RECORD OF DECISION
EXPLANATION OF SIGNIFICANT DIFFERENCE
FOR THE WAYNE INTERIM STORAGE SITE

WAYNE, NEW JERSEY

DECEMBER 10, 2003

US Army Corps of Engineers®
New York District
Formerly Utilized Sites Remedial Action Program

EXPLANATION OF SIGNIFICANT DIFFERENCE

Wayne Site
Wayne, New Jersey

Site Name and Location: W.R. Grace and Co., Inc./Wayne Interim Storage Site, Wayne, New Jersey (Wayne site)

Lead Agency: The U.S. Army Corps of Engineers (USACE), New York District

Support Agencies: U.S. Environmental Protection Agency, Region 2 (EPA) and New Jersey Department of Environmental Protection (NJDEP)

I. Statement of Purpose

On May 15, 2000, the Deputy Commander for Civil Works of the Army issued a Record of Decision (ROD) for the Wayne site that addresses the excavation and off-site disposal of radioactively contaminated soil and debris from the former W.R. Grace/Wayne Interim Storage Facility (WISS). The ROD presumed prior actions taken by the U.S. Department of Energy (DOE) in 1984 through 1987 and in 1993, to clean up properties in the vicinity (vicinity properties) of the WISS were sufficient to meet cleanup criteria specified in the ROD. In addition, during implementation of the remedial action, contaminated soils above cleanup levels were identified adjacent to two County roadways: one bordering the Wayne Interim Storage Site (WISS), and one bordering the right-of-way vicinity property. For this reason, it is suspected that contaminated soils above cleanup levels exist beneath these roadways and are considered inaccessible.

The cleanup of the Wayne site is being carried out in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended, 42 USC §§ 9601 et seq. and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300.

This Explanation of Significant Difference (ESD) is issued in accordance with Section 117(c) of the CERCLA of 1980, as amended, and the NCP, 40 CFR § 300.435(c)(2)(i) and § 300.825(a)(2). This ESD has been prepared to provide the public with an explanation of the nature of a change of scope and cost made to the selected remedy set forth in the ROD; to summarize the information that led to the making of the change; and to affirm that the revised remedy complies with the statutory requirements of CERCLA section 121, 42 USC § 9621. The selected remedy does not fundamentally alter the remedy or performance of the remedy, and therefore a ROD amendment is not required. This ESD is to be incorporated into the Administrative Record for the Site. The Administrative Record is located at the Wayne Public Library, on 475 Valley Road, Wayne, NJ. For library hours, call (973) 694-4272.

II. Summary of the Site History, Site Conditions, and Selected Remedy

A. Site History and Conditions (Also See Attached Site Fact Sheet)

From 1948 through 1957, Rare Earths, Inc., processed monazite sand at the site to extract thorium and rare earth metals. In 1954, after the Atomic Energy Act was passed, Rare Earths received an Atomic Energy Commission (AEC) license to conduct these operations. The Davison Chemical Division of W.R. Grace and Company acquired the facility in 1957, and processing activities continued until July 1971. During this time, some process wastes from the thorium operations were buried on the site.

The process, which was used to extract the rare earths and thorium from the monazite in solution, involved controlling the pH and selectively precipitating and separating desired products. Wastes and residues from the processing operations, which typically contained less than 5 percent of the original thorium concentration, included ore tailings, yttrium sludges, and sulfate precipitates. Liquid effluents were treated to existing effluent standards in an onsite wastewater treatment plant, neutralized, and discharged through storm drains into Sheffield Brook. Sheffield Brook often flooded during periods of heavy rainfall, causing contamination to spread to nearby low-lying vicinity properties. Residues from the wastewater treatment operation were disposed of in an onsite sludge dump.

In 1974, W.R. Grace closed the facility and decontaminated the site. Several buildings were demolished, and the building debris was buried onsite. The waste disposal areas on the site were covered with clean fill to reduce gamma radiation levels to below 0.2 millirad per hour (mrad/hr). The Nuclear Regulatory Commission released the site for unrestricted use in 1975, with the provision that a notation be recorded on the property deed that radioactive material was buried at the site.

