programs, NJDEP approved \$85 million in final cleanups by responsible parties in State Fiscal Year 1998, with No Further Action designations issued for all sites involved. The nationally acclaimed Voluntary Cleanup Program provided oversight at cleanups completed worth \$40.4 million. The Underground Storage Tank program oversaw final cleanup actions totaling \$19.9 million, with an additional \$8.4 million in cleanups approved after responsible parties conducted the work without NJDEP oversight. The Industrial Site Recovery Act Program approved cleanups worth \$16.2 million after providing direct oversight and \$165,000 in cleanups performed without prior NJDEP involvement. The regulated community reports these monetary amounts to NJDEP each year.

Law and Public Safety using the authority provided by the state's Spill Compensation and Control Act. The Site Remediation Program is responsible for negotiating with responsible parties to attempt to reach settlements of outstanding cleanup costs, thus avoiding costly litigation. The Site Remediation Program reached \$1.1 million in settlements with responsible parties for past NJDEP cleanup costs in State Fiscal Year 1998.

When an agreement cannot be reached, DOL is requested to initiate legal action to effect an appropriate settlement or undertake litigation to recover the costs. DOL's actions to recover NJDEP's costs in State Fiscal Year 1998 resulted in recovery of more than \$15.9 million, an increase of 51 percent from the previous year. Several recent settlements warrant individual mention and are presented below. Also, a more recent and historic settlement involving the Chemical Control Corporation Superfund site in State Fiscal Year 1999 has been specially noted on page eight.

Helen Kramer Landfill — This federal court suit was settled by a group of allegedly responsible parties agreeing to pay the state \$9.8 million for past remedial costs and the federal government more than \$95 million for its substantial share of past cleanup costs. Furthermore, the parties have agreed to continue to operate ground water/leachate and methane gas treatment systems at the site as well as maintain its cover and fencing. These long-term actions, projected to require another 26 years of operation and maintenance, will save the state about \$1.5 million a year, or \$39 million over time. The parties also agreed to pay the state \$190,000 in natural resource damages and acquire 151 acres of land for

preservation as a natural habitat in the Township of West Milford, thus replacing wetlands lost at the landfill. First instituted in 1989, this settlement resulted in recovery of more than 90 percent of the state's past and future costs and nearly 80 percent of the federal government's past costs.

High Point Landfill — A group of potentially responsible parties and insurers agreed to pay the state about \$1.9 million for past costs, bringing the total recovered for this site to \$3.1 million. The parties also agreed to perform some additional required cleanup work and assume operation and maintenance work, for an anticipated future savings to NJDEP of \$1.4 million.

Cleaveland Industrial Center — NJDEP received a payment of more than \$4.5 million from the site owner and its insurer to pay for past and future remediation of this site. In addition, NJDEP still maintains a lien on the property. The Site Remediation Program recently began a Remedial Investigation into soil and ground water contamination at this site after completing installation of a large water line extension project to provide area residents with a public water supply as an alternative to private wells that were threatened by pollution from this site.

Using GIS to manage site remediation data

The Site Remediation Program continued to explore methods in 1998 to use Geographic Information System (GIS) technology as a tool for managing site investigation and cleanup data. While using GIS to locate Superfund sites is commonplace, GIS has played only a minor role in the review and analysis of

data gathered during an investigation or monitoring activity.

However, the regulatory climate has changed in ways that favor GIS implementation. Concerned about the need to quickly and accurately process an ever-growing volume of data, the agency changed data submission requirements. The Site Remediation Program requires that all sites currently being remediated within New Jersey submit site data in electronic format. In 1998, the Department and regulated community worked to improve the electronic data submission process. Through frequent refinements to submission guidelines and outreach to the regulated community via the Site Remediation Program's internet site and help desk, the number of initial submissions meeting NJDEP requirements increased significantly.

Recognizing the importance of GIS as a tool for visualizing site conditions and

displaying results, all location and sampling data submitted to NJDEP also are now required to be GIS compatible. The move from hard copy to electronic data submission could accelerate the review and availability of information, thus improving service to the regulated community and protection of the environment and public health.

The HAZSITES data entry program, distributed by NJDEP, facilitates manual entry of site data. The regulated community may submit data produced in other applications such as spreadsheet and database programs, or supplied by a laboratory or contractor. EQuIS for Windows, a product of EarthSoft, Inc., of Pensacola, Florida, was selected by NJDEP as the environmental data management system for storing and accessing data. Through a set of procedures and import routines, data are evaluated against quality criteria. Data that success-



The side view of a three dimensional representation of a plume of ground water contamination about 50 feet below the surface is shown here. NJDEP is working with a responsible party to clean up the pollution at the site. NJDEP used ground water monitor well data submitted electronically to create this representation and calculate the extent and size of the contaminant plume. The Department also established a Classification Exception Area for this site and will track improvements in water quality over time.

fully meet this criteria go to Site Remediation Program staff while data failing quality checks are rejected and must be resubmitted. Once in the EQuIS system, large volumes of chemical data may be combined with other site-specific information such as geological and hydrological data.