In 1980, radiological surface contamination was discovered at the processing facility site and on areas west of the plant (vicinity properties). In Fiscal Year 1984 legislation, Congress assigned the DOE responsibility for conducting a decontamination research and development project to address radioactive contamination at the Wayne site. DOE assigned the site to their Formerly Utilized Sites Remedial Action Program (FUSRAP), and, in 1984, DOE acquired the former processing facility site property from W.R. Grace & Company. DOE then began investigating the site, and from 1984 to 1987, and again in 1993, several vicinity properties were cleaned up. Because there were no disposal facilities available that were licensed or permitted to accept the radiological wastes from this site, the excavated soils and cleanup debris were stored in an interim storage pile on the former processing facility site property; hence the name, WISS.

The Wayne site was listed by the U.S. Environmental Protection Agency (EPA) on the National Priorities List (NPL) in 1984 as W.R. Grace and Co./Wayne Interim Storage Site, CERCLIS ID# NJ 1891937980. In September 1990, DOE and EPA entered intoa Federal Facility Agreement (FFA) that established the cleanup responsibilities for each agency under the NCP. FUSRAP was transferred from DOE to the USACE by the 1998 Water and Energy Appropriations Act (PL 105-62). USACE is currently designated the Lead Federal Agency. An Interagency Agreement between USACE and EPA

dated March 6, 1998, outlines the USACE's responsibilities for the Wayne site and EPA's oversight role for the remedial action process. NJDEP's input was also sought and incorporated into the ROD.

B. The ROD's Selected Remedy

The major components of the selected remedy addressed by the May2000 ROD are:

- Excavation and disposal of the remaining contaminated subsurface materials to an average concentration of 5 picoCuries/gram (pCi/g) of radium 226 (Ra-226) and thorium-232 (Th-232), combined above naturally occurring background concentrations at WISS, and an average concentration of 100 pCi/g of total uranium above naturally occurring background as determined by surveys consistent with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). Remediating the site to these levels eliminates risks above the CERCLA risk threshold for unrestricted use scenarios, which meets the substantive requirements of the applicable or relevant and appropriate requirement (ARAR) 10 CFR 20.1402.

- Excavation and disposal of chemically contaminated soils above levels calculated to be protective of groundwater or above levels protective for unrestricted uses of the property (with regard to chemicals of concern).

- Implementation of a five-year groundwater monitoring program to establish groundwater quality after contaminated soil has been removed.

- Decontamination and demolition of the building on WISS, removal and offsite disposal of demolition debris, removal and offsite disposal of contaminated materials under the building.

- Removal and treatment of groundwater encountered during excavation to meet discharge criteria for contaminants of concern (COCs) specified in the New Jersey Pollutant Discharge Elimination System Equivalency Permit (NJPDES), or the pre-treatment standards of the receiving publicly owned treatment works (POTW) prior to release.

III. Description of Significant Differences

Since the publication of the ROD in May 2000, the scope of the selected remedy set forth in the ROD has expanded. In preparation for closeout of the Wayne site, USACE conducted a paper review to evaluate whether prior actions by DOE at the vicinity properties were sufficient to meet the cleanup criteria specified in the ROD. This evaluation was necessary because DOE applied subsurface soil cleanup criteria less stringent than the unrestricted land use criteria in the WISS ROD when they remediated the VPs in the 1980's. DOE utilized the following Guidelines:

- External gamma radiation levels on a site released for unrestricted use to not exceed 20 μR/hr above the ground surface;

- Maximum permissible concentration of Radium-226 and Thorium-232 in soil above background levels averaged over 100 cubic meters; 5 pCi/g averaged over the first 15 cm of soil at the surface; 15 pCi/g when averaged over 15-cm thick soil layers more than 15 cm below the surface (i.e. for sub-surface soils at depths greater than 15 cm); and
- Maximum permissible concentration of Uranium-238 in soil; 150 pCi/g above background.

On the basis of this paper review, USACE conducted additional sampling at four VPs. Following the review and sampling, USACE determined that prior DOE actions were sufficient to meet the ROD cleanup criteria at all vicinity properties with the exception of the Wayne Township (Sheffield) Park and a small right-of-way (ROW) area adjacent to the Pompton Plains Crossroad (Fig. 1). Therefore, USACE will conduct additional excavation and off-site disposal of contaminated residual soils at the Wayne Township Park and ROW property consistent with the selected remedy in the ROD.