Additionally, users may organize constituent groups, locations, and regulatory limits to support the analysis of data over a particular site or group of sites. For example, a project manager could group shallow monitoring well data to evaluate all volatile organic compounds above a particular cleanup level. This ability to aggregate data is critical to investigating site conditions.

While GIS is a powerful tool for evaluating site data, the cost/benefits of applying GIS may raise concerns without sound strategies addressing quality issues, implementing version control, and providing access to stored data. Using the EQuIS-ArcView GIS interface, managers

can quickly and seamlessly retrieve data for a project or set of projects. Ancillary project information, such as location groupings and regulatory thresholds, are available through the interface if this information was incorporated in the data management system. The interface can connect to any project supported by EQuIS. Project data refresh each time the ArcView GIS interface is invoked. Accessing an updated common repository ensures that users are working with the same data as well as using the same conventions. Data evaluation can be performed using a custom graphic user interface or through standard ArcView GIS functions. Because this interface supports open system design, experienced programmers can easily develop their own ArcView GIS tools using the data tables that are provided within the interface.

An interesting initiative using the data produced by NJDEP involves both NJDEP and USEPA Region II. Encour-

Using Digital Site Remediation Data

Some of the current and planned uses for the digital data generated under the new technical regulations include:

- Provide site-specific data analysis to case managers to aid them in routine tasks and decision making.
- Combine data from various sites to address problems on a regional basis and track down contaminant sources.
- Use GIS as a repository for digital data on contouring soil and ground water contamination, predictive modeling, and calculating contaminant risk exposures.
- Generate maps and other graphical outputs to communicate environmental risk issues to the public.
- Use GIS with environmental indicator analysis to track the effectiveness of remedial strategies over time for a particular site or region such as a watershed.

aged by the Environmental Council of the States, NJDEP has joined in the National Environmental Performance Partnership System. This program focuses performance measurement on outcome-based measures of progress rather than activity-based measurements. The program emphasizes interpreting and communicating scientifically sound environmental information by using environmental indicators to measure current conditions and trends over time.

USEPA Region II formed an Environmental Indicators Quality Action Team tasked with developing meaningful and accurate indicators. The team set up criteria that correlated the quality of the environment with the amount and distribution of contamination within the environment. This team developed a multimedia, mass balance approach that calls for the use of Quantitative Environmental Indicators. These indicators attempt to quantify factors that are not otherwise measurable such as the effectiveness of a ground water contamination extraction and treatment system or how well natural attenuation of contaminated ground water is working. Quantitative Environmental Indicators are defined by performing spatial operations that calculate the aerial extent of contamination, approximate the volume, and derive the contaminant mass. Site Remediation Program staff were honored by USEPA with a National Notable Achievement Award in 1998 for "Outstanding Team of the Year" for their involvement with this effort.

The Site Remediation Program is now researching the mapping of Classification Exception Areas with GIS as a tool for calculating and visualizing quantitative environmental indicators. Classification

Exception Areas are defined as areas of ground water contamination that are not expected to meet water quality standards for some time.

Using the ArcView Spatial Analyst extension with the EQuIS-ArcView GIS interface, NJDEP staff scientists are able to quickly interpolate chemical concentrations. Data are assessed in terms of area and volume using depth information. Using the same techniques that were applied manually to quantify contaminant mass, numbers are derived for each of the environmental indicators through the ArcView GIS system. Through this program of environmental data collection and standardization using GIS, NJDEP is creating a framework for a system that will result in better remedial decisions and communication on the status of environmental conditions at particular sites and regions.

Natural resource damage settlements

NJDEP's Office of Natural Resource Damages settled six natural resource damage cases in 1998 for a total of \$1.6 million. Furthermore, using damage recoveries from previous settlements, NJDEP expended more than \$3.7 million in 1998 for the purchase and protection of 658 acres of ecologically valuable land, of which 53 degraded acres will be restored or rehabilitated to ecologically valuable conditions.

The office works closely with the Site Remediation Program during oil spills and remediation of hazardous sites in assessing natural resource damages. In 1998, a task force with members from the Site Remediation Program, Office of Natural Resource Damages, environmen-

NJDEP Installs Dual Purpose Anchor Poles for Spill Protection and Osprey Nests



NJDEP installed dual-purpose utility poles along the Delaware Bay's Nantuxent Cove to serve as permanent anchors for oil spill protection and for osprey nests. Six poles with connecting hardware were installed that will be used in the event of oil spills to deploy booms more quickly to protect the shoreline. Three creeks that feed into the cove—the Nantuxent in Downe Township, the Back Creek in Fairfield Township and the Cedar Creek in Lawrence Township—have been fitted with two poles at their mouths so booms can be connected to prevent oil from spreading upstream. The \$15,000 for installation was funded through a settlement negotiated by NJDEP's Office of Natural Resource Damages with a barge owner who was responsible for an October 1996 oil spill at Bombay Hook that resulted in tar balls along the cove. The installation was conducted for NJDEP by the U.S. Army Corps of Engineers using its Delaware River barge, the Titan. The nests were placed on top of the poles, which also will have predator protection installed below the platforms to keep raccoons and other wildlife away.



tal community and regulated community met throughout the year to prepare a guidance document to assist those parties responsible for addressing site contamination issues and spills that involve potential damages to natural resources. The task force hopes to issue a final report in 1999.

NJDEP also provided \$150,000 for research and management initiatives to protect and restore wildlife resources injured during past oil spills and \$23,000 for a pilot project in which permanent boom anchors were constructed at the mouth of three tributaries to Delaware Bay. These boom anchors will allow rapid deployment of booms to this remote area during any future oil spills, thus protecting hundreds of acres of salt marsh ecosystem.

The primary mission of NJDEP's natural resource damage effort is to provide for the assessment of New

Jersey's natural resources that have been injured by the release of oil or other hazardous substances and to perform restoration in coordination with other state and federal programs that oversee spill and site response and in cooperation with responsible parties. Restoration projects must have a demonstrable link to injuries caused by specific releases. The office is under the Assistant Commissioner for Natural and Historic Resources, working with the other natural resource agencies within NJDEP, such as the Division of Parks and Forestry, the Division of Fish, Game and Wildlife, and the Green Acres Program, in addition to the Site Remediation Program.

1998 Natural Resource Damage Settlements

Spills	Injury Category	Damage Recovery
Bouchard Barge (B155)	Wetlands	\$17,940
Cynthia M	Fisheries	\$50,000
Harrah's	Wetlands	0.5 acre Wetland Restoration; monitoring
Mystra	Fisheries	\$15,964
Contaminated Sites	Injury Category	Damage Recovery
Helen Kramer Landfill	Ground water, Wetlands	\$190,000; purchase and protection of 151 acres of wetlands and upland forest implemented by responsible party at \$960,000
Washington Valley Auto	Ground water	\$342,000

II. Regulatory Update



In 1998, the Site Remediation Program continued its efforts to ensure that its rules provide the most efficient and cost-effective process for remediating contaminated sites.

On January 6, 1998, Governor Whitman signed into law legislative amendments to the renamed Brownfield and Contaminated Site Remediation Act (formerly the Hazardous Site Discharge Remediation Act), N.J.S.A. 58:10B-1 et seq., the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11, and the Industrial Site Recovery Act, N.J.S.A. 13:1K-6. The legislative amendments provide incentives to facilitate the acquisition and remediation of contaminated sites in New Jersey, especially those areas formerly used for commercial and industrial purposes known as brownfield sites. In response to the legislative amendments, the Site Remediation Program reviewed its existing rules concerning the remediation of those contaminated sites to determine the regulatory amendments necessary to implement the new requirements of the statute. On July 6, 1998, the Site Remediation Program proposed amendments to four of its rules to ensure consistency with the legislative amendments and facilitate remedial activities at brownfield sites throughout New Jersey. The four rules included in the proposal are: the Industrial Site Recovery Act rule (ISRA rule), N.J.A.C. 7:26B; the Department Oversight of the Remediation of Contaminated Sites rule (oversight rule), N.J.A.C. 7:26C; the Technical Requirements for Site Remediation rule (technical rule), N.J.A.C. 7:26E; and, the Underground Storage Tanks rule (UST rule), N.J.A.C. 7:14B. The Department will adopt the amendments to these rules in June 1999.

On December 7, 1998, the Site Remediation Program proposed to readopt with amendments the Processing of Damage Claims Pursuant to the Sanitary Landfill Closure and Contingency Fund Act rule (SLF rule), N.J.A.C. 7:1I, and proposed amendments to the Processing of Damage Claims Pursuant to the Spill Compensation and Control Act rule (Spill Fund rule), N.J.A.C. 7:1J.

The SLF rule sunsets on February 22, 1999. This rule provides the requirements for processing claims made to the Sanitary Landfill Facility Closure and Contingency Fund (SLF Fund). The SLF Fund was established in 1981. The purpose of the SLF Fund is to provide compensation for damages proximately resulting from the improper operation or improper closure of sanitary landfill facilities. Historically, the SLF Fund has paid compensation predominately to individual homeowners for property value diminution after the homeowners have exhausted all other reasonably available sources for compensation. The amendments proposed to the SLF rule reflect the Site Remediation Program's experience in implementing the existing rule for processing damage claims against the SLF Fund. The proposed readoption and amendments will ensure that pending claims and newly filed claims are addressed in a prompt manner, with uninterrupted service to the businesses and residents affected by damages sustained as the proximate result of the improper operation or closure of sanitary landfill facilities.