Descriptions and results of the paper review and select confirmatory sampling can be found in the *WISS Vicinity Property Technical Memorandum*, (Sept 2003). A description of the remedial action activities will be described in Post Remedial Action Reports (PRARs), to be prepared for the Pompton Plains Crossroad ROW property and the Wayne Township (Sheffield) Park.

The VPs are located downstream of the WISS along Sheffield Brook. Surface runoff from the WISS drains into the Brook, which empties into the Pompton River about one-half mile southeast of the WISS. The ROW is located just east of the WISS across the Black Oak Ridge Road, and the Park is located on the banks of the Pompton Rivers at the mouth of Sheffield Brook. Radiological contaminants were deposited on the VPs primarily via drainage into Sheffield Brook from the former thorium manufacturing process and related waste handling operations at the WISS. Flooding likely spread the contaminants beyond the banks of the Brook.

At the Wayne Township Park, soil sampling results show elevated levels of thorium-232 and radium-226 combined at a maximum concentration of 17 pCi/g, and the contamination ranges from six to 30 inches below the surface. At the ROW, soil sampling results show elevated levels of thorium-232 and radium-226 combined at a maximum concentration of 75 pCi/g, and the contamination ranges from 24 to 48 inches below the surface. Previously, the DOE remediated the Park to a depth of six inches, and the ROW to 24 inches below the surface.

Chemical constituents of concern (COCs) listed in Section 10.0 of the ROD are not expected to be present above ROD cleanup levels on the two VPs. If chemical contamination is present, it is expected to be co-mingled with radiological contamination based on remedial action experiences at the WISS and other similar FUSRAP sites. Confirmatory sampling for chemical COCs will be conducted during

the post-excavation final status surveys to verify chemical COC's are not present above ROD cleanup levels.

In addition, contaminated soils are suspected to exist beneath Black Oak Ridge Road along the eastern boundary of the WISS, and Pompton Plains Cross Road adjacent to the ROW. If these inaccessible soils are made accessible in the future, USACE will conduct an investigation to determine whether or not they contain contaminants above the ROD cleanup levels. USACE has taken appropriate steps to control any potential risk by notifying the County of the suspected contamination. The County has agreed to notify USACE in the event the soils are made accessible in the future.

These significant differences to the to the scope and cost of the original selected remedy are consistent with the intent of the original ROD. The original remedy set forth in the ROD will be applied to the Wayne Township Park and ROW. In general, the following actions will be taken: remaining residual contaminated soils at the Wayne Township Park and ROW are to be excavated to an average concentration of 5 picoCuries/gram (pCi/g) of radium 226 (Ra-226) and thorium-232 (Th-232), combined above naturally occurring background concentrations at the Wayne site, and an average concentration of 100 pCi/g of total uranium above naturally occurring background as determined by surveys consistent with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The soil will be disposed of at an appropriate off-site facility. If groundwater is encountered during the excavation, it will be removed and treated to meet the receiving Publicly Owned Treatment Works pretreatment standards. The remedial action at the VPs will comply with the same ARARs identified in the WISS ROD.

The estimated cost to complete the VP remedial actions is $1,500,000.00. The estimated volume of contaminated soil is 1,600 cubic yards. The total cost of cleaning up the WISS was $43,710,428, for 55,410 cubic yards of soil and building debris material remediated and disposed. The 1999 cost estimate for the WISS ROD was $34,028,000 based on a volume of 57,000 cubic yards. The ROD did not include costs for the five-year long-term groundwater-monitoring program.

USACE has determined that a change in the scope and cost of remedy set forth in the ROD is warranted. This change is a significant difference as defined in the NCP at 40 CFR § 300.435(c)(2)(i); therefore, preparation and publication of an ESD is required. Amendment of the ROD is not required because the remedy will not change. The scope and cost of the remedy will change, but these changes are not considered to be fundamental changes that would require amendment of the original ROD.

IV. Public Participation

A notice of availability and a brief description of this ESD will be published in a local major newspaper.

USACE sponsored a Public Information Session on July 01, 2003 for the Draft ESD and the proposed remedial actions. The final ESD will be made available to the public by placing it in the Administrative Record file. No significant comments were received at the Public Information Session.

V. Support Agency Review

USACE has notified EPA and NJDEP of the changes proposed in this ESD in accordance with 40 CFR § 300.435(c)(2).

VI. Statutory Determinations

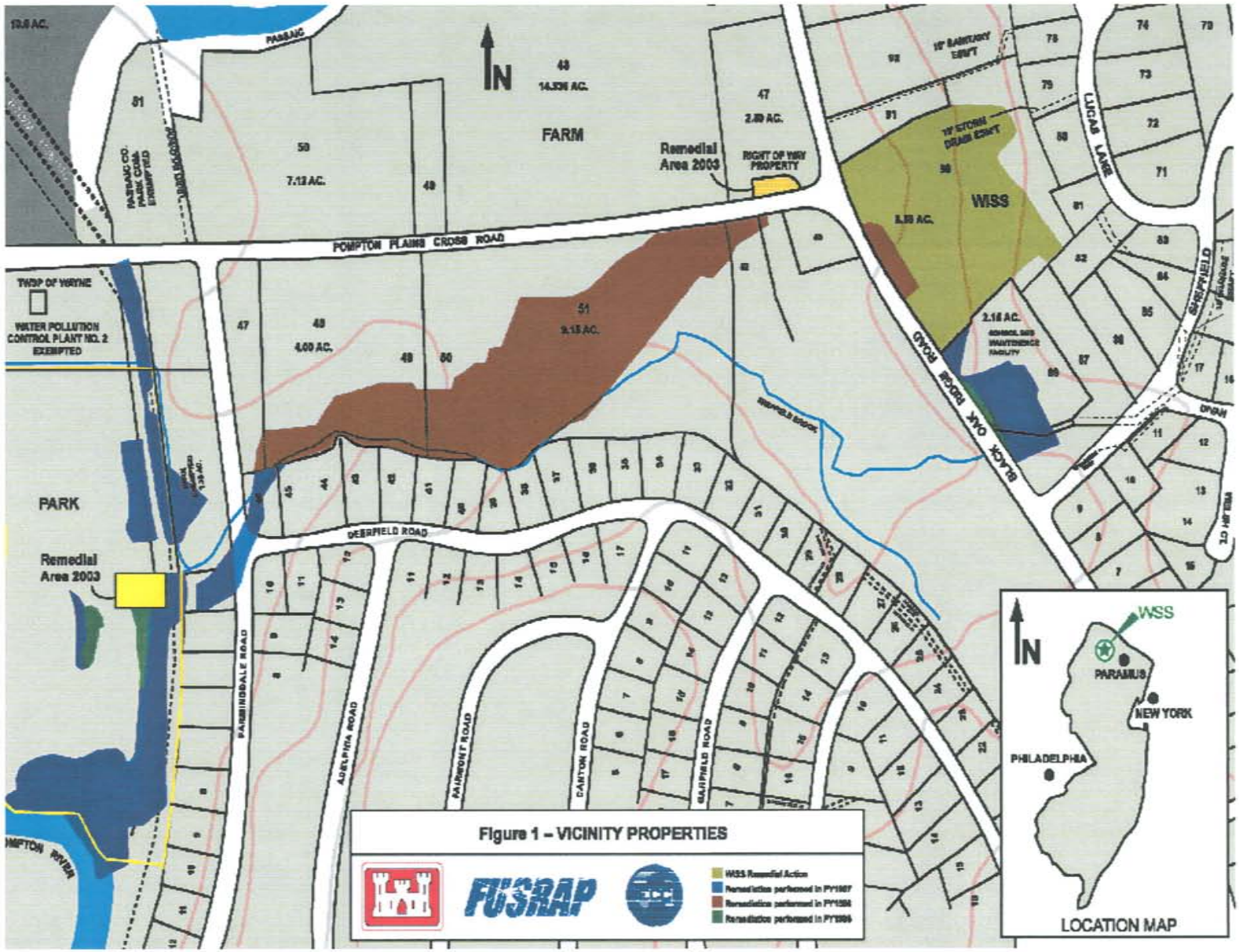
The remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective and uses permanent solutions and alternative treatment technologies to the maximum extent practicable.