The Department also is adopting amendments to the SLF rule and the Spill Fund rule (which provides the requirements for processing claims made to the Spill Compensation and Control Act Fund) based on amendments to the Spill

Compensation and Control Act, N.J.S.A. 58:10B-23.11a et seq., and the Brown-field and Contaminated Site Remediation Act, N.J.S.A. 58:10B et seq. As stated above, these legislative amendments are designed to promote the redevelopment of New Jersey's brownfield sites. The adopted amendments to the SLF rule and the Spill Fund rule provide that certain parties may be barred from making a claim against the SLF Fund and/or the Spill Fund depending on whether the claimant is the beneficiary of a covenant not to sue issued by the Department and the type of remedial action implemented at the subject property. For example, the Spill Fund rule at N.J.A.C. 7:1J-2.7(c)1 provides that a person is not eligible for compensation from the Spill Fund for damages resulting from a site if that person benefits from a covenant not to sue issued with a No Further Action letter for the site. Furthermore, a person is not eligible for compensation from the Spill Fund for damages if they purchased a site after the Department issued a No Further Action letter in connection with a remedial action implemented at the site that involves the use of engineering controls. The Department adopted these rules on February 22, 1999.

In summer 1999, the Department is planning to propose a new Financial Responsibility rule, N.J.A.C. 7:14B-15 and 16. The proposed rule will establish the requirements for owners and operators of state regulated underground storage tanks to maintain evidence of financial responsibility for necessary remedial actions in the event of a discharges from an underground storage tank, as well as for compensating third parties for damage caused by the discharge. The rule will require owners and

operators of underground storage tanks who do not establish and maintain financial responsibility to pay an annual surcharge to the Petroleum Underground Storage Tank Remediation, Upgrade and Closure Fund. The purpose of this fund is to make low interest loans and grants to eligible owners and operators of regulated petroleum underground storage tanks for the purpose of financing costs associated with the upgrade and closure of underground storage tanks as well as the remediation of discharges from those tanks. The fund also will provide loans and grants to eligible homeowners for remedial activities necessary due to a discharge from their home heating oil underground storage tanks.

In 1999, the Site Remediation Program is also planning to propose a readoption with amendments to the Remedial Priority System rule (RPS rule), N.J.A.C. 7:26F. The RPS rule, promulgated in 1996, establishes a system to evaluate the relative risks associated with known contaminated sites in New Jersey. The system characterizes those risks as numerical scores that can be organized in ranked order. By defining the relative risk posed by these sites, the Department shall be better able to determine its priorities for remediation using public funds.

Based on the program's experience in implementing the existing RPS rule, the Department is proposing technical changes to the scoring system. The emphasis of the amendments is to provide a better mechanism to evaluate the limited analytical data available on some of the sites awaiting ranking.

Finally, the Site Remediation Program has initiated a rulemaking effort to promulgate soil remediation standards that will be proposed at N.J.A.C. 7:26D.

The Site Remediation Program has the lead in this rulemaking effort, but is working closely with other Department programs in the development of the rule. The rule will include human health-based soil remediation standards that will be used to identify and remediate contaminated sites in New Jersey. The rule will provide soil standards that are appropriate for residential and non-residential use, as well as procedures for the development of site specific standards. The Site Remediation Program is planning to solicit public input concerning this rulemaking through an interested party review in late 1999. A previous rulemaking effort in this area in 1992 led to the use of published soil cleanup criteria, but this guidance was never formally adopted as a regulation.

III. Progress at Contaminated Sites

The Site Remediation Program maintains a Comprehensive Site List (CSL) database that contains more than 30,000 sites in New Jersey. This year, for general reporting purposes, sites on the CSL are divided into three categories: No Further Action (NFA) sites, assigned to program sites and awaiting assignment sites. Figure 4 compares the CSL status as of June 30, 1997 with the status at the end of December 1998 (the latest data available for reporting purposes). The Site Remediation Program issued 3,349 NFA designations during the 18-month period.

NFA sites do not require remedial activities to be conducted at this time and now represent 62 percent of the CSL universe. An NFA designation is given when all remedial activities that were necessary to address any environmental concerns have been completed. An NFA designation also may be given where it is determined that regulatory requirements have been satisfied.

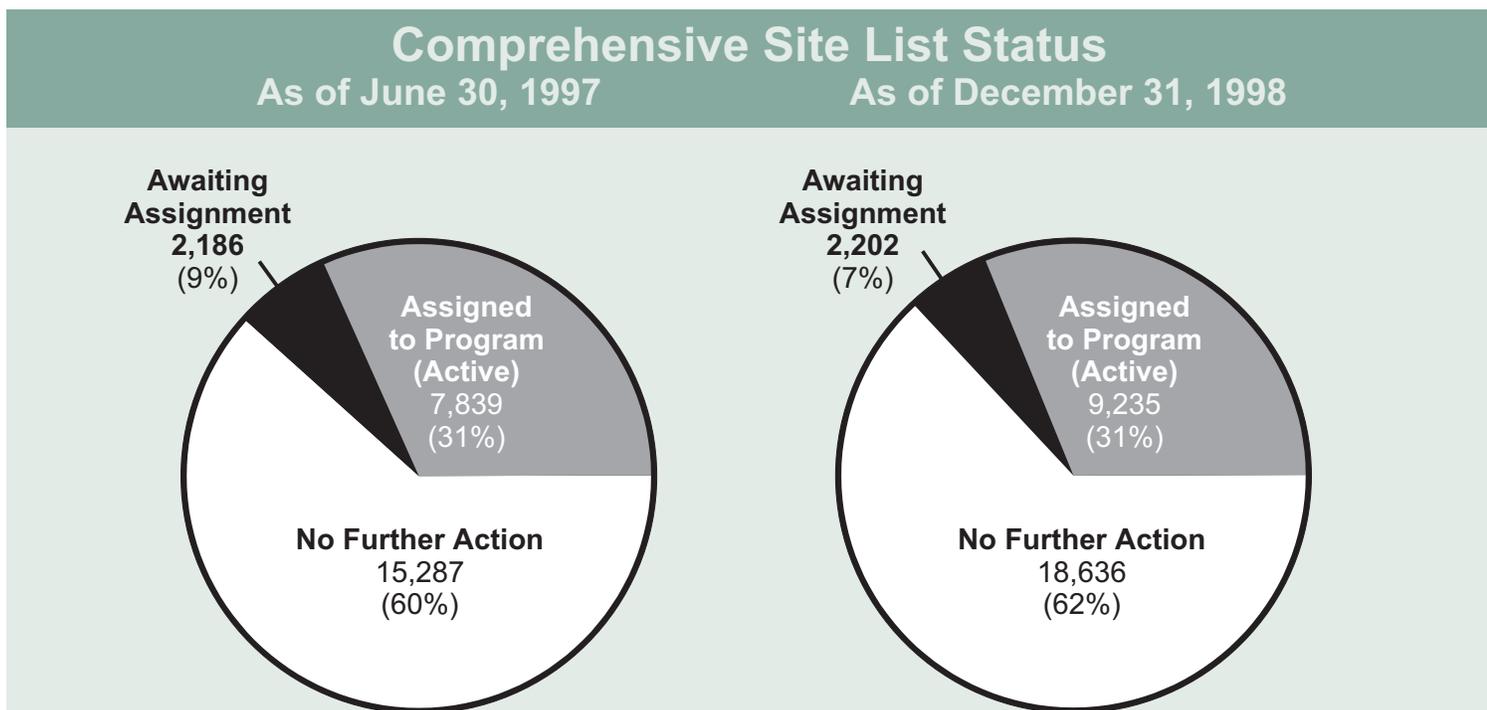
Sites awaiting assignment require further remedial activities and will be assigned an active status when a private party agrees to conduct any required

work or if the site becomes a priority for publicly funded action by the Department. This category represents the smallest component of the CSL universe, about seven percent.

Assigned to program sites are active sites with remedial measures underway. They are either known contaminated sites or sites that have suspected contamination. Assigned to program sites represent 31 percent of the CSL universe. A listing of a majority of these sites is made available to the public in a document entitled *Known Contaminated Sites in New Jersey*. The latest edition, dated September 1997, for the first time provides those known contaminated sites that received an NFA designation during State Fiscal Year 1997 (SFY97), which runs from July 1, 1996 to June 30, 1997. It also identifies whether land use restrictions, known as institutional controls, were a condition of the NFA designation.

A 1998 edition of *Known Contaminated Sites in New Jersey* was not produced and a 1999 edition is scheduled to be released in the fall, which also will include for the first time a listing of all

Figure 4



properties with institutional controls, known as environmental Deed Notices.

Superfund site remedial actions

Sites administered under the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) are commonly known as Superfund sites. Investigation and cleanup work at these sites is funded by a responsible party(ies) or by a combination of federal and state funding when the responsible party cannot be identified or is unwilling or unable to conduct the cleanup. When public funds are used, the proportion of federal to state funding varies depending on the type of site, with the majority of funds usually supplied by the federal government. The Department works with the U.S. Environmental Protection Agency (USEPA) to implement remedial actions at New Jersey's Superfund sites.

During the past decade, the Department and the USEPA have made signifi-

cant progress in cleaning up Superfund sites located in New Jersey. More than 60 percent of environmental concerns at these sites have been addressed.