The expanded remedy does not satisfy the statutory preferences for treatment as a principal element of the remedy. Based on treatabililty studies, site characterization data, and USACE review of current literature on available technologies; treatment of the soil and waste materials was eliminated from consideration at the Wayne site.

VII. Authorizing Signature

John P. Carroll
Colonel, Corps of Engineers
Acting Division Engineer

10 Dec 2003
Date


N
FARM
Remedial Area 2003
RIGHT OF WAY PROPERTY
WSS
POMPTON PLAINS CROSS ROAD
BLACK OAK RIDGE ROAD
LUCAS LANE
SHEFFIELD
TWSP OF WAYNE
WATER POLLUTION CONTROL PLANT NO. 2 EXEMPTED
PARK
Remedial Area 2003
DEERFIELD ROAD
PARSIPPANY ROAD
ADELPHIA ROAD
FAIRMONT ROAD
CANTON ROAD
BARFIELD ROAD
POMPTON RIVER
WSS
PARAMUS
NEW YORK
PHILADELPHIA
LOCATION MAP
Figure 1 – VICINITY PROPERTIES
FUSRAP

US Army Corps of Engineers®
New York District

FUSRAP Wayne Superfund Site
Wayne, New Jersey

September 2003 Fact Sheet

Description: The Wayne site is located in a highly developed area of northern New Jersey, approximately 20 miles north-northwest of Newark, New Jersey. The Wayne Interim Storage Site (WISS) was formerly owned and operated by Rare Earths, Inc. and W.R. Grace & Co. Contamination at the WISS and vicinity properties resulted from rare earths and thorium processing activities conducted at the facility. The 6.5 acre WISS is now owned by the U.S. government and is located at the intersection of Black Oak Ridge Road and Pompton Plains Cross Road in Wayne Township, Passaic County, New Jersey. The processing operations at the WISS contaminated a number of vicinity properties. Contamination on the vicinity properties was addressed between 1985 and 1987 and again between 1993 and 1997 by the Department of Energy (DOE), and currently by the Army Corps of Engineers.

Authorization: Responsibility for the Wayne site was assigned to the U.S. Department of Energy (DOE) as a decontamination research and development project by the U.S. Congress through the Energy and Water Development Appropriations Act of 1984. DOE placed the site in their Formerly Utilized Sites Remedial Action Program (FUSRAP). In October 1997, responsibility for executing FUSRAP was transferred from DOE to the Army Corps by further Congressional action.

The site is listed by the U.S. Environmental Protection Agency (EPA) on the National Priorities List (NPL). All Army Corps activities at the site are being coordinated with EPA Region II under CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and a negotiated Federal Facilities Agreement (FFA). The FFA was originally developed by DOE and EPA to outline responsibilities for each agency. Terms of the agreement have been renegotiated by the Army Corps and EPA to incorporate the transfer of responsibilities from DOE to the Army Corps.

Project History: Contamination at WISS resulted from rare earth and thorium processing activities conducted at the facility during the period of 1948 to 1971. Two types of contaminated media have been addressed at the site: source media (which includes soil, processing waste, and bulk waste) and building debris. Thorium was the principal contaminant of concern at the site, with secondary contaminants consisting of radium, uranium, and seven heavy metals. The process used to extract the rare earth elements and thorium from the monazite sands created wastes that were disposed in burial waste pit areas. Processing was licensed by the Atomic Energy Commission (AEC) from 1954 until 1971, when processing ceased. After processing ceased, the facility was licensed for "storage only" of waste materials. In 1974, W.R. Grace partially decontaminated the site. Several buildings were demolished and the building debris was buried on-site. The Nuclear Regulatory Commission (the successor to the AEC) released the site for unrestricted use in 1975; however, land use restrictions were maintained for specific areas on the WISS property where buried wastes remained.