As of June 30, 1998, a total of 121 sites in New Jersey had been placed on the NPL for Superfund cleanup since the inception of the Superfund Program. Fourteen of the 121 sites have been removed or are proposed for removal from the Superfund list, leaving 107 active NPL sites. (Four additional sites were proposed for inclusion on the NPL in July and September 1998 and two of these became final in January 1999. Two other sites were deleted and one site was partially deleted from the NPL in December 1998. These actions bring the total number of active Superfund sites in New Jersey to 109 as of February 1999.)

For the purposes of evaluating the progress of cleanup activities in the Superfund Program, it is important to understand how sites move through the remedial process. A site is usually divided into subsites or operable units, allowing for variation in the speed or extent to which environmental concerns at a site are addressed. This approach allows subsites with immediate environmental concerns to be dealt with first, such as those requiring removal of surface waste or contaminated waste materials to prevent the threat of direct contact or off-site migration. The remaining subsites that move through the remedial process usually involve more complex environmental concerns requiring studies and cleanup actions such as treatment of contaminated soil or ground water.

The original 121 Superfund sites have been divided into 408 subsites as of June 30, 1998. Of this number, 252 subsites, or 62 percent of the total, no longer pose a threat to public health or the environ-

NJDEP Commissioner Bob Shinn marks the award of a construction contract to remove tainted soil at the Ellis Superfund Site in Evesham Township, Burlington County. Pictured, from left to right, are State Senator Martha Bark, Ellis Task Force Chairwoman Jane Nogaki, Commissioner Shinn, Evesham Mayor Gus Tamburro and State Assemblymen Francis Bodine and Larry Chatzidakis.



ment. They either have been completely remediated or are being addressed through long-term operation, maintenance and monitoring. Of the remaining 156 subsites, some type of remedial work is underway at 151.

Figure 5, entitled New Jersey's Superfund Subsite Status, compares remedial activities at New Jersey's Superfund subsites as of the end of SFY97 and the end of SFY98. Ten additional subsites were given an NFA designation and seven other subsites moved to a maintenance-only status after all investigation and cleanup activities were completed. Most subsites routinely require a series of remedial projects, as described below. The project types are Remedial Investigation and Feasibility Study (RI/FS or Study), Remedial Design (RD), Remedial Action (RA) and Operation and Maintenance (O&M).

The status of the 408 Superfund subsites as of June 30, 1998 shows 67 RI/FS subsites; 43 RD subsites; 41 RA subsites; 73 O&M subsites; 179 NFA subsites; and, five subsites where no work has been initiated.

Project definitions

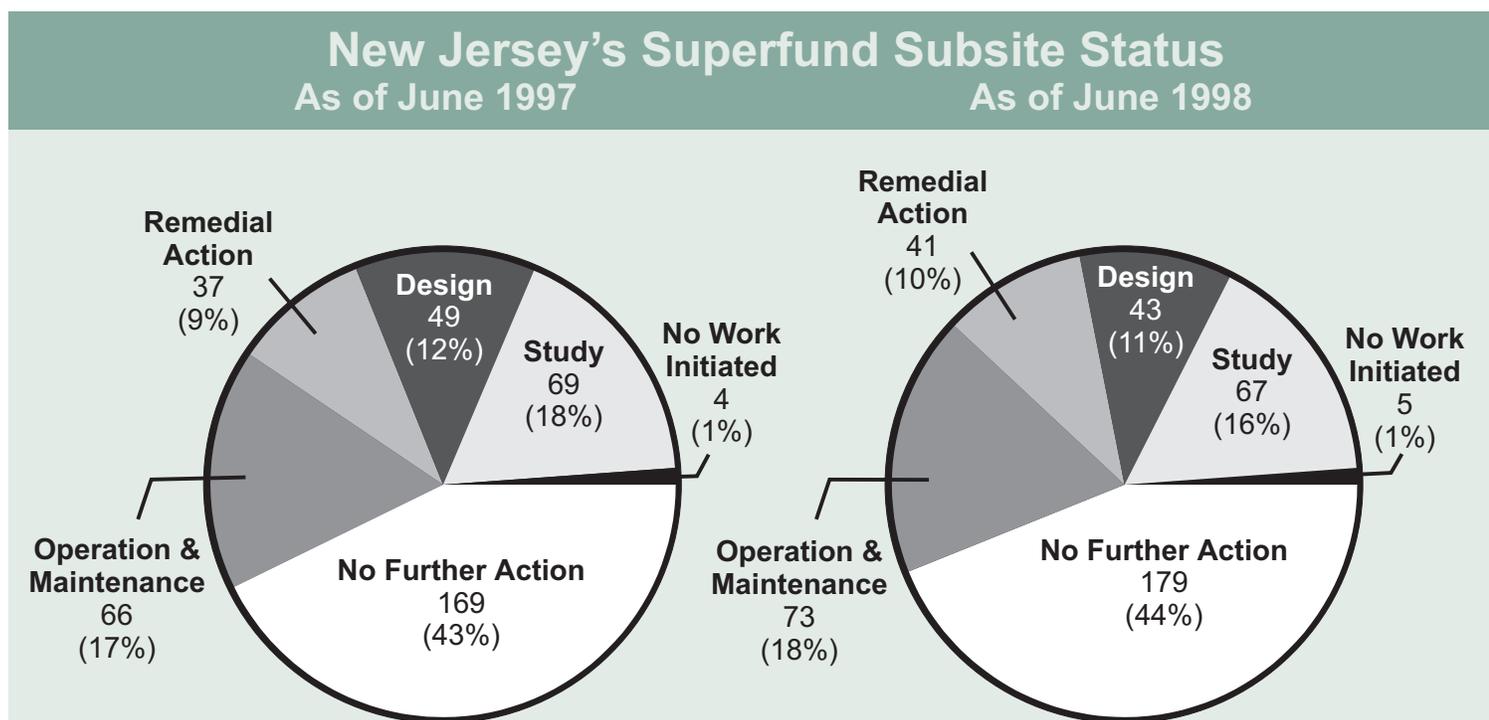
A **Remedial Investigation and Feasibility Study (RI/FS)** is an integral part of the remedial process. It is essential to determine the extent and nature of contamination and to identify acceptable alternatives for cleanup. Substantial effort is expended in characterizing the environmental problems generated by the site.

The **Remedial Design (RD)** develops plans and specifications to address the environmental concern(s) and achieve the most effective remedial action.

Remedial Action (RA) implements the design and includes removal of contaminated soil, capping, treatment of ground water or drinking water, fencing and other actions. This type of project entails removal or stabilization of contaminated material. It is the most visible indicator of cleanup progress.

Operation & Maintenance (O&M) occurs once construction work required is completed or if monitoring only is necessary. Operation and maintenance activities are often necessary to achieve

Figure 5



cleanup standards for a subsite and/or to ensure a successful remediation of a site.

SFY98 NPL site activities

During SFY98, 32 new remedial projects were initiated at Superfund sites. Twenty-one of the 32 projects are being funded by responsible parties while the other 11 were started with public monies.

During this same time period, 25 remedial projects were completed. Fourteen were funded by responsible parties while 11 were paid for with public funds.

The tables below also provide information for State Fiscal Year 1996 (SFY96) and SFY97.

Remedial activities conducted under state authority

Cleanup activities at Non-NPL complex sites

Complex sites are defined as sites or subsites that require a full scale study,

formal design and response to an unknown and/or uncontrolled source or release. These actions can be funded by responsible parties or with public monies. Progress at publicly funded subsites during SFY98 included the start of the following projects: 25 Remedial Investigation and Remedial Alternatives Analyses (RI/RAA); one Remedial Design (RD); nine Remedial Actions (RA); and two Operation and Maintenance actions. Furthermore, seven publicly funded Remedial Action projects were completed in SFY98, along with four Remedial Investigation/Remedial Alternatives Analyses and three Remedial Design projects.

In terms of privately funded actions in SFY98, 41 Remedial Action Workplans were approved, which mark the beginning of actual cleanup work at these responsible party sites. Also, 52 privately funded Remedial Action Reports, which represent the completion of responsible party cleanups, were approved during SFY98.

As of June 30, 1998, 150 publicly funded projects were underway, some of which began in previous years. In addition, 220 privately funded non-NPL complex projects also were underway at that time.

Focused Cleanup Activities

A focused cleanup is defined as a remedial measure, usually with no formal design phase, that consists of a focused response to a known source or release. The Site Remediation Program's Bureau of Field Operations, located in two regional field offices, oversees a large number of focused cleanups ensuring compliance with environmental laws and regulations. In SFY98, some 1,721 of these cleanups were guided to completion. There were 2,612 cleanups underway at the end of SFY98. A consistent

**NPL Project Activities
Projects Started**

Funding Source	SFY96	SFY97	SFY98
Public Funds	16	14	11
Private Funds	6	25	21
Totals	22	39	32

**NPL Project Activities
Projects Completed**

Funding Source	SFY96	SFY97	SFY98
Public Funds	13	15	11
Private Funds	7	13	14
Totals	20	28	25

increase in cleanups underway has occurred each year for the past three years.

Non-NPL SFY98 Cleanup Activities

Funding Source	Started	Completed
Public Funds	9	7
Private Funds	41	52
Totals	50	59

Industrial Site Recovery Act Cases

The Site Remediation Program's ISRA group oversaw completion of 59 cleanups during SFY98; an additional 255 site cleanups were underway at the end of the state fiscal year. In addition, 434 "No Further Action" determinations were issued based on the results of site investiga-

tions or remedial actions performed satisfactorily prior to a property transfer.