Between 1985 and 1987, removal actions were conducted to remove contaminated material from vicinity properties associated with operations at WISS. Excavated material from these properties was placed in an interim storage pile on top of the process waste pits on the WISS property. The interim storage pile was built with liners and covers to prevent migration of contamination from the pile. The interim storage pile contained approximately 38,500 cubic yards of radioactively contaminated soil and building rubble generated during the vicinity property cleanup efforts. Remedial activities were conducted at additional vicinity properties in 1993 under the *Engineering Evaluation/Cost Analysis for the Proposed Removal of Contaminated Materials from Vicinity Properties at the Wayne Site, U.S. Department of Energy, (August, 1993).* The majority of the waste from the 1993 cleanup actions was shipped directly to a commercial disposal facility. A small amount of contaminated soil from the 1993 cleanup actions was added to the interim storage pile due to off-site waste disposal constraints

in effect at the time. The interim storage pile was removed in 1997 by the DOE, and shipped off-site for disposal.

In March 1998, the Corps released for public review and comments an Engineering Evaluation/Cost Analysis (EE/CA) to address the most highly contaminated materials from WISS. This EE/CA allowed for excavation of process waste pit materials, as well as impacted soil and debris (from beneath the footprint of the former interim storage pile), and for transportation of these materials to a permanent disposal facility. Pursuant to this EE/CA, 40,000 cubic yards of material was removed for off-site disposal. Excavation pursuant to this EE/CA was completed in November 1999. The remainder of the contaminated soil was designated for removal as part of the remedial action in accordance with the Record of Decision (ROD) signed by the Corps and the Environmental Protection Agency (EPA) on May 15, 2000.

A wastewater treatment plant was constructed on-site to treat ground water that came in contact with contaminated soil in the excavations. The treatment plant was operated from May 2000 to December 2001. The treatment plant and housing structure were disassembled when operations ceased. A total of 20,000,000 gallons of wastewater was treated at the WISS and shipped to a local publicly owned municipal wastewater treatment plant for disposal.

In August 2000, the last remaining building located on-site was demolished and disposed of at a permitted off-site disposal location. The building demolition allowed for excavation of contamination beneath the building. This effort was authorized by the ROD and was performed under a design workplan approved by the EPA and New Jersey Department of Environmental Protection (NJDEP).

Excavation of contaminated soil at WISS was performed from August 2000 to December 2001 also pursuant to the ROD, which required contaminated material to be excavated to an average concentration of no more than 5 picoCuries / gram of radium-226 and thorium-232 combined above background levels. Contaminated material was also excavated to an average concentration of no more than 100 picoCuries/gram of total uranium above background levels. A total of 56,000 cubic yards of contaminated material has been excavated at WISS and disposed of at an appropriate off-site disposal facility under the ROD.

Site restoration activities were completed in August 2002. Site restoration comprised of placing native backfill soil in the excavation, grading the site to improve drainage, perimeter fence installation, and installing long-term monitoring wells. A one-foot layer of topsoil was placed on top of the backfill, and the area was hydroseeded with a combination of native grasses and wild flowers.

In March 2003, the Army Corps conducted a paper review to evaluate whether prior cleanup actions by DOE at the 28 vicinity properties, were sufficient to meet the cleanup criteria specified in the ROD. On the basis of this paper review and additional confirmatory sampling at four properties, the Army Corps determined prior DOE actions were sufficient to meet ROD criteria at all the vicinity properties with the exception of the Wayne Township Park and a small right-of-way area adjacent to Pompton Plains Crossroad. An additional 2,300 cubic yards was remediated from these two properties in July and August 2003 in accordance with a ROD Explanation of Significant Differences (ESD) currently being issued. EPA Region 2 completed a pre-final inspection on September 16, 2003 to verify that remedial action construction activities have been completed at the WISS and vicinity properties.

A 5-year groundwater monitoring program was initiated in April 2002 to evaluate the integrity of groundwater quality. If groundwater monitoring demonstrates protectiveness of the remedial action and the Site contaminants of concern are not present above established levels, the Site will meet the criteria for unrestricted use.

For more site information: Please call Allen Roos, Project Manager, at 212-264-0120, or e-mail Allen at: allen.d.roos@usace.army.mil. You may also visit the Wayne Public Library, at 475 Valley Road, and the Pequannock Township Library, at 530 Turnpike, where the Wayne site Administrative Record and Information Repositories are located.