Underground Storage Tanks

Significant progress continued in the remediation of underground storage tanks in SFY98, with 947 cleanups or closures completed. Of the 947 tank actions, 522 involved discharges with soil and/or ground water investigations. The remaining 425 removals were tanks without discharges. Data from 1996 to 1998 reveals that more than 2,400 leaking underground tanks were removed during that time period.

Emergency Response and Environmental Action

The Site Remediation Program responded to 912 emergencies during SFY98, an average of 2.5 emergencies per day.

Through a cooperative endeavor with NJDEP, Merck & Co., Inc. uses innovative technology to remove organic contamination from soil in a cleaning unit, pictured, owned by the company. The soil is cleaned through a low temperature thermal desorption method to meet NJDEP's Soil Cleanup Criteria and then is managed for beneficial reuse at Merck's Rahway facility.



Focused Cleanup Activities

Type	SFY96	SFY97	SFY98
Cleanups Underway	1,923	2,051	2,612
Cleanups Completed	1,132	1,721	1,721

ISRA Case Activities

Type	SFY96	SFY97	SFY98
Cleanups Underway	236	247	255
Cleanups Completed	27	33	59
NFA Determinations	403	479	434

The Department “Hot Line” for reporting environmental concerns or discharge notifications answered 76,323 calls in SFY98, an average of 209 calls per day.

Memorandums of Agreement and Administrative Consent Orders

When the Division of Responsible Party Site Remediation knows the individual or parties responsible for contamination at a site, a cleanup agreement is

discussed. Once an agreement has been reached, an oversight document is issued and signed by both parties. Document types vary depending on the circumstances.

An Administrative Consent Order (ACO) is the standard control document issued for priority sites. A priority site is one where the Department will use public funds to conduct remedial activities unless a private party agrees to perform the cleanup. If public funds are used,

The Fort James Corporation’s former Riegel Products site in Riegelsville, Warren County, undergoes cleanup of soil and building material, primarily contaminated with PCBs, as part of an Industrial Site Recovery Act case. Paper was manufactured at this site for about 100 years prior to the early 1980s when operations ceased.



Underground Storage Tank Activities

Type	SFY96	SFY97	SFY98
Removals with Discharge	710	589	522
Removals without Discharge	499	390	425
Total	1,209	979	947

Environmental Response and Environmental Action

Type	SFY96	SFY97	SFY98
Emergency Response	1,117	982	912
“Hotline” Calls Received	77,814	75,075	76,323

known responsible parties unwilling to do the cleanup themselves will be directed to reimburse the state and may be required to pay three times the cost of the cleanup.

A Remediation Agreement is a contract between an ISRA responsible party and the Department. A Remediation Agreement allows the ISRA triggering event, such as a sale, transfer and/or closing of an industrial establishment, to proceed prior to the actual cleanup.

responsible parties in SFY98 at priority sites with a total of \$6.2 million in estimated remedial costs. Also, 116 Remediation Agreements were executed by private parties during SFY98 with a total of \$51.8 million in estimated remedial costs. The number of MOAs signed by private parties and local governments during SFY98 was 2,048, an 11 percent increase from SFY97 and a 43 percent increase from SFY96.

A Memorandum of Agreement (MOA) is executed when a responsible party, a land developer, or other cooperative party agrees to investigate and/or clean up a non-priority site or any portion thereof in accordance with the voluntary cleanup program.

There were 10 ACOs signed by



A soil vapor extraction system is pictured operating at an Amerada Hess service station in Mountain Lakes, Morris County. The company installed the system in 1997 after a release of approximately 3,650 gallons of gasoline from an underground storage tank. Hess' exemplary response actions resulted in a recovery of more than 3,210 gallons of gasoline. The installation and operation of a permanent soil vapor extraction system occurred in less than three months following the release. Prompt response to this unfortunate event has prevented ground water contamination from leaving the boundaries of the site, while remaining contamination is controlled and cleaned up.

Oversight Documents Executed

Type	SFY96	SFY97	SFY98
Memorandums of Agreement	1,436	1,842	2,048
Administrative Consent Orders	9	7	10
Remediation Agreements	66	75	116

Spill Fund Claims

Type	SFY96	SFY97	SFY98
Claims Payments	215	243	182
Denials/Administrative Closures	87	42	43

It is important to note that there is not a one-to-one relationship between documents and sites or cleanups. One ACO could cover one or many sites and, conversely, an MOA could cover one site or a part of an overall site, such as only cleaning up leaking underground storage tanks at the location.

Environmental Claims

The Environmental Claims Administration (ECA) processes claims under the New Jersey Spill Compensation Fund (Spill Fund). The Spill Fund provides

compensation to individuals and businesses that have suffered direct or indirect damage resulting from a discharge of hazardous materials such as petroleum products.

In SFY98, ECA paid an estimated \$1.5 million to compensate 182 claims for damages caused by discharges of hazardous substances. There were 35 administrative closures and eight claims denied. From SFY96 to SFY98, ECA paid more than \$8 million dollars in compensation.